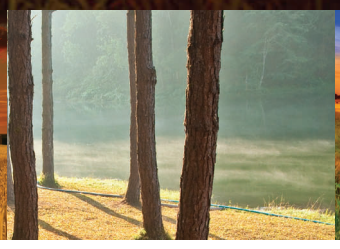
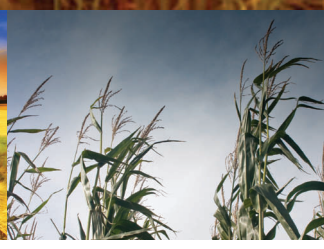
ANNUAL REPORT ON AGRICULTURAL EDUCATION AND TRAINING PROGRAMMES, ENROLMENTS AND GRADUATE OUTPUTS AT HIGHER EDUCATION INSTITUTIONS FOR THE 2008 ACADEMIC YEAR







agriculture,
forestry & fisheries

Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

ANNUAL REPORT ON AGRICULTURAL EDUCATION AND TRAINING PROGRAMMES, ENROLMENTS AND GRADUATE OUTPUTS AT HIGHER EDUCATION INSTITUTIONS FOR THE 2008 ACADEMIC YEAR

Department of Agriculture, Forestry & Fisheries

Design, Printed and Published by:
Department of Agriculture, Forestry and Fisheries

Obtainable from
Resource Centre

Department of Agriculture, Forestry and Fisheries
Private Bag X250
Pretoria
0001

ISBN: 978-1-86871-329-5

CONTENTS

FOREWORD BY THE DIRECTOR GENERAL

I am pleased to present the 2008 Annual Report on Agricultural Programmes, Graduate Outputs and Enrolments in Public Higher Education Institutions and Colleges of Agriculture. The 2008 report is the fifth of a series of annual reports on agricultural enrolments and graduate outputs in public higher education institutions and agricultural colleges as well as the type of programmes offered by these institutions on an annual basis.

The 2008 Annual Report on Agricultural Graduate Outputs and Enrolments originates from a data collection process by the Department of Agriculture on the supply of intermediate and high level skills for the agricultural sector.

Stipulated in the 2005 Department of Agriculture strategic plan as a deliverable, the 2008 report endeavours to present the sector with a picture on the supply of intermediate and high level skills for the agriculture sector by public higher education institutions and colleges of agriculture as the major role players in agricultural graduates provision. Apart from that the study was aimed at investigating and identifying agricultural skills which are in shortfall and those that are in oversupply. The preceding 2004, 2005, 2006 and 2007 reports portrayed an unbecoming picture of the skills provision in the agricultural education and training sector. Like the studies conducted before, the study was focused on the types of agricultural education and training programmes offered by various higher education institutions, agricultural enrolments and graduate outputs in the various fields of study during the 2008 academic year.

The study outlines trends in terms of skills supply for the agriculture sector by the public institutions of higher learning and agricultural colleges on yearly basis in order to inform planning for AET provisioning and interventions for skills development for the sector. In the previous reports, findings indicated a severe undersupply of particular critical skills in certain fields of agriculture particularly amongst the African, Coloured and Asian graduates; such skills include BSc Agricultural Engineering and BVSc Veterinary Science. African graduates were on the other hand overly represented on skills such as Animal Science, Agricultural Extension and Agricultural Science. This is the reason for the high unemployment rate amongst African agricultural graduates as these skills are deemed to be in lower demand compared to the supply.

I am certain that this report will make a valuable contribution in addressing the above problem, the implementation of the new AET Strategy and in addressing the skills gap in the sector as well as establishing a cadre of agricultural graduates that will benefit not only the agricultural sector but also the South African economy in general. It is therefore my conviction that this report like the ones before shall provide a very strong and informed basis for decision making in agricultural education and training. I truly trust that the findings of this report will assist to inform the efforts of transforming agricultural education towards a well coordinated, effective and responsive approach.

Langa Zitha (Mr)
DIRECTOR-GENERAL

EXECUTIVE SUMMARY

1. INTRODUCTION

This report is based on a study conducted on the agricultural enrolments, graduate outputs and Agricultural Education and Training (AET) programmes offered by various agricultural colleges and Higher Education institutions during the 2008 academic year during the 2008 academic year. The Department of Agriculture, Forestry and Fisheries (DAFF) collects data on the types of programmes offered in the colleges of agriculture and Higher Education (HE) institutions, agricultural enrolment figures and graduate output figures in all the agricultural programmes offered by these institutions on an annual basis. The 2008 report is the fifth of a series of annual reports on AET enrolments, graduate outputs and programmes offered by colleges of agriculture as well as HE institutions produced by the DAFF.

2. OBJECTIVES Of THE PROJECT

The primary objective of the study is to observe the trends in terms of skills supply for the agricultural sector by the HE institutions and the colleges of agriculture. The other objective of the study is to observe trends with regard to AET enrolments, graduate outputs and the types of AET programmes offered by the various institutions, in order to inform policy decisions and planning regarding AET provisioning in the public colleges of agriculture and HE institutions for the purpose of skills supply for the sector. The findings would further assist in the development of strategies for addressing the skills demand in the agriculture sector.

3. METHODOLOGY FOR THE STUDY

The research study was more quantitative in nature and its aim was to yield quantitative descriptive data. The Education, Training and Extension Services (ETES) Directorate conducted a questionnaire-based survey with all the colleges of agriculture, Universities and Universities of Technology offering AET programmes.

Data collection for the study focused on the number of AET enrolments and graduates from undergraduate to postgraduate levels focusing on all the agricultural disciplines. It also focused on the types of programmes and short courses offered in these institutions. Questionnaires requesting information on the number of enrolments and graduates in all the agricultural programmes offered by each institution was distributed electronically to all public HE institutions offering agricultural programmes and the 12 colleges of agriculture. The questionnaires were completed and returned to the Directorate in the same way. The study only focused on those public institutions that were offering higher education and training programmes in agriculture.

For ease of interpretation, the qualifications were categorised using the Categorisation of Education Subject Matter (CESM) of the Department of Education. However, in some cases the CESM was further broken down into sub-categories to obtain a better understanding of the enrolments and supply of AET graduates. The report indicates how the qualifications were classified per CESM.

4. LIMITATIONS

The study is mostly quantitative in nature and therefore does not provide an in-depth analysis of the factors influencing the trends in agricultural enrolments and graduate outputs in various programmes.

The study could not report on each qualification and used the CESM which resulted into the different scarce skills within the CESM not clearly indicated e.g. entomology, which is a scarce skill, is included under plant health. This was due to the fact that institutions do not provide the information per field of specialisation within the CESM.

Furthermore, the study could not clearly indicate the different specialisation within each CESM, because institutions did not provide the information on specialisation.

5. FINDINGS

5.1 Agricultural Education and Training at Colleges of Agriculture

There are twelve (12) public Colleges of Agriculture offering qualifications in the Higher Education and Training (HET) band up to the B Degree level, and the programmes are offered at colleges on an annual basis.

5.1.1 AET Programmes offered by the Colleges of Agriculture in 2008

All the Colleges of Agriculture have their qualifications registered on the National Qualifications Framework (NQF). During the 2008 academic year, not all the colleges offered programmes ranging from NQF level 1 to NQF level 6. The general qualifications offered in all the colleges were a Higher Education Certificate in Agriculture at NQF level 5, and a Diploma in Agriculture at NQF level 6. A Diploma in Agriculture is pursued after completion of the Higher Certificate in Agriculture. All the Higher Certificates are offered as a two-year programme, culminating in the Diploma in Agriculture in the third year of study.

The Higher Education Certificate and the Diploma programmes are accredited by the Higher Education Quality Committee (HEQC) of the Council on Higher Education (CHE), while the programmes from NQF levels 1 to 4 (including short courses) are accredited by Umalusi and AgriSETA. However, some of the short courses from NQF levels 1 to 4 are not yet accredited.

Nine (75%) of the 12 colleges offered NQF level 6 programmes in 2008. Madzivhandila, Tompi Seleka and Tsolo have phased out the NQF level 5 programmes and are presently concentrating on learnerships and short courses.

5.1.2 Agricultural Education and Training Enrolment figures at Colleges of Agriculture in 2008

A breakdown of enrolments by gender and race at Colleges of Agriculture is presented in the table below.

Breakdown of enrolments by gender and race

Name of the college	African			Coloured			White			Asian			Total	%
	M	F	Total	M	F	Total	M	F	Total	M	F	Total		
Cedara	80	59	**139**	3	1	**4**	30	6	**36**	3	3	**6**	**185**	**11**
CIAT: Elsenburg*	14	7	**21**	23	19	**42**	115	17	**132**	0	0	**0**	**195**	**12**
Fort Cox	251	216	**467**	0	0	**0**	0	0	**0**	0	0	**0**	**467**	**29**
Glen	44	28	**72**	0	0	**0**	0	0	**0**	0	0	**0**	**72**	**4**
Grootfontein	22	12	**34**	11	3	**14**	106	13	**119**	0	0	**0**	**167**	**10**
Lowveld	38	33	**71**	0	0	**0**	6	0	**6**	0	0	**0**	**77**	**5**
Madzivhandila	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**
Owen Sitole	127	127	**254**	0	0	**0**	0	0	**0**	0	0	**0**	**254**	**16**
Potchefstroom	74	21	**95**	0	0	**0**	67	9	**76**	1	0	**1**	**172**	**11**
Taung	13	14	**27**	0	0	**0**	0	0	**0**	0	0	**0**	**27**	**2**
Tompi Seleka	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**
Tsolo	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**
TOTAL	**663**	**517**	**1180**	**37**	**23**	**60**	**324**	**45**	**369**	**4**	**3**	**7**	**1616**	
Percentage	**41**	**32**	**73**	**2**	**1**	**4**	**20**	**3**	**23**	**0**	**0**	**0**		**100**

***Information on B Agric: Viticulture is discussed under chapter 5**

A total number of 1 616 students was enrolled in 2008 at Colleges of Agriculture. Like in previous academic years, 2008 enrolment figures at Colleges of Agriculture combined is still less than 2000, which is a required norm used to determine an institution to operating at higher education level.

Fort Cox had a high number of enrolments with 467 students, followed by Owen Sitole with 254 students and CIAT: Elsenburg with 195 students and the lowest enrolments were registered at Lowveld, Glen and Taung with 77, 72 and 27 students respectively.

African students dominated the enrolments with 73% followed by White students with 23%. The other population groups enrolled constituted less than 5% of the total enrolment at colleges during the 2008. Male enrolments constituted 64% of the total number of enrolled students in 2008 and female enrolments constituted 36%.

5.1.3 Number of people registering and completing Short Courses at Colleges of Agriculture during 2008

A breakdown of people registering and completing short courses by gender and race at Colleges of Agriculture is presented in the table below.

Breakdown of people registered in and completing short courses by gender and race

Name of the college	African			Coloured			White			Asian			Other	Total	%
	M	F	T	M	F	T	M	F	T	M	F	T			
Cedara	198	187	**385**	0	0	**0**	24	0	**24**	14	0	**14**	0	**423**	4
CIAT: Elsenburg	202	257	**459**	871	543	**1414**	35	5	**40**	1	0	**1**	0	**1914**	19
Fort Cox*	0	0	**0**	0	0	**0**		0	**0**	0	0	**0**	0	**0**	0
Glen	97	54	**151**	0	0	**0**	0	0	**0**	0	0	**0**	0	**151**	2
Grootfontein	702	260	**962**	378	105	**483**	151	43	**194**	0	0	**0**	0	**1639**	16
Lowveld	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	**0**	0
Madzivhandila	476	386	**862**	0	0	**0**	0	0	**0**	0	0	**0**	0	**862**	9
Owen Sitole	541	1267	**1808**	0	0	**0**	0	0	**0**	0	0	**0**	0	**1808**	18
Potchefstroom	193	77	**270**	9	0	**9**	1	0	**1**	0	0	**0**	0	**280**	3
Taung	100	116	**216**	0	0	**0**	0	0	**0**	0	0	**0**	0	**216**	2
Tompi Seleka	654	845	**1449**	0	0	**0**	0	0	**0**	0	0	**0**	0	**1499**	15
Tsolo	673	522	**1195**	0	0	**0**	0	0	**0**	0	0	**0**	0	**1199**	12
TOTAL	**3836**	**3971**	**7807**	**1258**	**648**	**1906**	**211**	**48**	**259**	**15**	**0**	**15**	**0**	**9987**	100
***Information not available**															

CIAT, Owen Sitole, Grootfontein and Tompi Seleka enrolled more students in short courses than any college, with 19%, 18%, 16% and 15% respectively. Africans students enrolled in short courses constituted 78% followed by Coloured students with 20% and Whites constituted 2%. Asian students were almost non-existent.

5.1.4 Agricultural Education and Training Graduate figures at Colleges of Agriculture in 2008

A breakdown of graduates by gender and race at Colleges of Agriculture is presented in the table below.

Breakdown of graduates by gender and race

Name of the college	African			Coloured			White			Asian			Total	%
	M	F	Total	M	F	Total	M	F	Total	M	F	Total		
Cedara	17	19	**36**	0	0	**0**	25	03	**28**	1	2	**3**	**67**	**9**
CIAT: Elsenburg	5	3	**8**	6	3	**9**	89	31	**120**	0	0	**0**	**137**	**18**
Fort Cox	59	32	**91**	0	0	**0**	0	0	**0**	0	0	**0**	**91**	**12**
Glen	24	22	**46**	0	0	**0**	0	0	**0**	0	0	**0**	**46**	**6**
Grootfontein	7	2	**9**	6	0	**6**	54	5	**59**	0	0	**0**	**74**	**10**
Lowveld	38	33	**71**	0	0	**0**	6	0	**6**	0	0	**0**	**77**	**10**
Madzivhandila	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**
Owen Sitole	102	101	**203**	0	0	**0**	0	0	**0**	0	0	**0**	**203**	**27**
Potchefstroom	8	2	**10**	1	0	**1**	3	28	**0**	0	0	**0**	**39**	**5**
Taung	3	7	**10**	0	0	**0**	0	0	**0**	0	0	**0**	**10**	**1**

Breakdown of graduates by gender and race														
Name of the college	African			Coloured			White			Asian			Total	%
	M	F	Total	M	F	Total	M	F	Total	M	F	Total		
Tompi Seleka	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**
Tsolo	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**
TOTAL	**263**	**221**	**484**	**13**	**3**	**16**	**199**	**42**	**241**	**1**	**2**	**3**	**744**	**100**

In 2008, 744 graduates were produced at Colleges of Agriculture. Owen Sitole had a high number of graduates with 27%, followed by CIAT: Elsenburg with 18% and Fort Cox with 12%.

African graduates were the largest group of graduates with 65% followed by White graduates with 32% and Coloured graduates with 2%. Only three Asians graduated during the 2008 academic year.

Male graduates dominated with 64% of the total number of graduates and female graduates constituted 36%. Africans dominated the female graduates at Colleges of Agriculture with 82% followed by Whites with 16%. Coloured and Asian female graduates constituted 1% each. African males dominated with 55%, followed by White males with 42% and Coloured males with 3%.

5.2 Agricultural Education and Training at Universities of Technology in 2008

There are five Universities of Technology offering AET programmes in South Africa namely; Cape Peninsula University of Technology (CPUT), Central University of Technology Free State (CUT), Mangosuthu Technikon (Mantec), Durban University of Technology (DUT) and Tshwane University of Technology (TUT). The agricultural programmes offered at these institutions range through the HET Band from NQF levels 5 to 8. i.e. from Certificate to a Doctor of Technology (DTech).

All the Universities of Technology offer few agricultural programmes such as Agricultural Management from Diploma level to BTech level, with the exception of TUT which offers programmes at DTech level. Most of the historically disadvantaged institutions do not offer programmes in the scarce skills category like Viticulture, BVSc Veterinary Science and Agricultural Engineering. TUT offers a wide range of agricultural programmes on a broad curriculum that is divided into four main streams, namely Horticulture, Crop Sciences, Nature Conservation and Animal Sciences.

5.2.1 Agricultural Education and Training Enrolment figures at Universities of Technology in 2008

The table below presents demographic breakdown of AET enrolments at Universities of Technology during the 2008 academic year.

Demographic Breakdown of AET enrolments at Universities of Technology during the 2008 academic year													
University of Technology	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
CPUT	72	120	**192**	47	51	**98**	165	62	**227**	3	1	**4**	**521**
CUT	35	28	**63**	2	0	**2**	30	3	**33**	0	0	**0**	**98**
MANTEC	384	440	**824**	0	0	**0**	6	1	**7**	0	0	**0**	**831**
DUT	154	365	**519**	6	9	**15**	49	193	**242**	18	22	**40**	**816**
TUT	645	531	**1176**	4	3	**7**	248	197	**445**	0	0	**0**	**1628**
TOTAL	**1290**	**1484**	**2774**	**59**	**63**	**122**	**498**	**456**	**954**	**21**	**23**	**44**	**3894**

A total number of 3 894 students were enrolled during the 2008 academic year at all the Universities of Technology. TUT enrolled 42% of the total enrolments followed by MANTEC and DUT with 21% each. CPUT and CUT enrolled the lowest with 13% and 3% respectively.

African students dominated the Universities of Technology enrolments with 71%, followed by White students with 24%. Coloured and Asian students constituted very low enrolments during the 2008 academic year with 3% and 1% respectively. Female students constituted 52% of the total enrolments at Universities of Technology and males constituted 48%.

5.2.2 Agricultural Education and Training Enrolments at Universities of Technology by Level of Qualifications & CESM in 2008

The table below presents agricultural enrolments at Universities of Technology by CESM and levels of qualifications.

Agricultural enrolments at Universities of Technology by CESM & levels of qualification in 2008							
CESM	**N.H.CER.**	**DIPLOMA**	**BTECH**	**MTECH**	**DTECH**	**Total**	**%**
Animal Science	0	845	50	0	0	**895**	**23**
Horticulture	0	115	14	0	0	**129**	**3**
Plant Science	0	262	32	0	0	**294**	**8**
Agricultural Management	81	102	64	0	0	**247**	**6**
Wildlife Management	0	341	14	0	0	**355**	**9**
Agricultural Science-General	1	92	18	24	0	**135**	**3**
Agricultural Extension	0	243	12	0	0	**255**	**7**
Veterinary Technology	0	32	23	3	0	**58**	**1**
Agricultural Biotechnology	0	144	44	19	11	**218**	**6**
Food Science and Technology	54	344	54	12	0	**465**	**12**
Land Reclamation	34	22	0	0	0	**56**	**1**
Renewable Natural Resources	39	611	108	21	0	**779**	**20**
Rural Development	0	2	6	0	0	**8**	**0**
TOTAL	**211**	**3155**	**439**	**79**	**11**	**3894**	
Percentage	**5**	**81**	**11**	**2**	**0**		**100**

Animal Science, Renewable Natural Resources and Food Science and Technology have the highest enrolment figures with 23%, 20% and 12% respectively. Each of the other CESM's has registered less than 10% of the total number of enrolments. Diploma enrolments constituted 81% of the total enrolments at Universities of Technology in 2008 followed by BTech enrolments with 11%. Postgraduate (MTech and DTech) enrolments constituted 2% of the total enrolments at Universities of Technology in 2008.

5.2.3 Agricultural Education and Training Graduate figures at Universities of Technology in 2008

The table below presents a demographic breakdown of AET graduates at Universities of Technology by gender and race for 2008.

Breakdown of graduates by gender and race per University of Technology during 2008													
Name of the University	**African**			**Coloured**			**White**			**Asian**			**Total**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
CPUT	4	4	**8**	8	2	**10**	73	13	**86**	0	0	**0**	**104**
CUT	13	6	**19**	0	0	**0**	31	2	**33**	0	0	**0**	**52**
DUT	28	68	**96**	1	2	**3**	4	8	**12**	10	67	**77**	**188**
MANTEC	104	84	**188**	0	0	**0**	1	0	**1**	0	0	**0**	**189**
TUT	124	86	**210**	1	0	**1**	46	25	**71**	1	0	**1**	**283**
TOTAL	**273**	**248**	**521**	**10**	**4**	**14**	**155**	**48**	**203**	**11**	**67**	**78**	**816**

A total of 816 graduates were produced in 2008 at all Universities of Technology. TUT produced 35% of the overall graduates at Universities of Technology in 2008 followed by MANTEC and DUT with 23% each. CPUT and CUT produced 13% and 6% of the overall graduates in 2008 respectively.

African graduates constituted 64% of all the AET graduates at Universities of Technology in 2008, followed by White graduates with 25%. Asian and Coloured graduates collectively comprised 12% of the total number of graduates produced by Universities of Technology in 2008. Male graduates constituted 55% of the overall AET graduates at Universities of Technology in 2008 and female graduates accounted for 45%.

5.2.4 Agricultural Education and Training Graduate figures at Universities of Technology by Level of Qualification and CESM in 2008

The table below presents a breakdown of graduates at Universities of Technology by CESM and level of qualification.

Agricultural graduates at Universities of Technology by CESM & levels of qualification in 2008							
CESM	**N.H. CER.**	**DIPLOMA**	**BTECH**	**MTECH**	**DTECH**	**Total**	**%**
Agricultural Management	0	48	33	0	0	**81**	**10**
Animal Science	1	160	21	1	0	**183**	**22**
Horticulture	0	16	0	0	0	**16**	**2**
Plant Science	0	102	35	2	0	**139**	**17**
Renewable Natural Resources	0	62	39	3	0	**104**	**13**
Wildlife Management	0	20	26	0	0	**46**	**6**
Agricultural Science-General	0	28	8	3	0	**39**	**5**
Agricultural Extension	0	34	0	0	0	**34**	**4**
Veterinary Technology	0	11	6	0	0	**17**	**2**
Biotechnology	0	52	21	4	0	**77**	**9**
Food Science	0	54	15	0	0	**69**	**8**
Rural Development	0	11	0	0	0	**11**	**1**
Land Reclamation	1	0	0	0	0	**1**	**0**
TOTAL	**2**	**598**	**204**	**13**	**0**	**816**	
Percentage	**0**	**73**	**25**	**2**	**0**		**100**

Animal Science, Plant Science and Renewable Natural Resources have high graduate figures with 22%, 17% and 13% respectively. Each of the other CESM categories has produced less than 11% of the overall graduates.

The Diploma dominated the AET graduates at Universities of Technology produced in 2008 with 73% followed by BTech with 25%, MTech with 2% and Certificates with less than 1%. There were no DTech graduates during the 2008 academic year.

5.3 Agricultural Education and Training at Universities in 2008

There are thirteen Universities offering AET programmes in South Africa. These institutions offer agricultural qualifications from NQF levels 5 to 8 i.e. from University Diploma to Doctor of Philosophy (PhD) programmes. All the Universities offer various agricultural programmes and they vary in terms of scope. For instance, University of Stellenbosch, University of Pretoria, University of KwaZulu-Natal, University of Free State, University of South Africa and University of Fort Hare, all offer many programmes in their agricultural curricula. The 2008 report covers only ten Universities because no data were received from University of KwaZulu-Natal, Johannesburg and Zululand despite numerous attempts made to gather this data.

5.3.1 Agricultural Education and Training Enrolment figures at Universities in 2008

A demographic breakdown of AET enrolments by gender and race at Universities is presented in the table below.

Demographic breakdown of AET enrolments at Universities in 2008

Name of the University	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
University of Fort Hare	91	68	**159**	0	0	**0**	0	0	**0**	0	0	**0**	**159**
University of North West	113	104	**217**	0	0	**0**	0	0	**0**	0	0	**0**	**217**
Nelson Mandela Metropolitan University	138	84	**222**	6	4	**10**	138	42	**180**	0	0	**0**	**412**
University of Free State	83	55	**138**	1	0	**1**	105	17	**122**	1	1	**2**	**263**
University of Johannesburg*	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**
University of KwaZulu-Natal *	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**
University of Limpopo	162	165	**327**	0	0	**0**	1	0	**1**	0	0	**0**	**328**
University of Pretoria	144	181	**325**	10	14	**24**	272	546	**818**	13	40	**53**	**1220**
University of South Africa	514	565	**1079**	17	17	**34**	82	93	**175**	7	14	**21**	**1309**
University of Stellenbosch	39	20	**59**	16	20	**36**	159	102	**261**	0	0	**0**	**356**
University of Venda	37	29	**66**	0	0	**0**	0	0	**0**	0	0	**0**	**66**
University of Western Cape	7	4	**11**	3	2	**5**	1	1	**2**	0	0	**0**	**18**
University of Zululand*	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**
TOTAL	**1328**	**1275**	**2603**	**53**	**57**	**110**	**758**	**801**	**1559**	**21**	**55**	**76**	**4348**

*Information not available

A total number of 4 348 students were enrolled in 2008 at all the Universities. University of South Africa and University of Pretoria accounted for 30% and 28% of the total enrolments during the 2008 academic year respectively, followed by Nelson Mandela Metropolitan with 9% and Stellenbosch with 8%. Likewise, in the previous academic years, Fort Hare, North West, Venda and Western Cape attracted less than 8% of the total enrolments in agricultural education and training at Universities during the 2008 academic year.

As depicted in the table above Africans constituted 60% of the total enrolments at Universities during the 2008 academic year followed by Whites with 36%. Coloured and Asian students accounted for 3% and 2% respectively. Both male and female students constituted 50% of total enrolments during the 2008 academic year.

5.3.2 Agricultural Education and Training Enrolments at Universities by Level of Qualifications & CESM in 2008

The table below presents agricultural enrolments at Universities by CESM and levels of qualifications.

Agricultural enrolments in Universities in 2008 by CESM and academic levels							
CESM	**Under-graduate**	**Post-graduate Diploma**	**Honours**	**Masters**	**PhD**	**Total**	**%**
Agricultural Economics (Science Stream)	125	0	23	17	0	165	4
Agricultural Economics (Art Stream)	28	0	0	0	4	32	1
Agricultural Economics (BCom Stream)	0	0	3	0	0	3	0
Agricultural Economics (AgriBusiness)	34	0	0	0	0	34	1
Agricultural Science (Art Stream)	112	0	0	45	1	158	4
Agricultural Science (Science Stream)	418	0	8	39	9	474	11
Agric. Extension	25	18	0	24	2	69	2
Agric. Extension (Inst.Agrar Stream)	0	0	1	0	0	1	0
Agric. Food Science	60	0	13	15	7	95	2
Animal Science	473	0	55	61	19	608	14
Horticulture	190	0	14	6	0	210	5
Horticulture (Inst. Agrar. Stream)	0	0	0	0	0	0	0
Plant Science	58	0	29	37	13	137	3
Plant Science (Inst.Agrar Stream)	0	0	11	1	0	12	0
Soil Science	35	0	2	27	1	65	1
Forestry	172	0	1	11	2	186	4
Renewable Natural Resources	19	0	0	7	4	30	1
Agric. Management	632	0	5	90	0	727	17
Other Agric. and Renewable Resources	1	31	0	4	0	36	1
Rural Development	0	0	2	4	0	6	0
Agric Econ (Inst. Agrar. Stream)	0	0	2	1	0	3	0
Environmental Management	37	0	44	4	9	94	2
Environmental Management (Inst. Agrar. Stream)	0	0	0	4	0	4	0
Agribusiness (Inst.Agrar Stream	0	0	0	0	0	0	0
Land Reclamation (Land Use)	0	0	1	0	0	1	0
Agronomy	24	0	3	4	2	33	1
Agronomy (Inst.Agrar. Stream)	0	0	0	3	0	3	0
Wildlife	415	0	12	15	2	444	10
BSc Veterinary Biology	271	0	0	0	0	271	6
Veterinary Nursing	0	0	0	0	0	0	0
Microbiology	39	0	15	13	4	71	2
Consumer Science	250	0	0	13	1	264	6
Biotechnology	46	0	30	14	22	112	3
TOTAL	**3464**	**49**	**274**	**459**	**102**	**4348**	
Percentage	**80**	**1**	**6**	**11**	**2**		**100**

As shown in the table above, Undergraduates Degree dominated the overall AET enrolments at Universities with 80% followed by Masters enrolments with 11%. Honours and PhD enrolments accounted for 6% and 2% respectively. Postgraduate Diploma registered the least number of students with 1% of the overall enrolments; this can logically be attributed to the fact that relatively few institutions offer Postgraduate Diploma programmes.

Agricultural Management, Animal Science and Agricultural Science (Science Stream) enrolled the highest number of students at Universities with 17%, 14% and 11% respectively.

5.3.3 Agricultural Education and Training Graduate figures at Universities in 2008

A demographic breakdown of AET graduates by gender and race at Universities is presented in the table below.

AET graduates figures at Universities in 2008		
Name of the University	**Number of AET graduates**	**%**
University of Fort Hare	64	3
University of North West	100	5
Nelson Mandela Metropolitan University	190	10
University of Johannesburg*	0	0
University of Free State	207	11
University of KwaZulu-Natal*	0	0
University of Limpopo	118	6
University of Pretoria	729	39
University of South Africa	75	4
University of Stellenbosch	329	18
University of Venda	67	4
University of Western Cape*	0	0
University of Zululand*	0	0
TOTAL	**1879**	**100**
*Information not available		

One thousand eight hundred and seventy nine (1 879) graduates were produced in 2008 at all the Universities. University of Pretoria produced 39% of the total number of graduates during the 2008 academic year followed by University of Stellenbosch with 18%. University of Free State accounted for 11% and Nelson Mandela Metropolitan University accounted for 10% of the total number of graduates in Universities during the 2008 academic year. Each of the other Universities produced less than 10% of the graduate figures.

Agricultural Education and Training Graduate figures at Universities in 2008

The table below presents a demographic breakdown of Universities graduates by gender and race for 2008.

Demographic breakdown of AET graduates at Universities in 2008													
Name of the University	**African**			**Coloured**			**White**			**Asian**			**Total**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
University of Fort Hare	39	25	**64**	0	0	**0**	0	0	**0**	0	0	**0**	**64**
University of North West	46	54	**100**	0	0	**0**	0	0	**0**	0	0	**0**	**100**
Nelson Mandela Metropolitan University	50	21	**71**	3	0	**3**	86	29	**115**	1	0	**1**	**190**
University of Johannesburg	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**
University of Free State	30	60	**90**	3	1	**4**	19	93	**112**	1	0	**1**	**207**
University of KwaZulu-Natal	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**
University of Limpopo	72	46	**118**	0	0	**0**	0	0	**0**	0	0	**0**	**118**
University of Pretoria	55	61	**116**	2	7	**9**	181	397	**578**	8	18	**26**	**729**
University of South Africa	33	26	**59**	0	0	**0**	5	6	**11**	1	4	**5**	**75**
University of Stellenbosch	29	12	**41**	8	6	**14**	152	122	**274**	0	0	**0**	**329**
University of Venda	32	35	**67**	0	0	**0**	0	0	**0**	0	0	**0**	**67**
University of Western Cape	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**
University of Zululand	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**
TOTAL	**386**	**340**	**726**	**16**	**14**	**30**	**443**	**647**	**1090**	**11**	**22**	**33**	**1879**

White and African graduates constituted the most significant figures overall. Whites accounted for 58% and African constituted 39% of the total University graduates during the 2008 academic year, whilst Coloured and Asian graduates collectively constituted 4%. Female graduates dominated the University graduates with 54% and male graduates constituted only 46% of the total number of graduates at Universities during the 2008 academic year.

5.3.4 AET Graduates at Universities by Level of Qualifications & CESM in 2008

The table below presents a breakdown of Universities graduates by level of qualification and CESM categories.

Agricultural graduates in Universities in 2008 by CESM and academic levels							
CESM	**Under-graduate**	**Post-graduate Diploma**	**Honours**	**Masters**	**PhD**	**Total**	**%**
Agricultural Economics (Science Stream)	42	0	17	8	0	**67**	4
Agricultural Economics (Art Stream)	12	0	5	0	2	**19**	1
Agricultural Economics (BCom Stream)	0	0	3	0	0	**3**	0
Agricultural Economics (AgriBusiness)	13	0	0	0	0	**13**	1
Agricultural Science (Art Stream)	140	0	1	34	10	**185**	10
Agricultural Science (Science Stream)	84	0	14	51	6	**155**	8
Agric. Extension	6	4	0	4	0	**14**	1
Agric. Food Science	52	0	13	18	4	**87**	5

Agricultural graduates in Universities in 2008 by CESM and academic levels							
CESM	**Under-graduate**	**Post-graduate Diploma**	**Honours**	**Masters**	**PhD**	**Total**	**%**
Agric. Food Science (Inst. Agrar. Stream)	5	0	0	0	0	**5**	0
Animal Science	232	0	53	29	5	**319**	17
Horticulture	3	0	5	3	0	**11**	1
Horticulture (Inst. Agrar. Stream)	0	0	0	1	0	**1**	0
Plant Science	26	0	30	18	5	**79**	4
Plant Science (Inst.Agrar Stream)	2	0	6	3	0	**11**	1
Soil Science	23	0	3	6	2	**34**	2
Forestry	64	0	11	4	1	**80**	4
Renewable Natural Resources	39	0	0	0	0	**39**	2
Agric. Management	142	0	3	16	0	**161**	9
Other Agric. and Renewable Resources	0	18	0	2	0	**20**	1
Rural Development	0	0	2	3	1	**6**	0
Agric Econ (Inst. Agrar. Stream)	0	0	1	1	0	**2**	0
Environmental Management	26	0	17	6	1	**50**	3
Environmental Management (Inst. Agrar. Stream)	0	0	0	1	0	**1**	0
Agribusiness (Inst.Agrar Stream	0	0	1	0	0	**1**	0
Land Reclamation (Land Use) (Inst.Agrar. Stream)	0	0	0	2	0	**2**	0
Agronomy	10	0	5	4	3	**22**	1
Agronomy (Inst.Agrar. Stream)	0	0	0	2	0	**2**	0
Wildlife	95	0	1	14	0	**110**	6
BSc Veterinary Biology	113	0	0	0	0	**113**	6
Veterinary Nursing	0	0	0	0	0	**0**	0
Microbiology	31	0	18	14	6	**69**	4
Consumer Science	109	0	2	5	1	**117**	6
Biotechnology	44	0	25	7	5	**81**	4
TOTAL	**1313**	**22**	**236**	**256**	**52**	**1879**	
Percentage	**70**	**1**	**13**	**14**	**3**		**100**

Horticulture, Agricultural Science (Science Stream) and Agricultural Management produced 17%, 10% and 9% respectively. Other CESM constituted less than 9% of the total AET graduates at Universities during the 2008 academic year.

Graduates at Undergraduate level accounted for 70% of the total number of graduates produced at Universities in 2008 followed by Masters graduates with 14% and Honours with 13%. PhD and Postgraduate Diploma level contributed 3% and 1% of the total number of graduates at Universities in 2008 respectively.

5.4 Enrolments and Graduate Outputs for Scarce Skills in Agriculture

Veterinary Science (BVSc), Agricultural Engineering, BSc Viticulture and Oenology, Food Science and Technology, B.Agric Viticulture and Biotechnology are regarded as scarce skills by the Department of Agriculture; hence they are discussed separately from other CESM.

5.4.1 Enrolments for Scarce Skills in Agriculture

Breakdown of scarce skills enrolments by gender and race during 2008

The table below presents a demographic breakdown of scarce skills enrolments at Universities.

Demographic breakdown of scarce skills enrolments by gender and race														
LEVEL	**African**			**Coloured**			**White**			**Asian**			**Total**	**%**
	%	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**		
BSc Agricultural Engineering	56	17	**73**	0	0	**0**	8	0	**8**	6	4	**10**	**91**	17
B.Agric Viticulture	8	3	**11**	8	8	**16**	65	17	**82**	0	0	**0**	**109**	20
BSc Biotechnology	15	11	**26**	6	5	**11**	2	2	**4**	0	0	**0**	**41**	7
Food Science and Technology	8	25	**33**	4	4	**8**	3	30	**33**	0	1	**1**	**75**	14
BSc Viticulture and Oenology	5	3	**8**	2	3	**5**	7	6	**13**	0	0	**0**	**26**	5
BVSc Veterinary Science	31	11	**42**	2	0	**2**	49	103	**152**	2	7	**9**	**205**	37
TOTAL	**123**	**70**	**193**	**22**	**20**	**42**	**134**	**158**	**292**	**8**	**12**	**20**	**547**	**100**

BVSc Veterinary, B.Agric Viticulture and BSc Agricultural Engineering enrolled the highest number of students at scarce skills programmes with 37%, 20% and 17% respectively.

The table above depicts that White students and African students had higher enrolments constituting 53% and 35% of the total enrolments respectively. Coloured and Asian students constituted 8% and 4% of the total number of scarce skills enrolments respectively.

It also indicates that male students constituted 52% of the total number of scarce skills enrolments and female students accounted for 48%. It should be noted however that it is only from 2004 that the Department of Agriculture, Forestry and Fisheries started to offer bursaries to redress issues of inequity in the sector.

5.4.1.1 Breakdown of scarce skills enrolments by levels of qualification during the 2008 academic year

Breakdown of scarce skills enrolments during the 2008 academic year						
CESM	**Undergraduate**	**Honours**	**Masters**	**PhD**	**Total**	**%**
Agricultural Engineering	91	0	0	0	**91**	17
B Agric Viticulture	109	0	0	0	**109**	20
Veterinary Science	128	10	53	14	**205**	37
Biotechnology	7	2	8	24	**41**	7
Viticulture and Oenology	14	5	6	1	**26**	5
Food Science and Technology	65		8	2	**75**	14
TOTAL	**414**	**17**	**75**	**41**	**547**	
Percentage	**76**	**3**	**14**	**7**		**100**

The table above indicates that Undergraduates dominated the scarce skills enrolments in the 2008 academic year in the 2008 academic year with 76%, followed by Masters enrolments with 14%. PhD and Honours enrolments constituted 7% and 3% of the overall scarce skills enrolments in the 2008 academic year.

5.4.2 Graduates for Scarce Skills in Agriculture

5.4.2.1 Breakdown of scarce skills graduates by gender and race during 2008

The table below presents a demographic breakdown of scarce skills graduates at institutions of higher learning.

Demographic breakdown of scarce skills graduates by gender and race

LEVEL	African			Coloured			White			Asian			Total	%
	%	F	T	M	F	T	M	F	T	M	F	T		
BSc Agricultural Engineering	2	4	**6**	0	0	**0**	0	0	**0**	1	0	**1**	**7**	2
B Agric Viticulture	2	2	**4**	5	1	**6**	65	26	**91**	0	0	**0**	**101**	27
Food Science and Technology	15	35	**50**	3	1	**4**	5	32	**37**	0	1	**1**	**92**	24
BSc Viticulture and Oenology	2	1	**3**	1	0	**1**	18	18	**36**	0	0	**0**	**40**	11
BVSc Veterinary Science	11	9	**20**	0	0	**0**	42	75	**117**	0	3	**3**	**140**	37
TOTAL	**32**	**51**	**83**	**9**	**2**	**11**	**130**	**151**	**281**	**1**	**4**	**5**	**380**	**100**

BVSc Veterinary Science and B.Agric Viticulture produced the highest number of graduates at scarce skills programmes with 37% and 27% respectively. Food Science and Technology and BSc Viticulture and Oenology respectively accounted for 24% and 11% of the total number of graduates produced at scarce skills programmes during the 2008 academic year. The lowest number of graduates was recorded at Agricultural Engineering with 2%.

White students dominated the total number of graduates produced in the scarce skills programmes with 74% followed by African students with 22%. Coloured students constituted 3% of the total number of scarce skills enrolment during the 2008 academic year while Asian students constituted 1%.

Gender breakdown indicates that female graduates dominated the scarce skills graduates with 55% and male graduates constituted 45% of the total number of graduates during the 2008 academic year.

5.4.2.2 Breakdown of scarce skills graduates by levels of qualification during the 2008 academic year

Scarce skills graduates in 2008 by academic level

CESM	Undergraduate	Honours	Masters	PhD	Total
Agricultural Engineering	7	0	0	0	**7**
B Agric Viticulture	101	0	0	0	**101**
BSc Viticulture and Oenology	34	6	0	0	**40**
BVSc Veterinary Science	97	8	33	2	**140**
Food Science and Technology	78	0	13	1	**92**
TOTAL	**317**	**14**	**46**	**3**	**380**

Undergraduate graduates dominated the scarce skills graduates produced in 2008 with 83% followed by Masters graduates with 12% and Honours graduates with 4%. PhD graduates constituted 1% of the total number of scarce skills during the 2008 academic year.

5.5 Total AET provision in 2008

From a total of 13 076 students enrolled for AET programmes in 2005, 12 630 in 2006, 19 773 in 2007, and 9 858 students were enrolled in 2008. One thousand six hundred and sixteen (1 616) were from colleges, 3 894 were from Universities of Technology and 4 348 were from the traditional Universities. In as much as race is concerned, Africans were in majority with 6 557, followed by Whites with 2 882 as it was the case in previous academic years. Coloureds and Asians were very minimal throughout the enrolments. A general gender classification shows that males were slightly dominant with 5 056 and females accounted for 4 802. A total number of 9 987 enrolled for short courses offered by Colleges of Agriculture. However, gender and racial classification cannot be made due to poor information records.

The findings depict that graduate output accounted for 3 439 graduates. In terms of race, Africans were in majority with 1 731, followed by Whites with 1 534. In terms of gender, males dominated with 1 781 whilst females accounted for 1 658. Generally, there were relatively very few Coloured and Asian graduates.

In terms of enrolments within the scarce skills categories, 547 students were registered. In terms of race, as was the case in previous years, Whites were dominant with 292 followed by Africans with 193. Males dominated the scarce skills enrolments with 287 whilst females accounted for 260 students.

Total scarce skills graduates produced were 380. Whites were dominant with 281 followed by Africans, Coloureds and Asians with 83, 11 and 5 graduates respectively.

6. RECOMMENDATIONS

6.1 Reducing overproduction of graduates in programmes which are not in demand in the agricultural sector.

From the findings it is evident that some institutions produce many graduates and enroll more students in programmes which are not in demand in the agricultural sector. This overproduction and over enrolment in certain programmes is attributed to the fact that institutions do not have information about market demands and the rate of employment for their graduates. It is also a known fact that graduates in certain programmes and from certain institutions have high employment rates than others. It is therefore necessary to investigate the reasons for these trends. To curb this problem it is crucial that all the institutions should develop systems which will track the employability of their graduates in the various programmes in order to decrease over production of skills which are not in demand in the agricultural sector. Funding formula for Universities should be done in terms of the relevance, type of programmes offered and according to the demand within the agricultural sector.

There are challenges in agriculture and the curricula need to be responsive and aligned to the needs of the agricultural sector, by increasing the supply of graduates in fields of demand. HET institutes need to involve themselves with alumni studies to determine the employability of their graduates and adapt the programmes accordingly.

Career guidance, career awareness at school levels and the marketing of the Higher Education and Training Institutes must include the scarce skills and the programmes which are in demand in the agricultural sector. Senior lectures of Higher Education and Training institutes can be involved at school levels assisting in the training of Agricultural Science subjects, to promote agriculture as a career.

6.2 Effective participation of the agricultural sector in agricultural curriculum reviews and development of higher and further education institutions

The National Agricultural Education and Training Forum was established in terms of the Agricultural Education and Training Strategy (2005) and should play a major role in curriculum review meetings of higher education institutions as well as during the development and reviews of the agricultural curriculum for General Education and Training and Further Education and Training bands. This will ensure that the agricultural curriculum at all levels of the education system addresses the needs of the agriculture sector.

This study also recommends that DAFF Directorates should play a major role in determining the agricultural curricula i.e. directly influence the curricula for respective departments at Universities e.g. Directorate Animal Health should liaise with Animal Health departments at different Universities for them to know what the labour market requires in terms of skills required e.g. Animal Health Technicians.

6.3 Quality benchmarking of same agricultural programmes in all the higher education institutions

The perception that the quality of programmes varies in terms of content from one institution to the other is also a cause for concern. For instance BSc in Agriculture does not offer the same content in all the institutions offering the programme and admission requirements for the same programme vary. It is therefore necessary that the Department of Agriculture, Forestry and Fisheries in collaboration with the Department of Higher Education and Training investigate the quality of programmes at each institution and to establish quality benchmarks for these programmes in higher education institutions.

Higher Education and Training Institutes which present AET need to review the alignment of the AET curricula at all Higher Education and Training levels to support the development of an effective, harmonised, mobile and articulated AET curriculum.

6.4 Encouraging undergraduates to pursue post graduate studies in specialised fields in agriculture to increase a pool of agricultural scientists

From the findings the general trend is that there is an increasing number of entrants into agriculture at undergraduate level. For instance, high numbers of Africans are enrolling for agricultural programmes at undergraduate level. However, this is not addressing the needs of the rapidly changing landscape as well as the skills demands in the sector. It is also evident from the findings that there are a limited number of agricultural enrolments and graduates at post graduate level, particularly at Masters and PhD levels. It is therefore recommended that graduates with undergraduate qualifications outside of the identified scarce skills programmes, including those with undergraduate qualifications in agricultural economics, should pursue higher education programmes and be specialists in Certification fields of agriculture. This will establish a strong scientific research base for the sector.

Higher Education and Training Institutes, which present AET, need to review the alignment of the AET curricula at all Higher Education and Training levels to support the development of an effective, harmonised, mobile and articulated AET curriculum.

Regular studies will be conducted to investigate the challenges and needs of the agricultural sector, to adapt the curricula and encourage research into the needs identified.

6.5 Marketing agricultural careers to Indians and Coloureds

From the findings there are an insignificant number of Indians and Coloureds graduating in and enrolling for agricultural programmes. It is necessary to target Indian and Coloured dominated schools to market agriculture as a career to Indian and Coloured youth.

6.6 Recruiting female learners to register for scarce skills programmes in agriculture

The general trend is that there is a lower number of Black (Coloured, Indian and African) female enrolments and graduates in scarce skills categories. To recruit females into the agricultural scarce skills professions it is important to work in collaboration with the Provincial Departments of Education and to liaise with female-learner coordinators to market agricultural scarce skills careers to female learners. female-learner Coordinators in the various PDEs can also provide a platform for providing guidance to females in terms of the correct subject combinations at the General Education and Training levels to pursue scarce skills in agriculture.

6.7 Increasing the number of Black students enrolling for and graduating in scarce skills programmes in agriculture

Massive career awareness campaigns in schools targeting learners before entry into Further Education and Training (FET) (Grade 10) phase so that they can choose correct subject combinations which are required to pursue studies in agricultural scarce skills earlier in the FET phase. The target group will be learners from the African, Coloured and Indians communities. White females should also be targeted for agricultural engineering and other scarce skills. This will be a collaborative venture with Public Relations Departments of the Universities and managers of girl learner educational programmes from the provinces.

It is necessary that agricultural engineering courses are offered in the agricultural colleges, culminating in qualified agricultural engineering technicians. This will provide basic skills and knowledge of agricultural engineering for those with Mathematics and Science at Senior Certificate level, but do not meet the admission requirements for a degree in agricultural engineering. The engineering technician qualification obtained from agricultural colleges might provide skills and knowledge required to pursue a Agricultural Engineering Degree at University level, and might also encourage them to pursue Agricultural Engineering Degree at University level. This will then require systems which will allow easy progression and mobility from the agricultural college sector to the University or University of Technology, as well as effective Recognition of Prior Learning (RPL) systems.

6.8 Introduction of Veterinary Science studies by another University

Given the failure of University of Pretoria to produce African, Coloured and Asian veterinarians meeting the labour market demand, this study highly recommends that another University should introduce as part of its agricultural curricula the veterinary science studies. Secondly, a variety in this field of study is highly envisaged as it is impossible for one institution to successfully and sustainably provide the whole country's labour market with enough veterinarians. Moreover, this veterinarian's shortage is further exacerbated by the fact that a significant number of veterinarians leave the country though brain drain, preferring oversees countries like the United Kingdom.

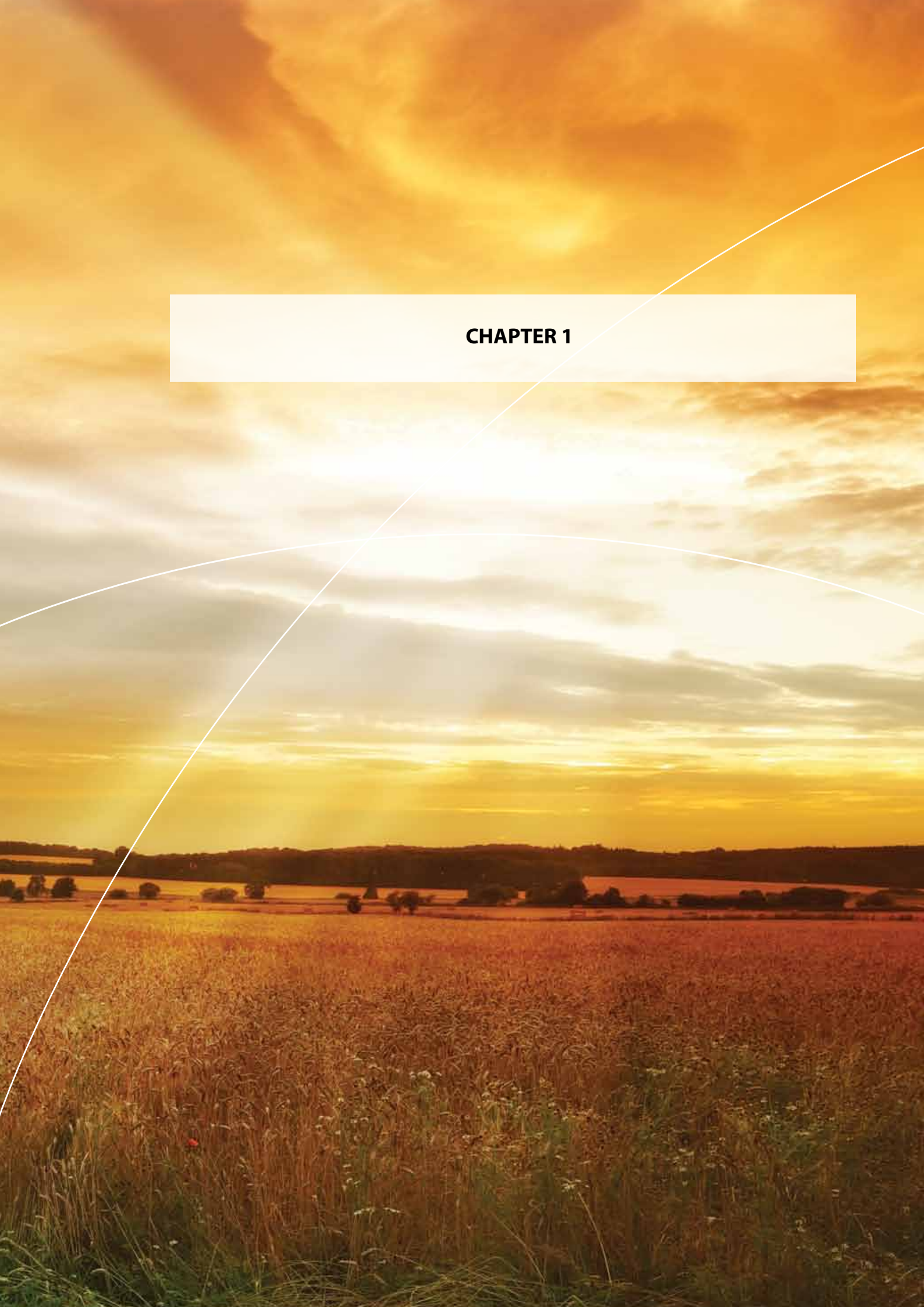
6.9 Partnership between the Department of Agriculture, Forestry and Fisheries, Faculties of Agriculture at HET and Colleges of Agriculture

The Department of Agriculture, Forestry and Fisheries should develop relations with all the faculties of agriculture in Higher Education Institutions whereby the DAFF officials will get a platform to communicate the type of skilled people that the agricultural labour market is seeking in terms of relevant skills, knowledge and behavior. Secondly, high-ranking officials in the agricultural business such as CEOs and other senior managers of private companies should be invited for lectures on an ongoing basis as is the case at institutions.

An indication will be given as to what exactly should be the focus of the curricula in the institutions of higher learning with regards to AET. This will not only give confidence to the students completing their qualifications but will ensure that by the time graduates get to the labour market are ready to take on tasks assigned to them and understand the skills that are currently required in the labour market.

6.10 Task team formulation to look at the progression of Black individuals in scarce skills programmes particularly the BVSc Veterinary Science

Factors contributing to Blacks not progressing in the scarce skills need to be investigated, especially in the wake of the fact that during 2004 to 2008 there has not been significant representation of Blacks in these programmes. The skills shortage impact is two-fold: firstly, it cripples the economic growth due to poor contribution to the GDP by the agricultural sector and secondly political efforts towards fair distribution of opportunities in the agricultural economic division such as employment equity tend to lag as there are relatively very few professionals in these fields of study.



CHAPTER 1

CHAPTER 1

1.1 Introduction

The 2008 annual report has its basis on a study conducted on the agricultural enrolments, graduate outputs and AET programmes offered by various accredited agricultural colleges and higher education institutions during the 2008 academic year. Since 2004 DAFF collected data on the types of programmes offered by various Colleges of Agriculture and Higher Education (HE) institutions, number of enrolments and number of graduates in all the agricultural programmes offered by these institutions on an annual basis. The 2008 report is the fifth in a series of annual reports on AET enrolments, graduate outputs and programmes offered by Colleges of Agriculture as well as HE institutions to be produced by the DAFF.

1.2 Objectives of the project

The primary objective of the study was to observe the trends in terms of skills supply for the agriculture sector by the HE institutions and the agricultural colleges. The other objective of the study is to observe trends with regard to AET enrolments, graduate outputs and the types of AET programmes offered by the various institutions, in order to inform policy and planning regarding AET provisioning in the public Colleges of Agriculture and Higher Education Institutions for the purposes of skills supply priorities in the sector. The findings would further assist in the development of strategies for addressing the skills demand in the agriculture sector. Secondarily, the project will assist in the development of trend analysis report in agricultural education and training in Colleges of Agriculture and Higher Education (HE) institutions.

1.3 Methodology for the study

Quantitative research techniques were utilised to produce this report and its aim was to yield quantitative descriptive data. The Education, Training and Extension Services (ETES) Directorate conducted a questionnaire-based survey with all the Colleges of Agriculture, Universities and Universities of Technology offering AET programmes.

Data collection for the study focused on a number of AET enrolments and graduates from undergraduate to postgraduate levels focusing on all the agricultural disciplines. Furthermore, it focused on the types of programmes offered in these institutions. Questionnaires requesting information on the number of enrolments and graduates in all the agricultural programmes offered by each institution were distributed electronically to all public HE institutions offering agricultural programmes and the 12 Colleges of Agriculture. The questionnaires were completed and returned to the Directorate in the same way.

For ease of interpretation, the qualifications were categorised using the Categorisation of Education Subject Matter (CESM) of the Department of Education. However, in some cases the CESM was further broken down into sub-categories to obtain a better understanding of the enrolments and supply of AET graduates. The following table indicates how the qualifications were classified in the report as well as the sub-categories.

Table 1: Classification of qualifications in the report	
CESM	**Qualifications**
Animal Science	Diploma Animal Health, BTech Animal Heath, MTech Animal Health, DTech Animal Health. National Certificate Animal Production, Higher Certificate Animal Production, Diploma Animal Production, BTech Animal Production, MTech Animal Production, DTech Animal Production Diploma Pig Production Management, BTech Pig Production Management, MTech Pig Production Management, DTech Pig Production Management Diploma Equine Science, BTech Equine Science, MTech Equine Science, DTech Equine Science Diploma Nutrition, BTech Nutrition, MTech Nutrition, DTech Nutrition Diploma Production Physiology, BTech Production Physiology, MTech Production Physiology, DTech Production Physiology Diploma Animal Production Management, BTech Animal Production Management, MTech Animal Production Management BA Animal Production, B.A.(Hons) Animal Production, M.A. Animal Production, PhD Animal Production BSc Animal Production, BSc (Hons) Animal Production, MSc. Animal Production, PhD Animal Production BSc Animal Health, BSc (Hons) Animal Health, MSc Animal Health, PhD Animal Health, BSc Animal Science and Animal Genetics, BSc (Hons) Animal Science and Animal Genetics, MSc Animal Science and Animal Genetics, PhD Animal Science and Animal Genetics

Table 1: Classification of qualifications in the report (continues)	
CESM	**Qualifications**
Horticulture	National Certificate Horticulture, Diploma Horticulture, BTech Horticulture, MTech Horticulture, DTech Horticulture BSc Horticulture, BSc (Hons) Horticulture, MSc Horticulture, PhD Horticulture National Certificate Turf Grass Management, National Diploma Turf Grass Management, BTech Turf Grass Management
Plant Science	Diploma Crop Production, BTech Crop Production, MTech Crop Production, DTech Crop Production Higher Certificate Plant Production, Diploma Plant Production, BTech Plant Production, MTech Plant Production, DTech Plant Production BSc Pasture Science, BSc (Hons) Pasture Science, MSc Pasture Science, PhD Pasture Science B.A. Crop Production Management, B. A. (Hons) Crop Production Management, M .A. Crop Production Management, PhD Crop Production Management National Certificate Crop Science, National Higher Certificate Crop Science, Diploma Crop Science, BSc Crop Science, BSc (Hons) Crop Science, MSc Crop Science, PhD Crop Science BSc Plant Pathology, BSc (Hons) Plant Pathology, MSc Plant Pathology, PhD Plant Pathology BSc Plant Pathology and Entomology, BSc (Hons) Plant Pathology and Entomology, MSc Plant Pathology and Entomology, PhD Plant Pathology and Entomology BSc Plant Breeding and Genetics, BSc (Hons) Plant Breeding and Genetics, MSc Plant Breeding and Genetics, PhD Plant Breeding and Genetics

Table 1: Classification of qualifications in the report (continues)	
CESM	**Qualifications**
Plant Science	BSc Plant Protection, BSc (Hons) Plant Protection, MSc Plant Protection, PhD Plant Protection BSc Plant Production, BSc (Hons) Plant Production, MSc Plant Production, PhD Plant Production
Land Reclamation	National Certificate Landscape Technology, Diploma Landscape Technology, BTech Landscape Technology, MTech Landscape Technology, DTech Landscape Technology
Renewable Natural Resources	Diploma Nature Conservation, BTech Nature Conservation, MTech Nature Conservation, DTech Nature Conservation
Agriculture Management	National Certificate Agricultural Management, National Higher Certificate Agricultural Management, Diploma Agricultural Management, BTech Agricultural Management, MTech Agricultural Management, DTech Agricultural Management
Other Agriculture and Renewable Resources	Diploma Agriculture: Mixed Farming, BTech Agriculture: Mixed Farming, MTech Agriculture :Mixed Farming, DTech Agriculture : Mixed Farming Diploma Disaster Management. B. Disaster Management. B (H) Disaster Management
Wildlife Management	National Certificate Game Ranch Management, National Higher Certificate Game Ranch Management, Diploma Game Ranch Management, BTech Game Ranch Management, MTech Game Ranch Management, DTech Game Ranch Management National Certificate Nature Conservation, National Higher Certificate Nature Conservation, Diploma Nature Conservation, BTech Nature Conservation, MTech Nature Conservation, DTech Nature Conservation Diploma Ecotourism, BTech Ecotourism, MTech Ecotourism, DTech Ecotourism
Agricultural Science (in Universities of Technology)	Diploma Agriculture, BTech Agriculture, MTech Agriculture, DTech Agriculture Diploma Agricultural Science, BTech Agricultural Science, MTech Agricultural Science, DTech Agricultural Science

Table 1: Classification of qualifications in the report (continues)	
CESM	**Qualifications**
Agricultural Science (B.Agric. Stream)	B.Agric. Science, B.A. (Hons) Agricultural Science, M.A. Agricultural Science, PhD Agricultural Science
Agricultural Science (Science Stream)	BSc Agricultural Science, BSc (Hons) Agricultural Science, MSc Agricultural. Science, PhD Agricultural Science
Agriculture Extension	Diploma Agricultural Rural Development, BTech Agricultural Rural Development, MTech Agricultural Rural Development, DTech Agricultural Rural Development B.Agric. Extension, B. (Hons) Agricultural Extension, M. Agricultural Extension, PhD Agricultural Extension
Agricultural Economics	B. Agricultural Economics, B. (Hons) Agricultural Economics, M.A. Agricultural Economics, PhD Agricultural Economics BSc Agricultural Economics, BSc (Hons) Agricultural Economics, MSc Agricultural Economics, PhD Agricultural Economics B .Com. Agricultural Economics, B. Com. (Hons) Agricultural Economics, M. Com. Agricultural Economics, D Com: Agricultural Economics
Agricultural Economics (AgriBusiness)	B.Com. Agricultural Economics (AgriBusiness), B.Com. (Hons) Agricultural Economics (AgriBusiness), M.Com. Agricultural Economics (AgriBusiness), PhD Agricultural Economics (AgriBusiness)
Agricultural Extension (Inst.Agrar. Stream)	B.Inst.Agrar. Agricultural Extension, B. (Hons) Inst.Agrar. Agricultural Extension, M .Inst.Agrar. Agricultural Extension,
Agricultural Food Technology	BSc Food Science and Technology, BSc (Hons) Food Science and Technology, M Sc Food Science and Technology, PhD Food Science and Technology BSc Food Science and Chemistry, BSc (Hons) Food Science and Chemistry, MSc Food Science and Chemistry, PhD Food Science and Chemistry BSc Food Science and Biochemistry, BSc (Hons) Food Science and Biochemistry, MSc Food Science and Biochemistry, PhD Food Science and Biochemistry BSc Food Science and Microbiology, BSc (Hons) Food Science and Microbiology, MSc Food Science and Microbiology, PhD Food Science and Microbiology

Table 1: Classification of qualifications in the report (continues)	
CESM	**Qualifications**
Soil Science	BSc Agric. Soil Science, BSc (Hons) Agric. Soil Science, MSc Agric. Soil Science, PhD Agric. Soil Science B Agric Irrigation Management, B (Hons) Irrigation Management, M Agric Irrigation Management PhD Irrigation Management BSc Remote Sensing, BSc (Hons) Remote Sensing, MSc Remote Sensing, PhD Remote Sensing, BSc Water Resource Management BSc (Hons) Water Resource Management, MSc Water Resource Management, PhD Water Resource Management,
Forestry	BSc Forestry, BSc (Hons) Forestry, MSc Forestry, PhD Forestry
Consumer Science	B. Family Ecology. B. (Hons)Family Ecology. MA. Family Ecology. PhD Family Ecology. B. Human Ecology, B.(Hons) Human Ecology, MA. Human Ecology, PhD Human Ecology BSc Consumer Science Educations, BSc (Hons): Consumer Science Educations MSc Consumer Science Educations PhD Consumer Science Educations
Agricultural Food Technology (Inst.Agrar. Stream)	B. Inst.Agrar. Food Technology, B. (Hons) Inst.Agrar. Food Technology, M. Inst.Agrar. Food Technology,
Agricultural Management (Inst.Agrar. Stream)	B. Inst.Agrar. Agricultural Management, B. Inst.Agrar. (Hons) Agricultural Management, M. Inst.Agrar. Agricultural Management,
Animal Science (Inst.Agrar. Stream)	B. Inst.Agrar. Animal Science. B. (Hons) Inst.Agrar. Animal Science, M. Inst.Agrar. Animal Science.
Horticulture (Inst.Agrar. Stream)	B. Inst.Agrar. Horticulture, B. (Hons) Inst.Agrar. Horticulture, M. Inst.Agrar. Horticulture
Land Reclamation (Inst.Agrar. Stream)	B. Inst.Agrar. Land Reclamation, B. (Hons) Inst.Agrar. Land Reclamation, M .Inst.Agrar. Land Reclamation.
Rural Development (Inst.Agrar. Stream)	B. Inst.Agrar. Rural Development, B. (Hons) Inst.Agrar. Rural Development. M Inst.Agrar. Rural Development,

Table 1: Classification of qualifications in the report (continues)	
CESM	**Qualifications**
Agricultural Economics (Inst.Agrar. Stream)	B Inst.Agrar. Agricultural Economics, B Inst.Agrar. (Hons) Agricultural Economics, M Inst.Agrar. Agricultural Economics.
Environmental Management (Inst.Agrar. Stream)	B Inst.Agrar. Environmental Management, B Inst.Agrar. (Hons) Environmental Management, M Inst.Agrar. Environmental Management
Agronomy (Inst.Agrar. Stream)	B. Inst.Agrar. Agronomy, B Inst.Agrar. (Hons) Agronomy, M Inst.Agrar. Agronomy.

The Agricultural Science CESM and Agricultural Extension were sub- categorised into the B.Agric. Stream, Inst.Agrar. Stream and the BSc. stream. The Agricultural Economics stream was also further sub-categorised into the Science stream (B.Sc. Agricultural Economics, B.Sc. Hons and M.Sc. Agricultural Economics), the B.Agric. Stream (B. Agricultural Economics, B.A. Honours in Agricultural Economics and M.A. Agricultural Economics/MPhil Agricultural Economics) and B Com Stream (B Com Agricultural Economics, BCom Hons Agricultural Economics, M Com Agricultural Economics and D Com Agricultural Economics).

BSc Agricultural Engineering, BSc Agricultural Economics, BVSc Veterinary Science, Oenology and Viticulture, BSc Food Science and Technology and Agricultural Biotechnology were identified as scarce skills in the agriculture sector; these programmes were therefore discussed separately from the other programmes.

The data presents a demographic breakdown of the number of enrolments and graduate outputs for all the AET programmes in the report.

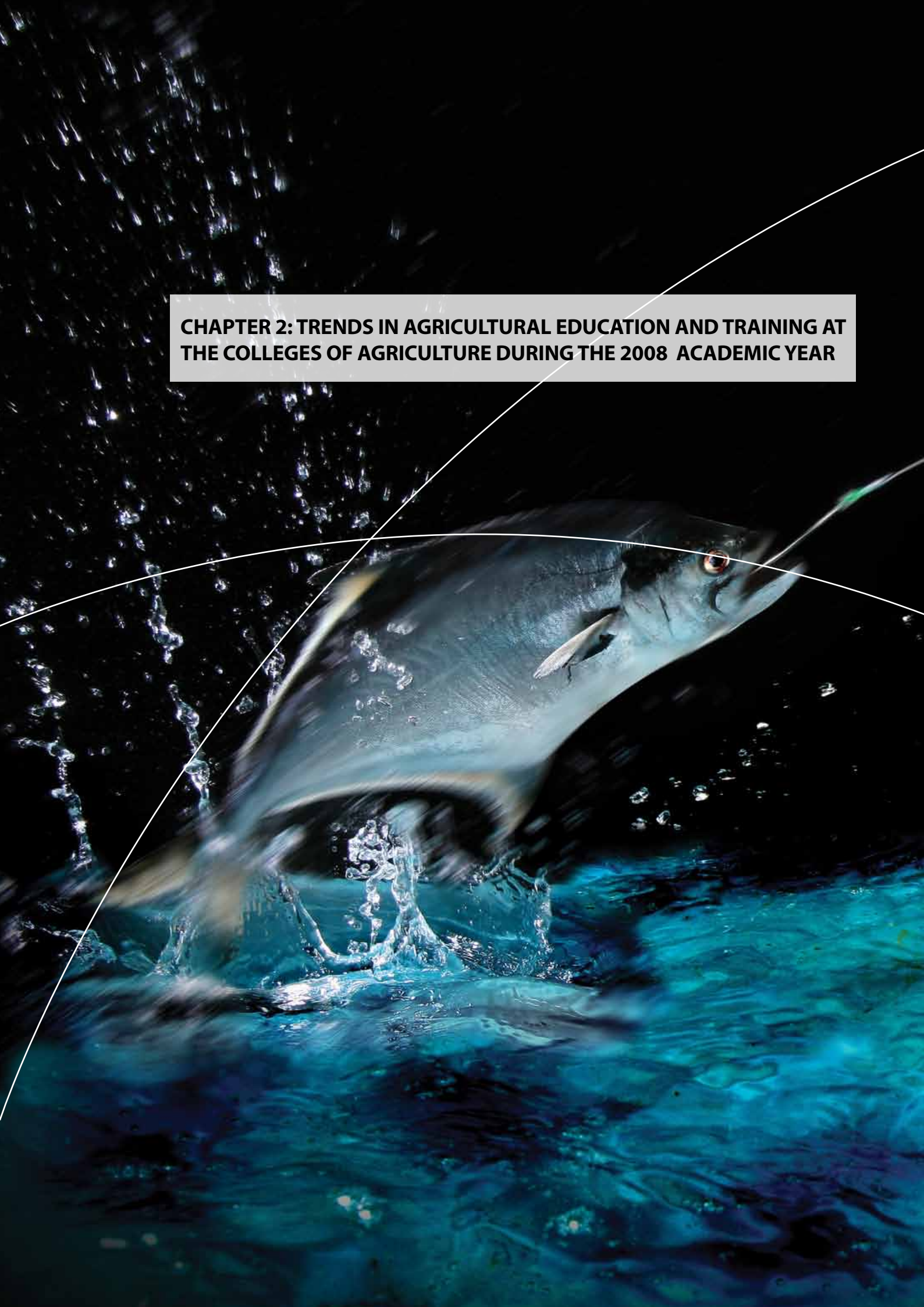
Chapter 1 presents the introduction of this study. Chapter 2 gives a picture of findings on the number of enrolments, graduate outputs and programmes offered in Colleges of Agriculture. Chapters 3 and 4 present the same information from the Universities of Technology and Universities respectively. Chapter 5 presents the agricultural scarce skills at Universities and Colleges of Agriculture. Chapter 6 presents overall analysis and recommendations.

1.4 Limitations

Due to the largely quantitative nature of this study, it does not go into depth with regards to factors influencing the trends in agricultural enrolments and graduate outputs in various programmes.

The study could not report on each qualification and used the CESM which resulted in the different scarce skills within a CESM not clearly indicated e.g. entomology is included under plant health. This was due to the fact that institutions could not provide the information per field of specialisation within the CESM and information was not submitted as per academic year registration.

Furthermore, the study could not clearly indicate the different specialisations within each CESM, due to the fact that some institutions did not provide the information on specialisation.



CHAPTER 2: TRENDS IN AGRICULTURAL EDUCATION AND TRAINING AT THE COLLEGES OF AGRICULTURE DURING THE 2008 ACADEMIC YEAR

CHAPTER 2

TRENDS IN AGRICULTURAL EDUCATION AND TRAINING AT THE COLLEGES OF AGRICULTURE DURING THE 2008 ACADEMIC YEAR

2.1 Introduction

There are 12 Colleges of Agriculture in the country namely: Cedara College of Agriculture, Cape Institute of Agriculture Training: Elsenburg (CIAT: Elsenburg), Fort Cox College of Agriculture and Forestry, Glen College of Agriculture, Grootfontein Agricultural Development Institute, Lowveld College of Agriculture, Madzivhandila College of Agriculture, Owen Sitole College of Agriculture, Potchefstroom College of Agriculture, Taung College of Agriculture, Tompi Seleka College of Agriculture and Tsolo Agriculture and Rural Development Institute. The location of these colleges is distributed throughout the rest of the country, i.e. all the provinces except for the Northern Cape have one or two colleges. Nine (9) of the 12 colleges offer programmes in the HET band as well as programmes in the FET band which are usually offered in the form of short courses and learnerships. Madzivhandila, Tompi Seleka and Tsolo phased out programmes in the HET band, i.e. Diploma and Higher Certificate in Agriculture between 2001 and 2004, and they only offer FET and GET agricultural programmes.

This chapter presents the types of programmes; NQF levels, accrediting bodies and duration of programmes offered at the Colleges of Agriculture. The chapter also presents the number of graduates and enrolments in the various programmes offered at these colleges.

2.2 Curriculum and Programme offerings at the Colleges of Agriculture

As was the case since DAFF's first annual report on agricultural enrolments and graduate outputs for the 2004 academic year, there have been no significant changes in terms of the programmes offered in the colleges in 2008. The colleges still offer programmes ranging from NQF levels 1-6. The common qualifications offered by the colleges are a Higher Education Certificate in Agriculture at NQF level 5, and a Diploma in Agriculture at NQF level 6. A Diploma in Agriculture is pursued after completion of the two-year Higher Certificate in Agriculture. Higher Certificates are offered as a two-year programme and the third year will result in the awarding of a diploma. This is also dependent on whether a student successfully completes the year of experiential training or practical training after the higher certificate for the diploma to be awarded.

Colleges have attempted to design their programmes to suit the skills requirements of the particular agricultural industry in their respective locality (e.g. wine farming in the Western Cape or subtropical crop production in the Lowveld).

The types of partnerships which existed between some of the colleges and local higher education institutions still exist. For example, CIAT: Elsenburg is linked with the University of Stellenbosch in providing a degree programme related to local industrial needs in the Western Cape. Furthermore, the colleges are working hard to provide support for small and emerging farmers in the provinces in which they are located. These factors have brought about marked differentiation between the colleges in their programme presentation as well as the introduction of short courses to address the needs of the farmers.

The Colleges of Agriculture do not provide highly standardised programmes. There is flexibility because the Colleges of Agriculture orient their courses towards supporting the agricultural activities that are practised in their region. For example: Cedara focuses on crop production, animal production and horticulture; Lowveld focuses on subtropical agronomy and horticulture under irrigation to attract students from other regions; Potchefstroom focuses on mixed farming as carried out in the Highveld and adjacent regions; and CIAT: Elsenburg has set itself the aim of specialising in agribusiness.

Even though the curriculum in the Colleges of Agriculture is not highly standardised as in the FET Colleges, the survey reveals that the agricultural colleges present programmes that cover the same broad fields of knowledge offered by the FET college curriculum: plant production, animal production, agricultural management and agricultural engineering.

Table 2 below indicates the knowledge fields and courses within which agricultural subject matter offered by the Colleges of Agriculture, with general course, specific subfield, specialised courses and commodity courses.

Table 2: Knowledge fields and courses within which agricultural subject matter offered by the Colleges of Agriculture

General courses	Courses covering specific sub-fields	More specialised courses within sub-fields	Commodity courses include:
Plant Production	Agronomy (Field crops)	Crop protection	E.g.: Vegetable production, fruit production, viticulture, sugar cane, etc. Also: green house management, Forestry
	Crop production	Pasture Management	
	Horticulture		
	Soil science Water management Plant propagation		
Animal production	Animal breeding	Artificial insemination	E.g.: Beef cattle, dairy cattle, fish, mutton, pig, poultry, wool, goats, milk goats, broilers and Angora goats etc.
	Animal nutrition	Animal husbandry	
		Feedlot management	
	Animal production	Small stock production	
		Large stock production	
	Animal health		
Agricultural Engineering	Hydraulics/Hydraulic systems	Irrigation and drainage systems	
	Agricultural implements		
	Mechanisation planning		
	Electrical apparatus/motors		
	Surveying		

Table 2: Knowledge fields and courses within which agricultural subject matter offered by the Colleges of Agriculture			
General courses	**Courses covering specific sub-fields**	**More specialised courses within sub-fields**	**Commodity courses include:**
Agricultural Management	Marketing		
	Farm management	Office administration	
		Land use planning	
	Community development		
	Financial management	Farm accounting	
	Economics	Production factors	
		IT applications	
		Entrepreneurial skills	
Environmental management	Game ranching		
	Veld management	Problem animal control	
	Botany, Agricultural Calculations	Agriculture Organisation	
Other		Farm safety	

Agricultural colleges offer courses at a more advanced level than the FET colleges. For example, within the knowledge field of animal production, more advanced courses such 'Artificial Insemination' are offered. Likewise, in crop production more advanced courses like 'Greenhouse Management' are offered. Furthermore, what is called the "Farm Mechanics" of the FET College Curriculum is taken to a more advanced level in the form of "Agricultural Engineering" at the agricultural colleges. Also, agricultural management at colleges includes higher-level courses in Agricultural Economics that are not offered at the FET Colleges. Finally, a knowledge domain not found in the FET College curriculum deals with Environmental Management, Conservation and Game Farming.

The balance between theoretical and practical with the college programmes is considered important. Broadly across the curriculum there is a 55-60% theoretical component with the rest given to practical application. This is not necessarily the case for Universities and Universities of Technology. Colleges of Agriculture are therefore providing more hands-on-training in comparison to other FET and HE institutions. Some colleges also offer non-formal training programmes, typically short courses for the further education and training sector.

The agricultural colleges are the only institutional type that exclusively offers agricultural programmes. This means that student choice of courses is strictly bound by what is offered by the institution. Therefore, Colleges of Agriculture are similar to FET colleges because student choice is defined by the boundaries of the institution or by the limits of the programme, unlike Universities and Universities of Technology (HE institutions) which offer a variety of programmes within a single qualification and students can select from a wide range of options even outside of the faculty of agriculture.

There is further similarity between FET colleges and Colleges of Agriculture because their programmes are based on a relatively straightforward progression of students between curriculum levels. In the case of the FET colleges, a student enters at N1 and progresses over three years to N3, and in the agricultural colleges, a student progresses from the two- year National Higher Certificate to the one-year National Diploma. In each case the completion of a strictly defined three-year programme leads to a single qualification.

Colleges of Agriculture like FET colleges, offer relatively 'closed' programmes, whereas the Universities and increasingly the Universities of Technology offer more open programmes which offer a wide variety. This means that it is possible for programmes in Universities and Universities of Technology to support higher levels of specialisation than in the Colleges of Agriculture.

Agricultural programmes at the Colleges of Agriculture have a clearly defined shape and are relatively standardised and they are almost similar with regard to content in all the colleges. These factors make it highly possible to describe the actual curriculum within each programme/ qualification and for student progression from one college to the other, which is not necessarily the case with Universities and Universities of Technology.

The Higher Education Certificate and the Diploma programmes are accredited by the HEQC of the CHE, while the programmes from NQF level 1 to 4 (including short courses) are accredited by Umalusi and AgriSETA.

Though Tsolo College ceased offering HE programmes in the year 2001, a one- year post matric certificate, a two-year Diploma and three-year Degree are presented by them to students enrolled at Walter Sisulu University.

Table 3 below indicates the types of programmes offered in the individual colleges, the NQF levels, duration of the programme and accrediting bodies for the different programmes as well as short courses.

Table 3: Programmes offered by the Colleges of Agriculture during 2008

College	Programme	NQF level	Duration	Accrediting body
1. Cedara	1. Higher Certificate in Agriculture.	5	2 years Full-time	HEQC
	2. Diploma in Agriculture.	6	3 years Full-time	HEQC
	3. Short Courses	*	(1 day-1week)	*
2. CIAT: Elsenburg	1. National Certificate	1 & 4	Variable (Short courses)	Umalusi
	2. Higher Certificate in Agriculture.	5	2 years Full-time	HEQC
	3. Diploma in Plant Production (Viticulture)	6	1 year Full-time	HEQC
	4. Diploma in Agriculture.	6	1 year Full-time	HEQC
	5. B Agric Viticulture	6	3 years Full-time	HEQC
	6. Short courses	1-4	1 – 10 days	Umalusi
	7. Learnerships	1-4	1 year	Umalusi
	8. Higher Certificate in Animal Production	5	2 years Full-time	HEQC
	9. Diploma in Animal Production	6	2 years Full-time	HEQC
3. Fort Cox	1. Diploma in Social Forestry.	6	3 years Full-time	HEQC
	2. Diploma in Agriculture: Animal Production.	6	3 years Full-time	HEQC
	3. Diploma in Agriculture: Crop Production.	6	3 years Full-time	HEQC
	4. Diploma in Agriculture: Agribusiness	6	3 years Full	HEQC

Table 3: Programmes offered by the Colleges of Agriculture during 2008				
College	**Programme**	**NQF level**	**Duration**	**Accrediting body**
4. Glen	1. National Certificate	5	2 years Full-time	HEQC
	2. National Diploma in Agriculture.	6	1 year (Post Certificate)	HEQC
	3. Various Short courses	*	1– 3 days	*
5. Grootfontein	1. Higher Certificate in Agriculture.	5	2 years Full-time	HEQC
	2. Diploma in Agriculture.	6	3 years Full-time	HEQC
	3. Various Short Courses	2	(1-3 weeks)	*
6. Lowveld	1. Higher Certificate Plant Production	5	2 years Full-time	HEQC
	2. Diploma Plant Production	6	1 year Full-time (post Certificate)	HEQC
7. Madzivhandila	1. Learnership programme:			
	(i) Animal Production	4	8 months	AgriSETA
	(ii) Plant Production	4	8 months	AgriSETA
	2. Various short courses	1	2 days – 3 months	*
8. Owen Sitole	1. Higher Certificate in Agriculture.	5	2 years Full-time	HEQC
	2. Diploma in Agriculture	6	3 years	HEQC
	3.Higher Certificate in Home Economics	5	2 years	HEQC
	4. Diploma in Agriculture: Home Economics.	6	3 years	HEQC
9. Potchefstroom	1. Higher Certificate in Agriculture.	5	2 years	HEQC
	2. Diploma in Agriculture.	6	3 years	HEQC
	3. Various short courses	1	(1-4 days)	AgriSETA
10. Taung	1. N4 Certificate in Farming Management.	4	1 year	Umalusi
	2. N5 Certificate in Farming Management.	4	2 years	Umalusi
	3. N6 Certificate in Farming Management.	5	3 years	Umalusi
	4. Diploma in Farming Management	(after the N6 Certificate in Farming)	after completion of 18 months experiential training	
11. Tompi Seleka	Various short courses	*	*	*
12. Tsolo	4. Various short courses	*	*	*
* Not accredited				

From Table 3, all the Colleges of Agriculture in accordance with their programme offering fit well into the FET sector. Taung College of agriculture is still pursuing the N-stream that is used by technical colleges. After the completion of the N6 Certificate, the students in this college may enroll for the national diploma in Farm Management at any University of Technology. In order to qualify for this diploma, candidates need

to complete 18 months of practical training in an agricultural related workplace. CIAT: Elsenburg has a partnership with University of Stellenbosch to offer Bachelor of Agriculture in Viticulture.

The challenge in most colleges is accreditation of short courses which are offered either at GET or FET levels, and in most of the colleges these programmes are not accredited and are therefore more like information sharing programmes rather than training programmes.

2.3 Enrolment figures at Colleges of Agriculture

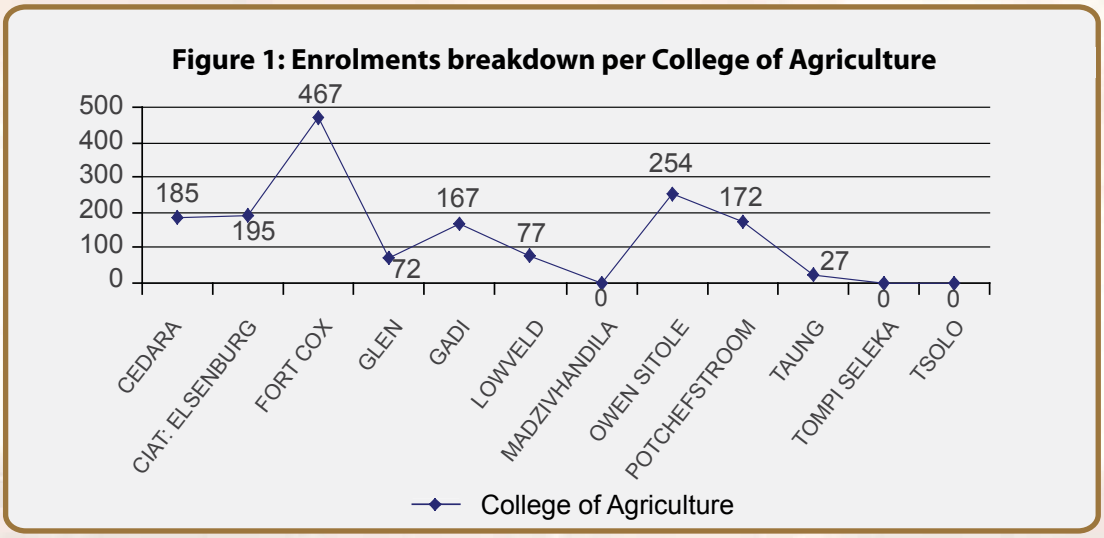
Enrolments at Colleges of Agriculture have improved by 6% from just 1 525 students enrolled in 2007 to 1 616 in 2008.

Table 4 below presents the enrolment figures per college of agriculture during the 2008 academic year.

Table 4: Enrolments per college of agriculture

Name of the college	Number of enrolled students in 2008	%
Cedara College of Agriculture	185	11
CIAT: Elsenburg	195	12
Fort Cox College of Agriculture & Forestry	467	29
Glen College of Agriculture	72	4
Grootfontein Agricultural Development Institute	167	10
Lowveld College of Agriculture	77	5
Madzivhandila College of Agriculture	0	0
Owen Sitole College of Agriculture	254	16
Potchefstroom College of Agriculture	172	11
Taung College of Agriculture	27	2
Tompi Seleka College of Agriculture	0	0
Tsolo Agriculture and Rural Development Institute	0	0
TOTAL	**1616**	**100**

In 2008 Fort Cox and Owen Sitole registered the highest number of students with 29% and 16% respectively, followed by Elsenburg with 12%, Cedara and Potchefstroom with 11% each. Grootfontein contributed 10% of the overall students registered at Colleges of Agriculture during the 2008 academic year and the colleges that registered few students were Lowveld with 5%, Glen with 4% and Taung with 2%.



* Note that Madzivhandila, Tompi Seleka and Tsolo are offering short courses and learnerships only

Three (3) out of nine colleges namely, Glen, Lowveld and Taung registered less than one hundred students during the 2008 academic year.

Table 5 below presents a demographic breakdown of enrolments per Colleges of Agriculture.

Table 5: Breakdown of enrolments by gender and race at Colleges of Agriculture for 2008

Name of the college	African			Coloured			White			Asian			Total	%
	M	F	Total	M	F	Total	M	F	Total	M	F	Total		
Cedara	80	59	**139**	3	1	**4**	30	6	**36**	3	3	**6**	**185**	**11**
CIAT: Elsenburg	14	7	**21**	23	19	**42**	115	17	**132**	0	0	**0**	**195**	**12**
Fort Cox	251	216	**467**	0	0	**0**	0	0	**0**	0	0	**0**	**467**	**29**
Glen	44	28	**72**	0	0	**0**	0	0	**0**	0	0	**0**	**72**	**4**
Grootfontein	22	12	**34**	11	3	**14**	106	13	**119**	0	0	**0**	**167**	**10**
Lowveld	38	33	**71**	0	0	**0**	6	0	**6**	0	0	**0**	**77**	**5**
Madzivhandila	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**
Owen Sitole	127	127	**254**	0	0	**0**	0	0	**0**	0	0	**0**	**254**	**16**
Potchefstroom	74	21	**95**	0	0	**0**	67	9	**76**	1	0	**1**	**172**	**11**
Taung	13	14	**27**	0	0	**0**	0	0	**0**	0	0	**0**	**27**	**2**
Tompi Seleka	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**
Tsolo	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**
TOTAL	**663**	**517**	**1180**	**37**	**23**	**60**	**324**	**45**	**369**	**4**	**3**	**7**	**1616**	**100**

Table 5 above indicates that four of the nine colleges have enrolled students which are predominantly black with no Coloured, White or Asian students at all. These colleges are Fort Cox, Glen, Owen Sitole and Taung.

The data in Table 5 above depicts that in 2008 African students dominated the enrolments at Colleges of Agriculture with 73% followed by White students with 23% and Coloured students with 4%. These figures show no significant changes such as decrease or increase with regards to racial student representation when compared to previous academic years since 2004. Asian students enrolled at colleges during the

2008 academic year constituted less than 1%. Male enrolments in 2008 accounted for 64% of the total number of enrolled students at Colleges of Agriculture and female enrolments constituted 36%.

African males dominated the male enrolments at Colleges of Agriculture during the 2008 academic year with 64% followed by White males with 32% and Coloured males with 4%. Asian males enrolled at colleges during the 2008 were almost non existent. African female students dominated the female enrolments with 88% followed by White females with 8%. Coloured females accounted for 4% and Asians were almost none existent.

Figure 2: Breakdown of enrolments by gender per College

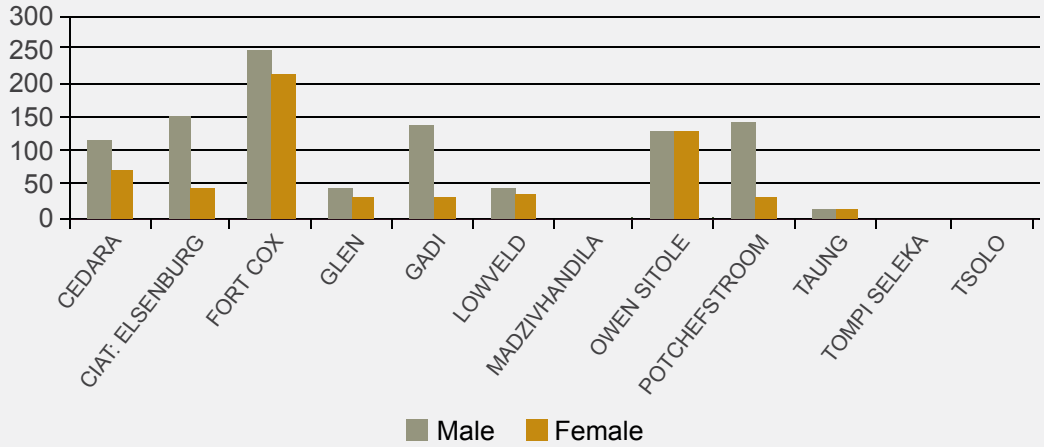


Figure 2 above indicates that the difference in numbers between male enrolments and female enrolments in some colleges has been very high as it has been the case in 2007. For instance, there is a significant difference between male and female students in Grootfontein, Potchefstroom, Cedara and CIAT: Elsenburg.

The trends in Figure 2 above indicate that the number of male enrolments in the agricultural colleges is generally higher than that of female enrolments during the 2008 academic year. This has been the case in the previous academic years since 2004. The figures also depicts that the colleges that are regarded as historically black colleges in terms of their student attraction have so far failed to attract other racial groups to their student population. This is a continuing trend for all the academic years since the study commenced in 2004.

Contrary to the 2007 academic year, data in Table 6 below shows that Diploma level constituted 49% of the total number of enrolled students per programme in 2008 followed by the Higher Education Certificate with 45%. Likewise in 2007, Degree at colleges constituted the least of the enrolments with 7% mainly from CIAT: Elsenburg. No students enrolled for the N1, N2 and N3 streams in 2008.

Table 6 below gives a breakdown on enrolments per programme.

Table 6: Breakdown of enrolments per programme at Colleges of Agriculture for 2008

Colleges	Number of enrolments per programme						
	NQF 1-4 (Including N1-N2)	Certificate (Including N3)	HEC (Including N4-N5)	Diploma	Degree	Total	%
Cedara	0	0	150	35	0	**185**	**11**
CIAT: Elsenburg	0	0	60	26	109	**195**	**12**
Fort Cox	0	0	0	467	0	**467**	**29**
Glen	0	0	41	31	0	**72**	**4**
Grootfontein	0	0	126	41	0	**167**	**10**
Lowveld	0	0	40	37	0	**77**	**5**
Madzivhandila	0	0	0	0	0	**0**	**0**
Owen Sitole	0	0	136	118	0	**254**	**16**
Potchefstroom	0	0	144	28	0	**172**	**11**
Taung	0	0	23	4	0	**27**	**2**
Tompi Seleka	0	0	0	0	0	**0**	**0**
Tsolo	0	0	0	0	0	**0**	**0**
TOTAL	**0**	**0**	**720**	**787**	**109**	**1616**	
Percentage	**0**	**0**	**45**	**49**	**7**		**100**

2.4 Short Courses offered at Colleges of Agriculture

Colleges have engaged in short course programmes on a large scale. During 2008 Cedara, CIAT: Elsenburg, Glen, Grootfontein, Madzivhandila, Owen Sitole, Taung, Tompi Seleka and Tsolo offered short course programmes. CIAT: Elsenburg is the only college offering accredited short courses. The accreditation of their short courses ranges between NQF levels 1 and 4 and they are accredited by AgriSETA. The duration of short courses varies from 1 day being the shortest and up to 3 months being the longest.

Table 7 below presents the types of courses offered by the Colleges of Agriculture during the 2008 academic year.

Table 7: Various short courses offered at Colleges of Agriculture in 2008

Technical Agricultural Skills	Cedara	CIAT: Elsenburg	Fort Cox	Glen	Grootfontein	Lowveld	Madzivhandila	Owen Sitole	Potchefstroom	Taung	Tompi Seleka	Tsolo
Advanced Soil Utility	X											
Agricultural Extensions	X											
Agricultural Engineering		X										
Agribusiness Management							X				X	
Agro Processing (atchar, jam and chutney)											X	
Animal Health				X								
Animal Management				X								
Animal Production							X				X	
Arc Welding					X							

Table 7: Various short courses offered at Colleges of Agriculture in 2008												
Technical Agricultural Skills	**Cedara**	**CIAT: Elsenburg**	**Fort Cox**	**Glen**	**Grootfontein**	**Lowveld**	**Madzivhandila**	**Owen Sitole**	**Potchefstroom**	**Taung**	**Tompi Seleka**	**Tsolo**
Artificial Insemination									X			
Apply Fertilizer Manually												X
Basic Financial Management									X			
Basic Welding									X			
Beef Production								X	X			
Beekeeping	X											
Bio-resource Programme	X											
BRU Course	X											
Boer Goat Management					X							
Clean Poultry House & Equipments on site												X
Combat Veld Fire					X							
Commercial Crop Prod	X											
Conservation tillage, soil fertility management and IKS											X	
Crop Management				X								
Crop & Vegetable Production								X				
Dairy Processing	X											
Dairy Production	X											X
Dairy Production (Advanced)	X											
Dairy Production (Basic)	X											
Develop and Implement New Recipes and Menus												X
Digital Photography(Basic)	X							X				
Extension and Professionalism												X
Farm Business Management	X							X				
Farm Mechanisation								X	X			
Fence Making					X							
Fruit Production		X										X
Gas Welding					X							
General Agriculture		X										
Goat Production	X											
Grass and Shrubs					X							
Handling of Sheep					X							
Hydroponics Production												X
Human and Social Science		X										
Irrigation	X											
Land Assessment	X											
Make a Garment												X
Map Reading												

Table 7: Various short courses offered at Colleges of Agriculture in 2008												
Technical Agricultural Skills	**Cedara**	**CIAT: Elsenburg**	**Fort Cox**	**Glen**	**Grootfontein**	**Lowveld**	**Madzivhandila**	**Owen Sitole**	**Potchefstroom**	**Taung**	**Tompi Seleka**	**Tsolo**
Milk Production									X			
Operate and Maintain Equipment and Implements on Site												X
Operate a Tractor					X							
Peach Processing	X											
Pig Production	X				X				X			X
Plant Production							X					
Produce a Range of Dough												X
Pot Painting	X											
Poultry Production	X				X			X	X			
Radio Coordinators	X											
Record in Agricultural Business					X							
Research Methodology												X
Sheep Management					X							
Sheep Shearing, Wool Sorting & Classing												X
Small Stock AI					X				X			
Soil Fertility	X											
Sweet Potato Processing	X											
Sugar Cane								X				
Tomato Processing	X											
Tractor Management									X			
Vegetable & Fruit Drying	X											
Vegetable Production		X			X				X			
Veld Management	X				X							
Veld Management & Sustainable Environment Management					X							
Viticulture		X										
Wool Classing for Registration				X	X							
Veld Monitoring					X							
Vermin Control					X							
Zoo Technology												X
Learnership Programmes												
National Certificate: Animal Production NQF 1		X										
National Certificate: Plant Production NQF 1		X										
National Certificate: Plant Production NQF 4		X										
National Certificate: Farming NQF 4		X										

Table 7: Various short courses offered at Colleges of Agriculture in 2008												
Technical Agricultural Skills	**Cedara**	**CIAT: Elsenburg**	**Fort Cox**	**Glen**	**Grootfontein**	**Lowveld**	**Madzivhandila**	**Owen Sitole**	**Potchefstroom**	**Taung**	**Tompi Seleka**	**Tsolo**
National Certificate: Poultry Production NQF 3		X										
Management skills												
Agric Co-op Management	X											
Agriculture Marketing												
Assessor Training												
Basic layout of Financial Statement					X							
Effective Communication	X											
Entrepreneurial	X											
Farm Business Management												
Farm-Record Keeping	X											
Financial Record Keeping					X							
Financial Statement												
Marketing	X											
Computer Skills												
Computer Application									X		X	
Computer Use					X							
Computer Literacy							X					
Other Skills												
Advanced Digital Photography	X											
Basic Digital Photography	X											
Life Orientation		X										
Tractor Management									X			
Vegetable & Fruit Drying	X											
Vegetable Production		X			X				X			
Veld Management	X				X							
Veld Management	X				X							
Veld Management & Sustainable Environment Management					X							

24.1 Number of people registering and completing Short Courses during 2008

Table 8 below presents the number people registered and completed short courses per college. CIAT: Elsenburg and Madzivhandila have learnership programmes which are offered according to demand and are accredited by AgriSETA. The programmes consist of Animal Production and Plant Production and runs for a period of 8 months (32 weeks).

Table 8: Breakdown of people registered and completed short courses by gender and race

Name of the college	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Cedara	198	187	**385**	0	0	**0**	24	0	**24**	14	0	**14**	**423**	**4**
CIAT: Elsenburg	202	257	**459**	871	543	**1414**	35	5	**40**	1	0	**1**	**1914**	**19**
Fort Cox*	0	0	**0**	0	0	**0**		0	**0**	0	0	**0**	**0**	**0**
Glen	97	54	**151**	0	0	**0**	0	0	**0**	0	0	**0**	**151**	**2**
Grootfontein	702	260	**962**	378	105	**483**	151	43	**194**	0	0	**0**	**1639**	**16**
Lowveld	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**
Madzivhandila	476	386	**862**	0	0	**0**	0	0	**0**	0	0	**0**	**862**	**9**
Owen Sitole	541	1267	**1808**	0	0	**0**	0	0	**0**	0	0	**0**	**1808**	**18**
Potchefstroom	193	77	**270**	9	0	**9**	1	0	**1**	0	0	**0**	**280**	**3**
Taung	100	116	**216**	0	0	**0**	0	0	**0**	0	0	**0**	**216**	**2**
Tompi Seleka	654	845	**1499**	0	0	**0**	0	0	**0**	0	0	**0**	**1499**	**15**
Tsolo	673	522	**1195**	0	0	**0**	0	0	**0**	0	0	**0**	**1195**	**12**
TOTAL	**3836**	**3971**	**7807**	**1258**	**648**	**1906**	**211**	**48**	**259**	**15**	**0**	**15**	**9987**	**100**

*Information not available

Likewise in 2007, CIAT: Elsenburg and Owen Sitole enrolled more students for short courses than any college with 19% and 18% respectively. Grootfontein, Tompi Seleka and Tsolo contributed 16%, 15% and 12% of the total number of people registering and completing short courses at Colleges of Agriculture during the 2008 academic year. The data in Table 8 above depicts that Africans dominated the number of people registering and completing short courses at Colleges of Agriculture with 78% followed by Coloureds with 19% and Whites with 3% during 2008. The numbers of Asian registering for short courses at colleges during the 2008 academic year were almost non existent. During 2008 males accounted for 53% of the total number of people registering and completing short courses at Colleges of Agriculture and females constituted 47%.

African males dominated at Colleges of Agriculture during the 2008 academic year with 71% followed by Coloured males with 24% and White males with 4%. Asian males registered at colleges during the 2008 were almost non existent. African females dominated the total number of females registered and completed short courses during the 2008 academic year with 85% followed by Coloured females with 14%. White females accounted for 1% and Asians were almost non existent.

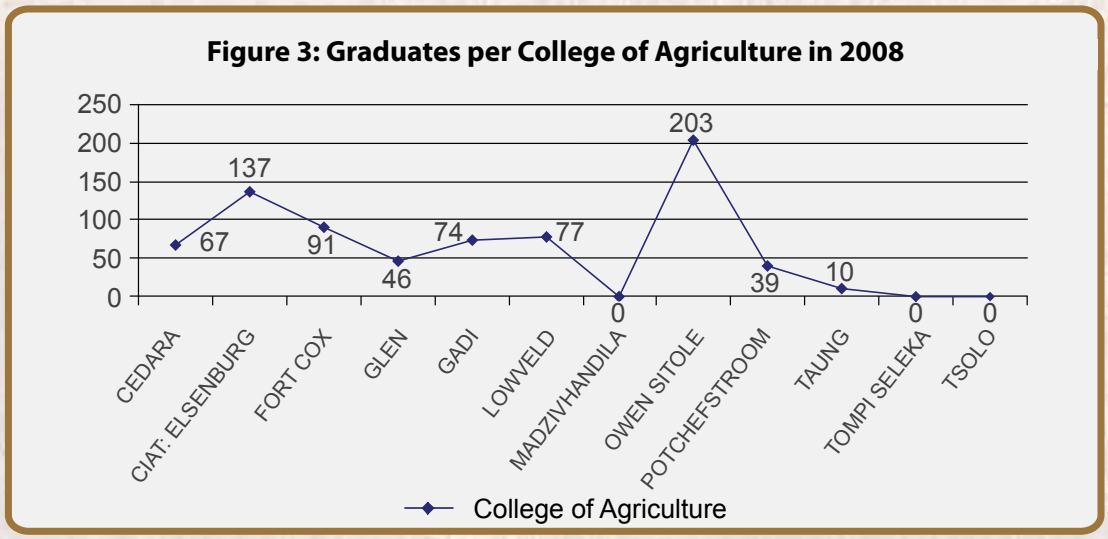
2.5 Graduate Outputs at Colleges of Agriculture

Table 9 below presents a number of graduates per college of agriculture during the 2008 academic year. This represents all graduations, on Higher Certificate and Diploma levels.

Table: 9 Graduates per College of Agriculture during 2008		
Name of the college	**Number of graduates in 2008**	**%**
Cedara College of Agriculture	67	9
CIAT: Elsenburg*	137	18
Fort Cox College of Agriculture & Forestry	91	12
Glen College of Agriculture	46	6
Grootfontein Agricultural Development Institute	74	10
Lowveld College of Agriculture	77	10
Madzivhandila College of Agriculture	0	0
Owen Sitole College of Agriculture	203	27
Potchefstroom College of Agriculture	39	5
Taung College of Agriculture	10	1
Tompi Seleka College of Agriculture	0	0
Tsolo	0	0
TOTAL	**744**	**100**
*Information on B Agric: Viticulture is discussed under Chapter 5		

There were 744 students who graduated at Colleges of Agriculture in 2008 as compared to 644 students graduated in 2007. Likewise in 2007, Owen Sitole produced more graduates than any other college with 27% followed by CIAT: Elsenburg with 18% and Fox Cox with 12%. Grootfontein and Lowveld accounted for 10% each followed by Cedara with 9%. Other colleges produced less than 9% of the overall college graduates during the 2008 academic year.

Figure 3: Graduates per College of Agriculture in 2008



As depicted in Figure 3 above, of the nine colleges that enrolled students during the 2008 academic year, only two colleges produced more than 100 graduates. The lowest graduates were recorded by Taung with 10 graduates.

Table 10: Breakdown of graduates by gender and race														
Name of the college	**African**			**Coloured**			**White**			**Asian**			**Total**	**%**
	M	**F**	**Total**	**M**	**F**	**Total**	**M**	**F**	**Total**	**M**	**F**	**Total**		
Cedara	17	19	**36**	0	0	**0**	25	03	**28**	1	2	**3**	**67**	**9**
CIAT: Elsenburg	5	3	**8**	6	3	**9**	89	31	**120**	0	0	**0**	**137**	**18**
Fort Cox	59	32	**91**	0	0	**0**	0	0	**0**	0	0	**0**	**91**	**12**
Glen	24	22	**46**	0	0	**0**	0	0	**0**	0	0	**0**	**46**	**6**
Grootfontein	7	2	**9**	6	0	**6**	54	5	**59**	0	0	**0**	**74**	**10**
Lowveld	38	33	**71**	0	0	**0**	6	0	**6**	0	0	**0**	**77**	**10**
Madzivhandila	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**
Owen Sitole	102	101	**203**	0	0	**0**	0	0	**0**	0	0	**0**	**203**	**27**
Potchefstroom	8	2	**10**	1	0	**1**	25	3	**28**	0	0	**0**	**39**	**5**
Taung	3	7	**10**	0	0	**0**	0	0	**0**	0	0	**0**	**10**	**1**
Tompi Seleka	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**
Tsolo	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**
TOTAL	**263**	**221**	**484**	**13**	**3**	**16**	**199**	**42**	**241**	**1**	**2**	**3**	**744**	**100**

Likewise in 2007, Table 10 above shows that Africans were the largest group of graduates and comprised 65% followed by Whites with 32% and Coloureds with 3%. Asian graduates were almost non existent.

Male graduates dominated the total number of graduates at Colleges of Agriculture during the 2008 academic year with 64% and females constituted 36%. African males dominated the male graduates at colleges with 55% followed by White males with 42% and Coloureds with 3%. No Asian males graduated at Colleges of Agriculture during the 2008 academic year. African females dominated the female graduates with 83% followed by White females with 16% and Coloured females with 1%. Asian female graduates at Colleges of Agriculture in 2008 were almost non existent.

Figure 4: Breakdown of graduates by gender

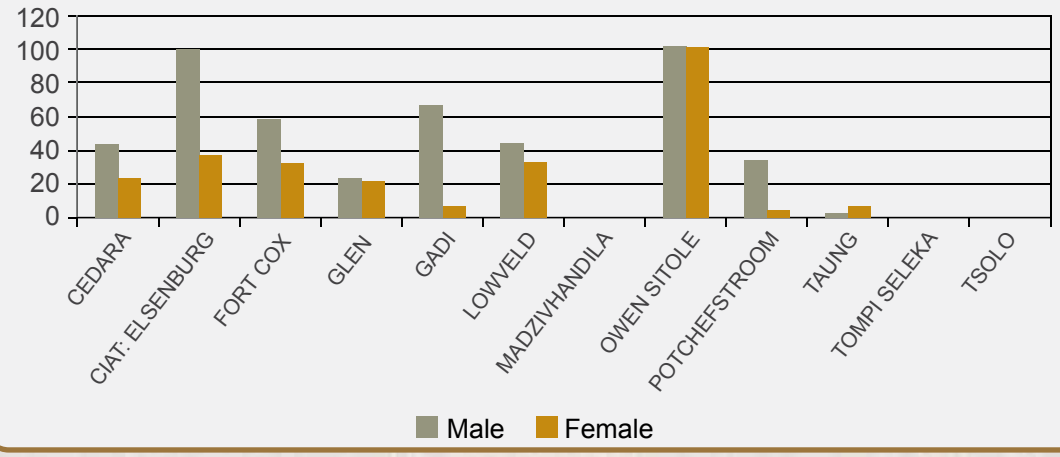


Figure 4 above indicates that the difference in numbers between male graduates and female graduates in some colleges such as Grootfontein, CIAT: Elsenburg, Cedara, Fort Cox and Potchefstroom has been very high. Nonetheless the situation is different at Taung where female graduates outnumbered the male graduates.

The data in Table 11 below depict that Higher Education Certificates dominated the total number of qualifications at Colleges of Agriculture during the 2008 with 46% followed by the Diploma with 40%. The least qualifications at Colleges of Agriculture was the Degree which accounted for 14% of the total output in 2008.

Table 11: Breakdown of graduates per programme at Colleges of Agriculture for 2008

College	Number of graduates					
	NQF 1-4	Certificate (Including N3)	HEC (Including N4-N5)	Diploma	Degree	Total
Cedara	0	0	42	25	0	**87**
CIAT: Elsenburg	0	0	18	18	101	**137**
Fort Cox	0	0	40	51	0	**91**
Glen	0	0	26	20	0	**46**
Grootfontein	0	0	35	39	0	**74**
Lowveld	0	0	40	37	0	**77**
Madzivhandila	0	0	0	0	0	**0**
Owen Sitole	0	0	113	90	0	**203**
Potchefstroom	0	0	23	16	0	**39**
Taung	0	0	7	3	0	**10**
Tompi Seleka	0	0	0	0	0	**0**
Tsolo	0	0	0	0	0	**0**
TOTAL	**0**	**0**	**344**	**299**	**101**	**744**
Percentage	**0**	**0**	**46**	**40**	**14**	**100**

2.6 Conclusion

The number of enrolments at the Colleges of Agriculture increased from 1 525 students in 2007 to 1 616 students in 2008. On the other hand graduate figures increased progressively from 644 in 2007 to 744 in 2008. For the past four academic years (2004 to 2007) Africans and Whites dominated both the enrolments and graduates figures. African enrolments increased from 1 038 in 2007 to 1 180 students in 2008. White enrolments decreased from 412 in 2007 to 369 during the 2008 academic year.

As a continued trend, there is a significant decrease in both the number of Coloured enrolments and graduates in the Colleges of Agriculture in 2008 in comparison to the previous academic years since 2004. Coloured enrolments decreased from 70 students in 2007 to 60 in the 2008 academic year. There is no noticeable increase in Coloured graduate figures. This is a negative sign and therefore it still holds water to say that interventions aimed at recruiting Coloureds and Asians in the agriculture sector should be intensified. Asians are still largely under represented in all the Colleges of Agriculture with just 7 students registered and 3 graduating in 2008. Generally, males have dominated females during the past four academic years. This has been the case in 2008.

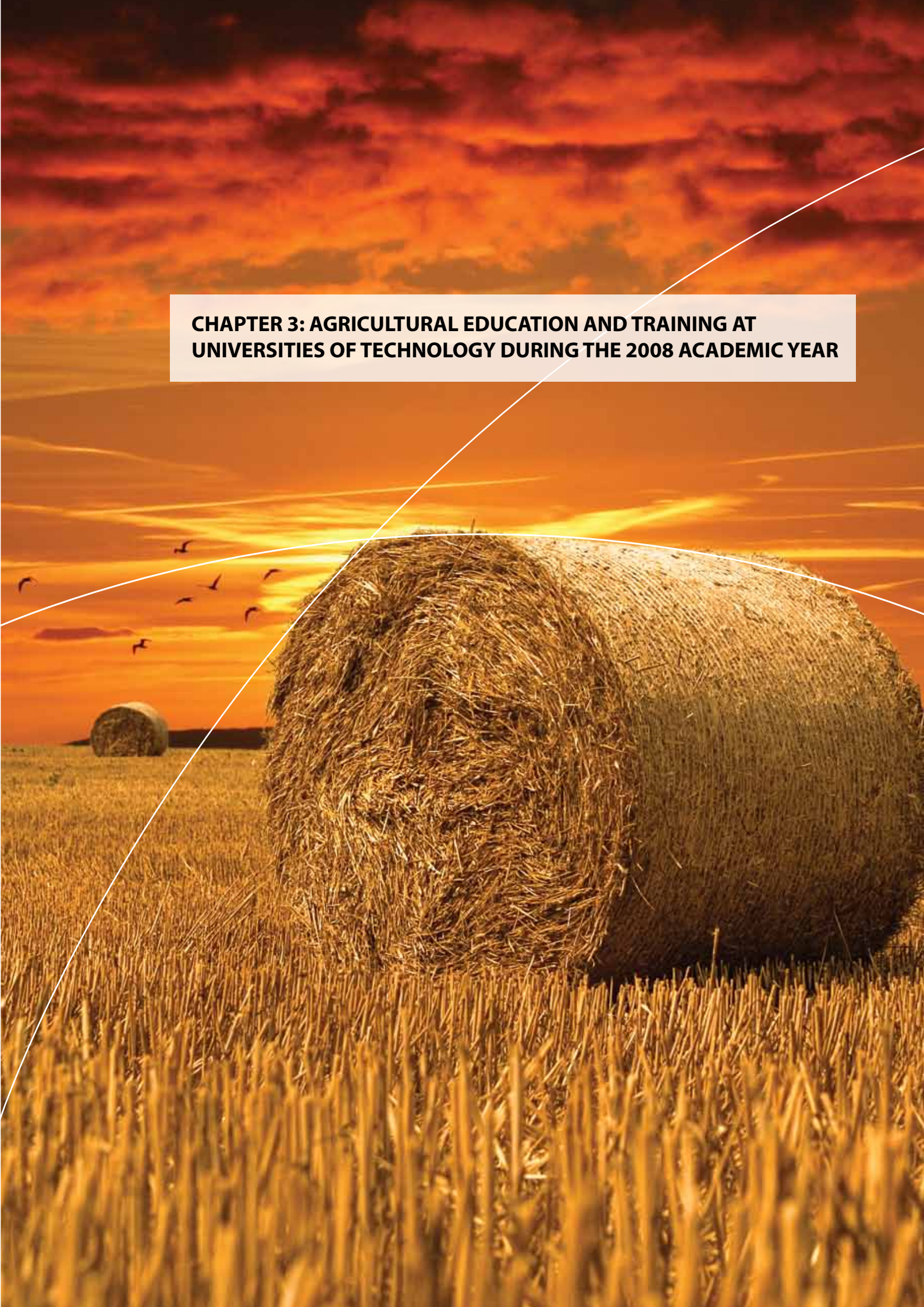
In the 2008 academic year; Cedara, CIAT: Elsenburg, Grootfontein, Lowveld and Potchefstroom continued to attract students from more than one racial group while other colleges continued to enroll students from one racial group. This is a continued trend from 2004 through to 2008.

In addition to the Diploma and Higher Education Certificate Programmes offered by the Colleges of Agriculture, many agricultural colleges have introduced short courses at General Education and Training

(GET) and Further Education and Training (FET) levels; these were introduced in the 2005 academic year. The short courses offered by the colleges are more demand driven and are aimed at addressing the needs of the farming community and LRAD beneficiaries in their respective locations. Some of the short courses are accredited and others are not. The non-accredited programmes are offered in the form of short courses which is more of information sharing rather than competency based and, as such, the participants receive Certificates of attendance only.

Since its inception, most of the beneficiaries and participants in the short courses are Africans, and very few participants are from the other racial groups. Some colleges have reported that they did not keep statistics of the trainees, who participated on these programmes, and others have statistics but no demographic breakdown of the participants in the short courses. Short course beneficiaries increased from a record of 7 019 students trained in the 2007 to 9 707 students in the 2008 academic year. This figure might be far greater considering that some of the colleges do not keep statistics of the number of participants in short courses and this makes it impossible to arrive at any conclusion in this matter. It is therefore crucial that all the colleges should keep a database of the beneficiaries and participants in these programmes in order to be able to evaluate the impact of the programmes to the socio-economic situation of the beneficiaries at a later stage.

CHAPTER 3: AGRICULTURAL EDUCATION AND TRAINING AT UNIVERSITIES OF TECHNOLOGY DURING THE 2008 ACADEMIC YEAR



CHAPTER 3

AGRICULTURAL EDUCATION AND TRAINING AT UNIVERSITIES OF TECHNOLOGY DURING THE 2008 ACADEMIC YEAR

3.1 Introduction

There are five Universities of Technology offering the AET programmes in South Africa. The agricultural programmes offered at these institutions range through the HET band from NQF levels 5 to 8. i.e. from Certificate to a Doctor of Technology (DTech). This chapter presents the programmes offered at higher education institutions and the demographic breakdown of agricultural enrolments and graduates.

The Universities of Technology offering AET programmes in South Africa are Cape Peninsula University of Technology (CPUT), Central University of Technology, Free State (CUT), Mangosuthu Technikon (MANTEC), Durban University of Technology (DUT) and Tshwane University of Technology (TUT).

3.2 AET programmes and National Qualification Framework offered at Universities of Technology in 2008

Table 12: Types of agricultural programmes offered at Universities of Technology

	Cape Peninsula University of Technology	Central University of Technology Free State	Durban University of Technology	Mangosuthu Technikon	Tshwane University of Technology
National Certificate programmes					
National Certificate Agriculture Animal Production					X
National Certificate Agriculture Crop Science					X
National Certificate Agricultural Management Crop Science					X
National Certificate Game Ranch Management					X
National Certificate Horticulture					X
National Certificate Nature Conservation					X
National Certificate Landscape Technology					X
National Certificate Turf Grass Management					X
National Higher Certificate Programmes					
National Higher Certificate Agriculture Animal Production					X
National Higher Certificate Agriculture Crop Science					X
National Higher Certificate Agricultural Management Crop Science					X
National Higher Certificate Game Ranch Management					X
National Higher Horticulture					X
National Higher Certificate Nature Conservation					X
National Diploma programmes					
National Diploma Agriculture	X				X
National Diploma Agriculture Crop Production					X

Table 12: Types of agricultural programmes offered at Universities of Technology					
	Cape Peninsula University of Technology	Central University of Technology Free State	Durban University of Technology	Mangosuthu Technikon	Tshwane University of Technology
National Diploma Agriculture Crop Science					X
National Diploma Agriculture Commercial Mixed Farming					X
National Diploma Agriculture Mixed Farming					X
National Diploma Agriculture Rural Development					X
National Diploma Agricultural Management	X	X			X
National Diploma Agriculture Animal Production				X	X
National Diploma Agriculture Plant Production				X	
National Diploma Agriculture Equine Science					X
National Diploma Agriculture Horticulture			X		X
National Diploma Biotechnology			X		
National Diploma Community Extension				X	
National Diploma Consumer Science: Food and Nutrition			X		
National Diploma Ecotourism Management			X		
National Diploma Food Science			X		
National Diploma Food Technology	X				X
National Diploma Game Ranch Management					X
National Diploma Landscape Technology			X		X
National Diploma Nature Conservation			X		X
National Diploma Turf Grass Management					X
National Diploma Veterinary Technology					X
National Higher Diploma programmes					
National Higher Diploma Pig Production					X
National Higher Diploma Poultry Production Management					X
BTech. Programmes					
BTech. Agriculture	X	X			X
BTech. Agricultural Management					X
BTech. Agriculture Animal Production					X
BTech. Agriculture Crop Production					X
BTech. Agricultural Development & Ext					X
BTech. Agriculture Mixed Farming					X
BTech. Agriculture Rural Development					X
BTech. Agriculture Animal Health					X
BTech. Equine Science					X
BTech. Biotechnology			X		
BTech. Food Science			X		
BTech. Food Technology	X				X
BTech. Food and Consumer Sciences			X		

Table 12: Types of agricultural programmes offered at Universities of Technology					
	Cape Peninsula University of Technology	Central University of Technology Free State	Durban University of Technology	Mangosuthu Technikon	Tshwane University of Technology
BTech. Game Ranch Management					X
BTech. Agriculture Horticulture			X		X
BTech. Landscape Technology					X
BTech. Nature Conservation					X
BTech. Turf grass Management					X
BTech. Veterinary Technology					X
MTech. Programmes					
MTech. Agriculture					X
MTech. Biotechnology			X		
MTech. Food Science			X		
MTech. Food Technology	X				X
MTech. Horticulture					X
MTech. Nature Conservation					X
MTech. Veterinary Technology					X
DTech. programmes					
DTech. Agriculture					X
DTech. Agriculture Animal Production					X
DTech. Biotechnology			X		
DTech. Horticulture					X
DTech. Nature Conservation					X

Table 12 above indicates the types of agricultural programmes offered by individual Universities of Technology. As depicted in table 12 above, TUT offers a wide range of agricultural programmes on a broad curriculum that is divided into four main departments namely, Horticulture, Crop Science, Nature Conservation and Animal Science. Veterinary Technology is offered in the department of Biomedical Science.

The other Universities of Technology offer few agricultural programmes like Agricultural Management from Diploma to BTech level, with the exception of TUT and DUT which offer programmes up to DTech level. Historically black institutions have curricula focused on skills that are less in demand in the public sector's agriculture labour market. i.e. General Agriculture and Agricultural Management qualifications with no focus or specialisation on agricultural scarce skills such as Agricultural Economics, Agricultural Engineering, Viticulture, and Veterinary Science.

There is a high probability that graduates qualifying in these programmes might not secure employment. However, in the private sector the situation with regards to the demand for agricultural graduates with these qualifications might be different since the research conducted by DAFF did not cover the private sector.

Table 13: NQF levels at Universities of Technology		
NQF level	**Band**	**Types of qualification and Certificates**
8	Higher Education and Training Band	Doctorate/ further research degree
7		Higher degree/professional qualifications
6		First degree/ higher diplomas
5		Diplomas/occupational Certificates

Coordination of Agricultural Higher Education at Universities of Technology has been more progressive considering the transformation made as far as regulation is concerned. All the agricultural programmes offered at either of these Universities of Technology have their standards monitored, certified and registered under the NQF. The table above presents the programme levels together with NQF levels at which the programmes are rated (Department of Agriculture, 2005). The NQF levels determine the programme levels at each University of Technology which range between NQF level 5 which is a Higher Certificate, to NQF level 8 which is the DTech.

3.3 Enrolments in AET programmes at Universities of Technology during 2008

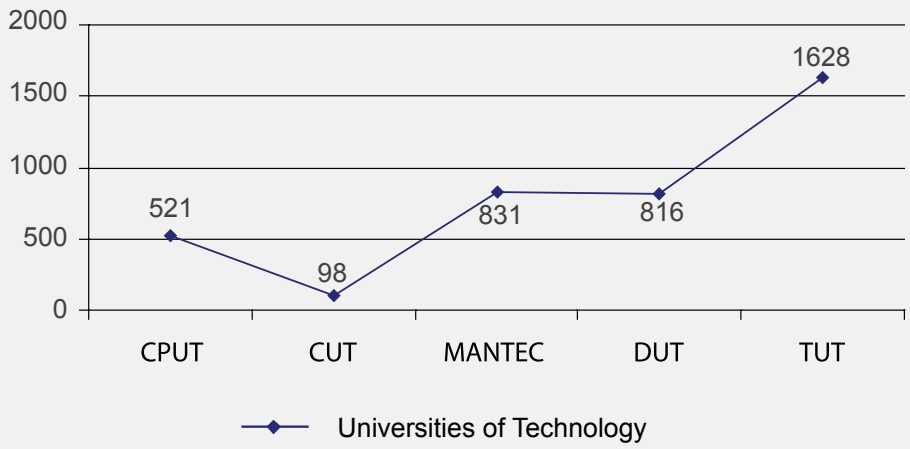
A total number of 3 894 students registered for agricultural programmes at Universities of Technology during the 2008 academic year.

Table 14: Enrolments per University of Technology during the 2008 academic year		
University of Technology	**Enrolment figures**	**%**
CPUT	521	13
CUT	98	3
MANTEC	831	21
DUT	816	21
TUT	1628	42
TOTAL	**3894**	**100**

Table 14 above presents enrolment figures at Universities of Technology during 2008. TUT enrolled a majority of students in 2008 with 42% of the total enrolments followed by DUT with 21% and MANTEC with 21%. CUT and CPUT have enrolled 13% and 3% of the total enrolments at Universities of Technology respectively.

Table 14 above and Figure 5 below depict a significant difference between TUT and the rest of the Universities of Technology in terms of student intake. The highest enrolment figures at TUT might be attributed to the many programmes offered by the institution as compared to fewer programmes offered by the other Universities of Technology. Of the 3 894 agricultural enrolments registered nationally at Universities of Technology in 2008, 1 628 were from TUT, which constitutes 42% of all enrolments at Universities of Technology.

Figure 5: Enrolments at Universities of Technology



3.3.1 Demographic Breakdown of AET Enrolments at Universities of Technology in 2008

Table 15 below presents a demographic breakdown of AET enrolments by Universities of Technology during the 2008 academic year.

Table 15: Demographic Breakdown of AET enrolments at Universities of Technology during the 2008 academic year

University of Technology	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
CPUT	72	120	**192**	47	51	**98**	165	62	**227**	3	1	**4**	521
CUT	35	28	**63**	2	0	**2**	30	3	**33**	0	0	**0**	98
MANTEC	384	440	**824**	0	0	**0**	6	1	**7**	0	0	**0**	831
DUT	154	365	**519**	6	9	**15**	49	193	**242**	18	22	**40**	816
TUT	645	531	**1176**	4	3	**7**	248	197	**445**	0	0	**0**	1628
TOTAL	**1290**	**1484**	**2774**	**59**	**63**	**122**	**498**	**456**	**954**	**21**	**23**	**44**	**3894**

Figure 6: Racial breakdown of AET enrolments at Universities of Technology

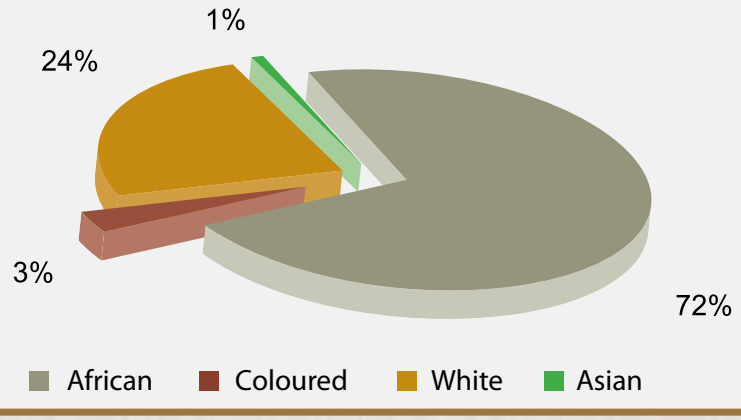


Table 15 and Figure 6 above depicts that Africans constituted the highest enrolments number with 72% of the total enrolments followed by White students with 24%. Coloured and Asian students collectively constituted less than 4% of the total enrolments as it was the case in 2007.

Figure 7: Gender breakdown of AET enrolments at Universities of Technology

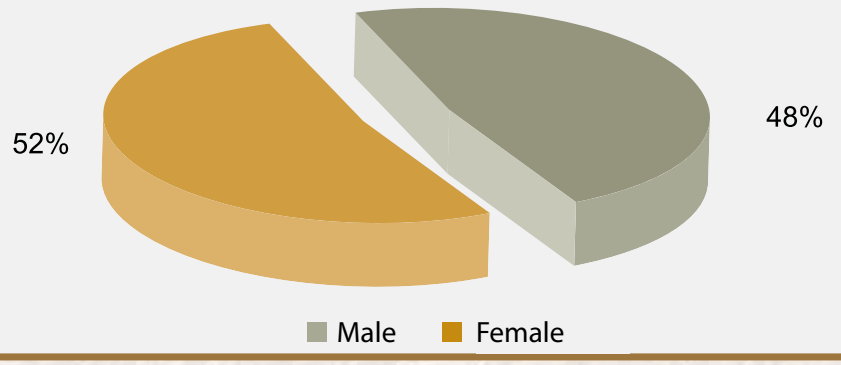


Figure 7 above depicts that female students constituted 52% of the total enrolments and male students constituted 48%. These figures represent no significant change from the 2007 academic year.

Figure 8: Racial breakdown of female enrolments at Universities of Technology

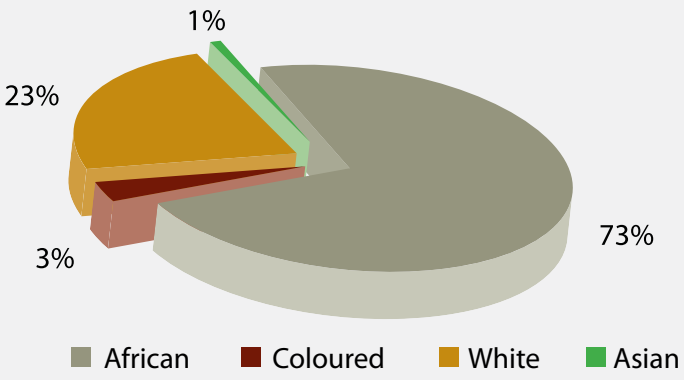


Figure 8 above depicts that African female student constituted the highest enrolments figure with 73% and White female students accounted for 23%. Coloured female and Asian female students accounted for 3% and 1% of the total female enrolments at Universities of Technology respectively. Asian females dropped from 11% in 2007 to 1% in 2008.

Figure 9: Racial breakdown of male enrolments at Universities of Technology

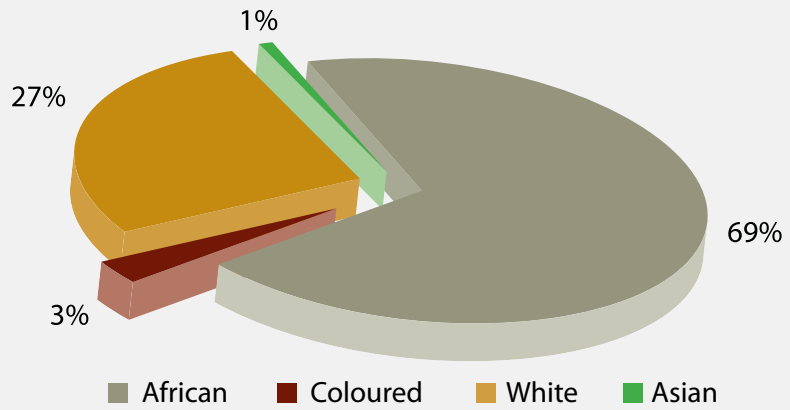


Figure 9 above indicates that African males constituted 69% of the total male enrolments in the 2008 academic year. White males accounted for 27% whilst Asian and Coloured males accounted for 3% and 1% of the overall male enrolments respectively.

3.3.2 AET Enrolments at Universities of Technology by level of qualifications & CESM in 2008

Table 16: Agricultural enrolments at Universities of Technology by CESM & levels of qualification in 2008

CESM	N.H.CER.	DIPLOMA	BTECH	MTECH	DTECH	Total	%
Animal Science	0	845	50	0	0	**895**	**23**
Horticulture	0	115	14	0	0	**129**	**3**
Plant Science	0	262	32	0	0	**294**	**8**
Agricultural Management	81	102	64	0	0	**247**	**6**
Wildlife Management	0	341	14	0	0	**355**	**9**
Agricultural Science-General	1	92	18	24	0	**135**	**3**
Agricultural Extension	0	243	12	0	0	**255**	**7**
Veterinary Technology	0	32	23	3	0	**58**	**1**
Agricultural Biotechnology	0	144	44	19	11	**218**	**6**
Food Science and Technology	55	344	54	12	0	**465**	**12**
Land Reclamation	34	22	0	0	0	**56**	**1**
Renewable Natural Resources	39	611	108	21	0	**782**	**20**
Rural Development	0	2	6	0	0	**8**	**0**
TOTAL	**210**	**3155**	**439**	**79**	**11**	**3894**	
Percentage	**5**	**81**	**11**	**2**	**0**		**100**

Table 16 above is a statistical presentation of enrolments at Universities of Technology by Category of Education Subject Matter (CESM). Universities of Technology offer programmes in the various CESMs as indicated in Table 16 above. There are qualifications which do not appear on the aforementioned Table 16 which are also offered by the Universities of Technology but no enrolments and graduates were recorded in these qualifications in 2008.

From Table 16 above Animal Science and Renewable Natural Resources have the highest enrolment figures with 23% and 20% respectively. Veterinary Technology, Land Reclamation and Rural Development enrolments were insignificant.

3.3.2.1 Demographic Breakdown of National Higher Certificate enrolments in Agricultural Education and Training at Universities of Technology by CESM in 2008

Table 17: Demographic breakdown of National Higher Certificate enrolments by CESM at Universities of Technology in 2008

CESM Category (National Higher Certificate)	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Agricultural Management	3	6	**9**	6	2	**8**	56	8	**64**	0	0	**0**	**81**	**39**
Agricultural Science-General	0	0	**0**	0	0	**0**	1	0	**1**	0	0	**0**	**1**	**0**
Food Science and Technology	11	24	**35**	2	10	**12**	2	4	**6**	2	0	**6**	**54**	**26**
Land Reclamation	7	7	**14**	3	1	**4**	13	3	**16**	0	0	**0**	**34**	**16**
Renewable Natural Resources	4	4	**8**	7	7	**14**	10	7	**17**	0	0	**0**	**39**	**19**
TOTAL	**25**	**41**	**66**	**18**	**20**	**38**	**82**	**22**	**104**	**2**	**0**	**6**	**210**	**100**

Table 17 above presents National Higher Certificate programmes at Universities of Technology during the 2008 academic year. Certificate programmes constituted 5% of the total enrolments at Universities of Technology in 2008. White students dominated these enrolments significantly with 104 students, followed Africans with 66 students. Thirty eight (38) Coloured students enrolled for certificate programmes during the 2008 academic year at Universities of Technology whilst only 6 Asians were registered.

Table 18: Demographic breakdown of Diploma enrolments by CESM at Universities of Technology in 2008

CESM Category (Diploma)	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Animal Science	372	353	**725**	1	0	**1**	23	96	**119**	0	0	**0**	**845**
Horticulture	46	41	**87**	2	0	**2**	18	4	**22**	1	3	**4**	**115**
Plant Science	118	144	**262**	0	0	**0**	0	0	**0**	0	0	**0**	**262**
Agricultural Management	32	28	**60**	3	0	**3**	35	4	**39**	0	0	**0**	**102**
Wildlife Management	87	116	**203**	0	6	**6**	105	18	**123**	5	4	**9**	**341**
Agricultural Science-General	33	38	**71**	1	1	**2**	14	5	**19**	0	0	**0**	**92**
Agricultural Extension	100	143	**243**	0	0	**0**	0	0	**0**	0	0	**0**	**243**
Veterinary Technology	13	14	**27**	0	0	**0**	2	3	**5**	0	0	**0**	**32**
Agricultural Biotechnology	18	45	**63**	0	0	**0**	0	1	**1**	22	58	**80**	**144**
Food Science and Technology	31	168	**199**	16	21	**37**	2	15	**17**	23	68	**91**	**344**
Renewable Natural Resources	256	210	**466**	2	3	**5**	71	64	**135**	4	1	**5**	**611**
Rural Development	1	1	**2**	0	0	**0**	0	0	**0**	0	0	**0**	**2**
Land Reclamation	1	3	**4**	2	0	**2**	10	6	**16**	0	0	**0**	**22**
TOTAL	**1108**	**1304**	**2412**	**27**	**31**	**58**	**280**	**216**	**496**	**55**	**134**	**189**	**3155**

Table 18 above presents the Diploma programmes enrolments at Universities of Technology in 2008. Diploma enrolments constituted 81% of the total enrolments at Universities of Technology as compared to 77% in 2007.

Africans contributed 76% of the total number of Diploma enrolments followed by Whites with 16%. Coloured and Asian students collectively constituted less than 9% of the total number of Diploma students.

Table 19: Demographic breakdown of BTech enrolments by CESM at Universities of Technology in 2008													
CESM Category (BTECH)	**African**			**Coloured**			**White**			**Asian**			**Total**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Animal Science	27	21	**48**	0	0	**0**	1	1	**2**	0	0	**0**	**50**
Horticulture	0	3	**3**	4	3	**7**	3	1	**4**	0	0	**0**	**14**
Plant Science	23	6	**29**	0	0	**0**	3	0	**3**	0	0	**0**	**32**
Agricultural Management	27	18	**45**	1	0	**1**	17	1	**18**	0	0	**0**	**64**
Wildlife Management	6	0	**6**	0	0	**0**	5	3	**8**	0	0	**0**	**14**
Agricultural Science-General	3	0	**3**	0	0	**0**	12	3	**15**	0	0	**0**	**18**
Agricultural Extension	7	5	**12**	0	0	**0**	0	0	**0**	0	0	**0**	**12**
Veterinary Technology	9	3	**12**	0	0	**0**	2	9	**11**	0	0	**0**	**23**
Agricultural Biotechnology	5	14	**19**	1	1	**2**	2	1	**3**	3	17	**20**	**44**
Renewable Natural Resources	44	22	**66**	0	0	**0**	24	18	**42**	0	0	**0**	**108**
Rural Development	5	1	**6**	0	0	**0**	0	0	**0**	0	0	**0**	**6**
Food Science and Technology	3	16	**19**	2	6	**8**	2	8	**10**	0	17	**17**	**54**
TOTAL	**159**	**109**	**268**	**8**	**10**	**18**	**71**	**45**	**116**	**3**	**34**	**37**	**439**

Table 19 above presents BTech the enrolments in agricultural programmes at Universities of Technology in 2008. BTech enrolments constituted 11% of the total enrolments at Universities of Technology in 2008 as compared to 17% in the 2007 academic year.

Africans constituted 61% of the total number of BTech enrolments during the 2008 academic year at Universities of Technology followed by Whites with 26%. Asian and Coloured students contributed 8% and 4% of the total BTech students respectively.

Table 20: Demographic breakdown of Postgraduates enrolments by CESM at Universities of Technology in 2008													
CESM Category (Postgraduate)	**Africans**			**Coloured**			**White**			**Asian**			**Total**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
MTech (Agricultural Science-General)	15	5	**20**	1	0	**1**	2	1	**3**	0	0	**0**	**24**
MTech (Veterinary Technology)	0	0	**0**	0	0	**0**	1	2	**3**	0	0	**0**	**3**
MTech (Agricultural Biotechnology)	0	5	**5**	1	0	**1**	2	0	**2**	1	10	**11**	**19**
MTech(Food Science)	0	7	**7**	0	0	**0**	0	3	**3**	0	2	**2**	**12**
MTec) (Renewable Natural Resources)	6	0	**6**	0	0	**0**	13	2	**15**	0	0	**0**	**21**
DTech (Agricultural Biotechnology)	1	1	**2**	0	0	**0**	0	0	**0**	4	5	**9**	**11**
TOTAL	**22**	**18**	**40**	**2**	**0**	**2**	**18**	**8**	**26**	**5**	**17**	**22**	**90**

Table 20 above outlines Postgraduate enrolments in agricultural programmes at Universities of Technology in 2008. Postgraduate enrolments constituted just 2% of the total enrolments at Universities of Technology in 2008 falling by one percent from the 2007 figure. Of the 90 students enrolled for Postgraduate Degree in agricultural programmes in 2008 at Universities of Technology, 79 were MTech and 11 were DTech students. This indicates a similar pattern in the 2007 academic year where the bulk of students who enrolled at postgraduate level were MTech students.

3.3.2.2 Animal Science Enrolments at Universities of Technology in 2008

This CESM at Universities of Technology includes Diploma, BTech, MTech and DTech in: Animal Health, Animal Production, Pig Production Management, Equine Science, Production Physiology and Animal

Production Management. Programmes in this CESM are offered by CPUT, MANTEC and TUT. There were 895 students enrolled in this CESM during the 2008 academic year.

Table 21 below presents a demographic breakdown of Animal Science enrolments during the 2008 academic year by level of qualification.

Table 21: Demographic breakdown of Animal Science enrolments by level of qualification

LEVEL	African			Coloured			White			Asian			TOTAL	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	372	353	**725**	1	0	**1**	23	96	**119**	0	0	**0**	**845**	**94**
BTech	27	21	**48**	0	0	**0**	1	1	**2**	0	0	**0**	**50**	**6**
TOTAL	**399**	**374**	**773**	**1**	**0**	**1**	**24**	**97**	**121**	**0**	**0**	**0**	**895**	**100**

High numbers of Animal Science enrolments are evident in the Animal Science Diploma level which accounted for 94%. BTech enrolments constituted only 6% of the total enrolments in this CESM with no significant differences from the 2007 academic year. As depicted in Table 21 above, no MTech and DTech enrolments were recorded in 2008.

Figure 10: Racial breakdown of Diploma in Animal Science enrolments

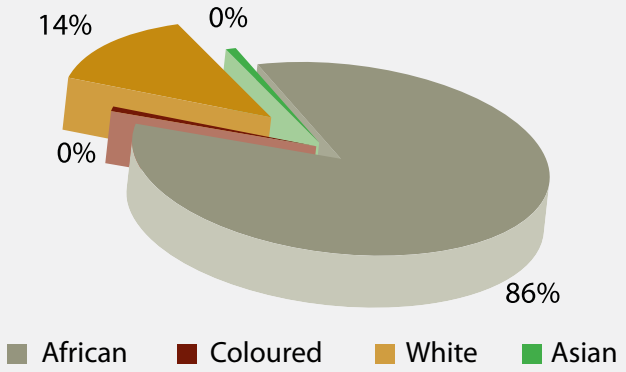


Figure 10 above depicts that African and White students constituted 86% and 14% of the Animal Science Diploma enrolments respectively. Coloured student enrolments in this CESM were insignificant and there were Asian students enrolled in this CESM at Diploma level during the 2008 academic year.

Figure 11: Gender breakdown of Diploma in Animal Science enrolments

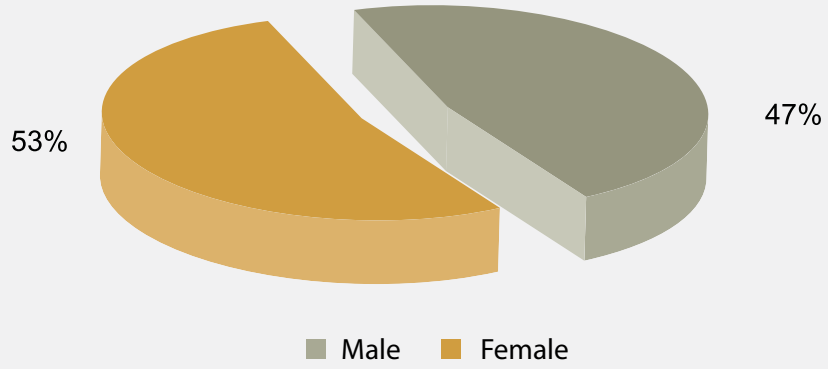


Figure 11 above depicts that female students dominated the Diploma enrolments in this CESM with 53%, while male students constituted 47%. Female enrolments in this CESM at Diploma level are dominated by Africans with 79% followed by White females with 21% and there were no Coloured and Asian females.

Figure 12: Racial breakdown of BTech in Animal Science enrolments

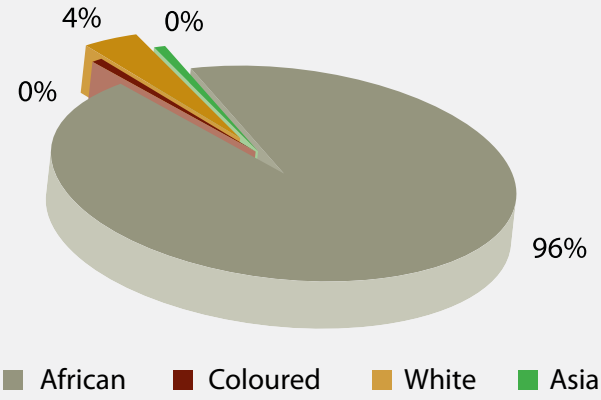


Figure 12 above indicates that Africans constituted the majority of BTech Animal Science enrolments with 96% and Whites accounted for 4%. There were no Coloured and Asian students enrolled for the BTech Animal Science at Universities of Technology during the 2008 academic year.

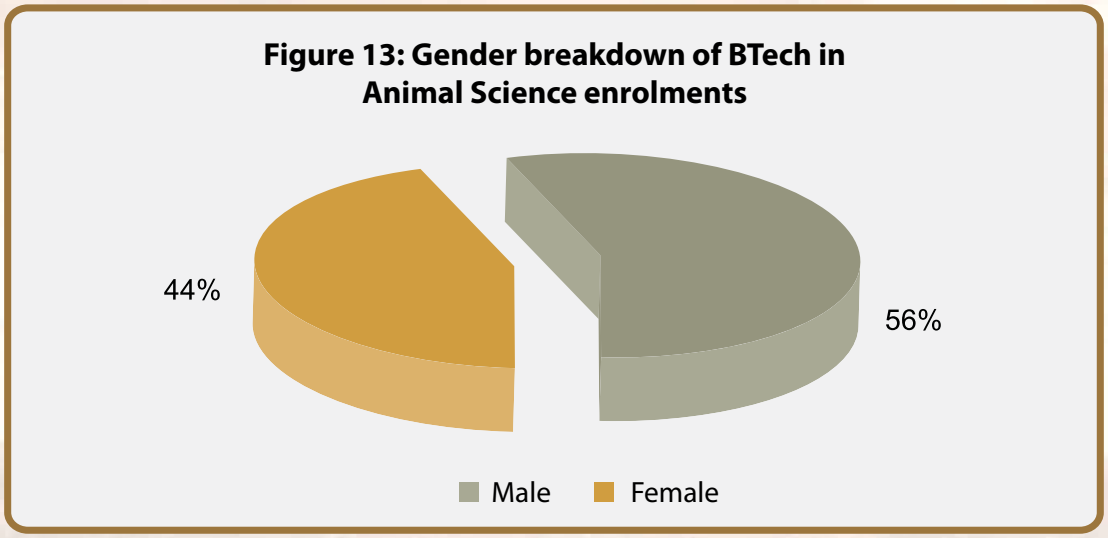


Figure 13 above depicts that male students comprised 56% of the total BTech Animal Science enrolments and female students accounted for 44 %.

3.3.2.3 Horticulture Enrolments at Universities of Technology in 2008

Horticulture CESM at Universities of Technology includes Diploma and BTech in: Horticulture and Turf Grass Management. One hundred and twenty nine (129) students enrolled for Horticulture at Universities of Technology in 2008. As depicted in Table 22 below, no students were enrolled in Horticulture at MTech and DTech levels. TUT and DUT are the only Universities of Technology offering Horticulture programmes in South Africa.

Table 22 below presents a demographic breakdown of Horticulture enrolments in the 2008 academic year by level of qualification.

Table 22: Demographic breakdown of Horticulture enrolments by level of qualification

LEVEL	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	46	41	**87**	2	0	**2**	18	4	**22**	1	3	**4**	**115**	**89**
BTech	0	3	**3**	4	3	**7**	3	1	**4**	0	0	**0**	**14**	**11**
TOTAL	**46**	**44**	**90**	**6**	**3**	**9**	**21**	**5**	**26**	**1**	**3**	**4**	**129**	**100**

As was the case in 2007, Diploma enrolments in Horticulture are the highest with 89% of the overall Horticulture CESM enrolments whilst BTech comprised 11%.

Figure 14: Racial breakdown of Diploma in Horticulture enrolments

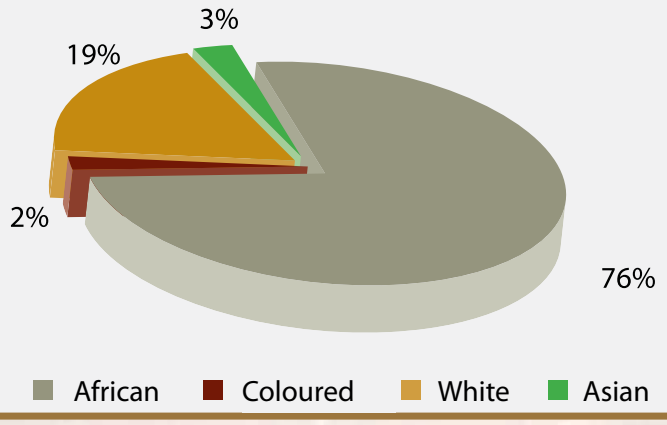


Figure 14 above depicts that African students constituted 76% of the Diploma enrolments in Horticulture followed by White students with 19%. Asian and Coloured students registered for this Diploma in this CESM at Universities of Technology during the 2008 academic year accounted for 3% and 2% respectively.

Figure 15: Gender breakdown of Diploma in Horticulture enrolments

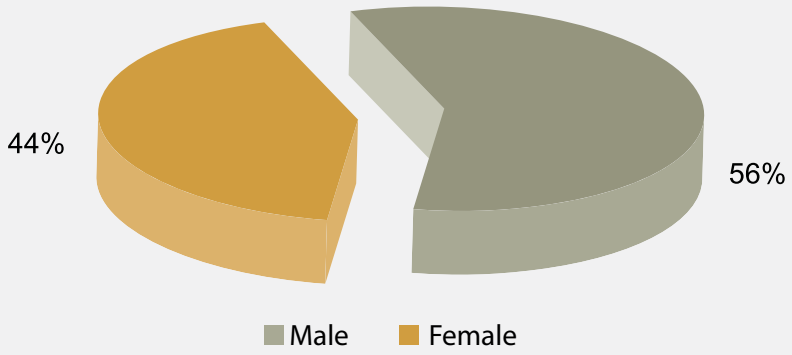


Figure 15 above shows that male students dominated with 58% and female students constituted 42% of the Horticulture Diploma enrolments. African males dominated the male enrolments with 65%, followed by Whites with 27% and Coloureds with 3%. No Asian males enrolled in this CESM at Diploma level in 2008.

A total number of 14 students registered for BTech Horticulture at Universities of Technology during the 2008 academic year. Four (4) were Coloured males, 3 were Coloured females, 3 were African males, 3 were White males and 1 was a White female.

Figure 16: Racial breakdown of BTech in Horticulture enrolments

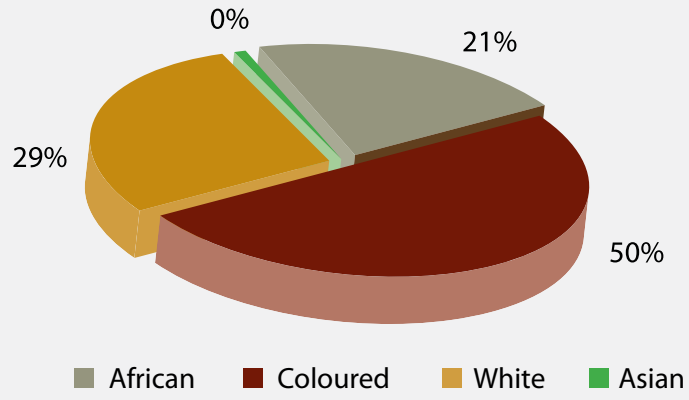


Figure 16 above depicts that Coloured students constituted 50% of BTech enrolments in Horticulture followed by White and African students with 29% and 21% respectively. No Asian students registered in this CESM at Universities of Technology during the 2008 academic year.

Figure 17: Gender breakdown of BTech in Horticulture enrolments

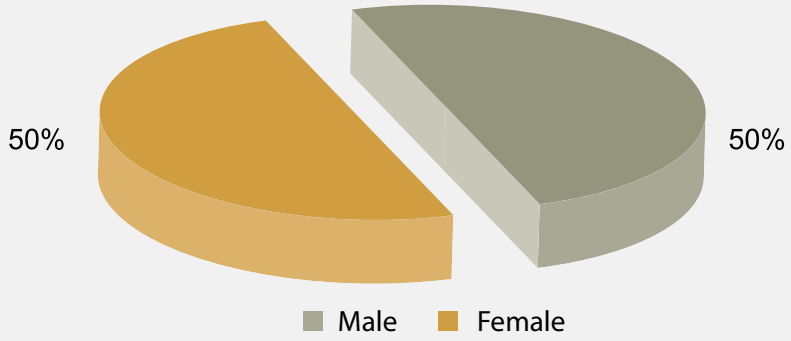


Figure 17 above indicates that the gender breakdown in this CESM at BTech were 50% each.

3.3.2.4 Plant Science Enrolments at Universities of Technology in 2008

Plant Science CESM consists of Diploma and BTech, in Crop Production and Plant Production. Two hundred and ninety four (294) students enrolled in this programme in 2008. Plant Science constitutes 8% of the total AET enrolments during 2008. As was the case in 2007, only Diploma and BTech students enrolled for this CESM in 2008 at Universities of Technology.

Table 23 below presents a demographic breakdown of Plant Science enrolments in 2008 by level of qualification.

Table 23: Demographic breakdown of Plant Science enrolments by level of qualification

LEVEL	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	118	144	**262**	0	0	**0**	0	0	**0**	0	0	**0**	262	89
BTech	23	6	**29**	0	0	**0**	3	0	**3**	0	0	**0**	32	11
TOTAL	**141**	**150**	**291**	**0**	**0**	**0**	**3**	**0**	**3**	**0**	**0**	**0**	**294**	**100**

Table 23 above illustrates that the enrolments in the Diploma accounted for 89% of the overall Plant Science enrolments and BTech comprised 11%.

Table 23 above indicates that African students accounted for 100% of the Diploma enrolments in this CESM at Universities of Technology during the 2008 academic year.

Figure 18: Gender breakdown of Diploma in Plant Science enrolments

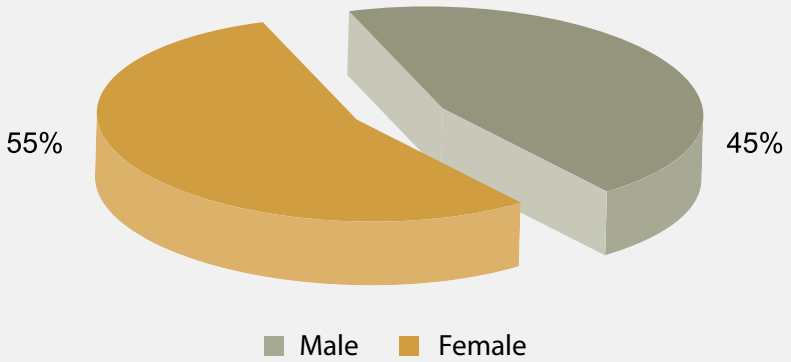


Figure 18 above depicts that male students dominated the Diploma Plant Science enrolments with 55% and female students constituted 45%.

Figure 19: Racial breakdown of BTech in Plant Science enrolments

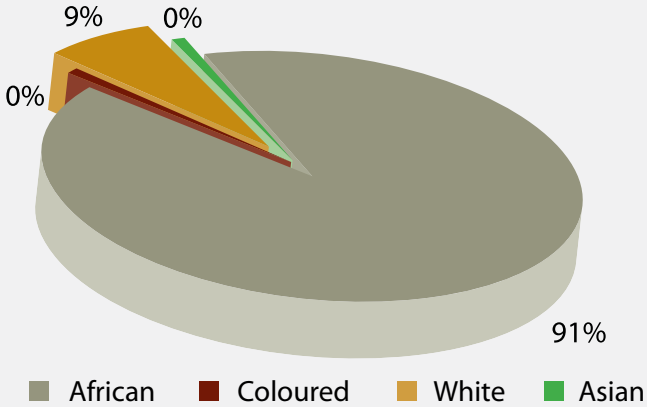


Figure 19 above indicates that African students dominated the BTech Plant Science enrolments with 91% followed by Whites with 9%. There were no Coloured and Asian enrolments for this programme at BTech level during 2008.

Figure 20: Gender breakdown of BTech in Plant Science enrolments

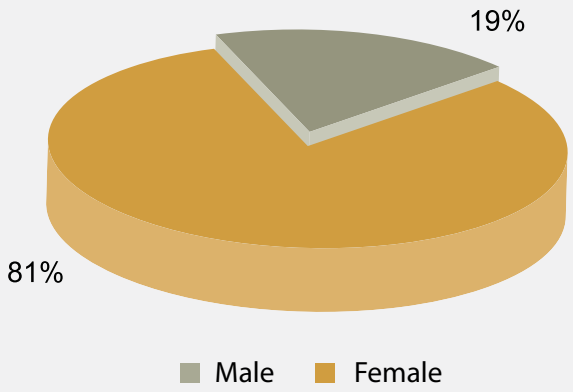


Figure 20 above depicts that male students dominated the BTech Plant Science enrolments with 81% and female students constituted 19%.

3.3.2.5 Agricultural Management Enrolments at Universities of Technology in 2008

Agricultural Management programmes are offered by CPUT, CUT and TUT. One hundred and sixty six (166) students enrolled during the 2008 academic year at the three Universities of Technology. Agricultural Management enrolments include Diploma and BTech levels only during the 2008 academic year.

Table 24 below presents a demographic breakdown of Agricultural Management enrolments during the 2008 academic year by level of qualification.

Table 24: Demographic breakdown of Agricultural Management enrolments by level of qualification

LEVEL	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	32	28	**60**	3	0	**3**	35	4	**39**	0	0	**0**	**102**	**61**
BTech	27	18	**45**	1	0	**1**	17	1	**18**	0	0	**0**	**64**	**39**
TOTAL	**59**	**46**	**105**	**4**	**0**	**4**	**52**	**5**	**57**	**0**	**0**	**0**	**166**	**100**

Table 24 above illustrates that the enrolments in the Diploma Agricultural Management accounted for the majority of the enrolments with 61%, whilst BTech constituted 39%.

Figure 21: Racial breakdown of Diploma in Agricultural Management enrolments

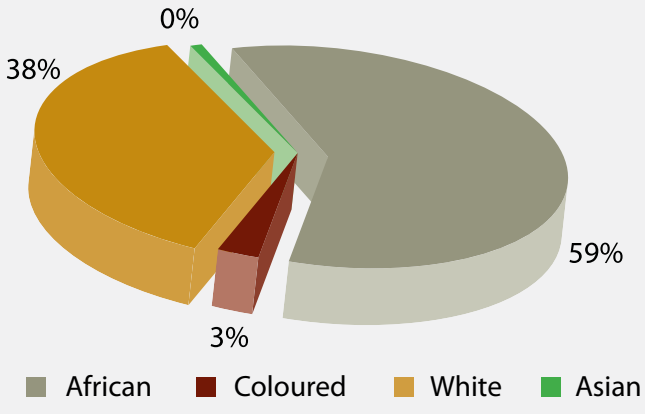


Figure 21 above depicts that the majority of the enrolments at Diploma level in this CESM were African students who comprised 59%, followed by Whites with 38% and Coloured students with 3%. No Asians were enrolled at Diploma level in this CESM during the 2008 academic year.

Figure 22: Gender breakdown of Diploma in Agricultural Management enrolments

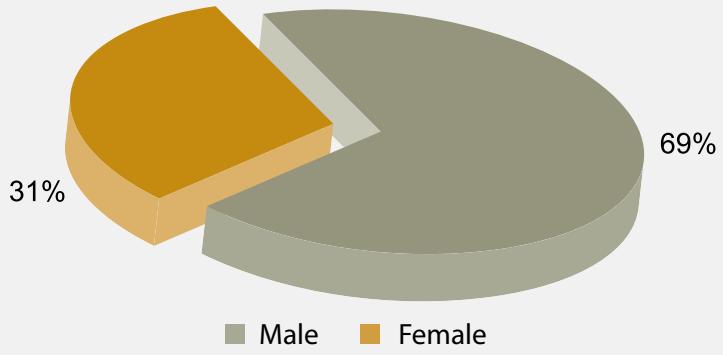


Figure 22 above shows that male students dominated enrolments at Diploma level in this CESM with 69% and female students constituted 31%. White males accounted for 50% of the male enrolments at Diploma level in this CESM, followed by Africans and Coloureds with 46% and 4% respectively.

Figure 23: Racial breakdown of BTech in Agricultural Management enrolments

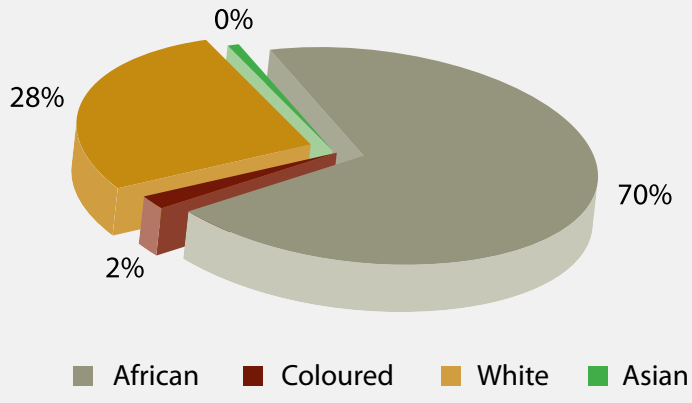


Figure 23 above indicates that African students constituted 70% of the BTech Agricultural Management enrolments followed by White students with 28% and Coloured students with 2%. No Asians were enrolled at BTech level in this CESM during the 2008 academic year.

Figure 24: Gender breakdown of BTech in Agricultural Management enrolments

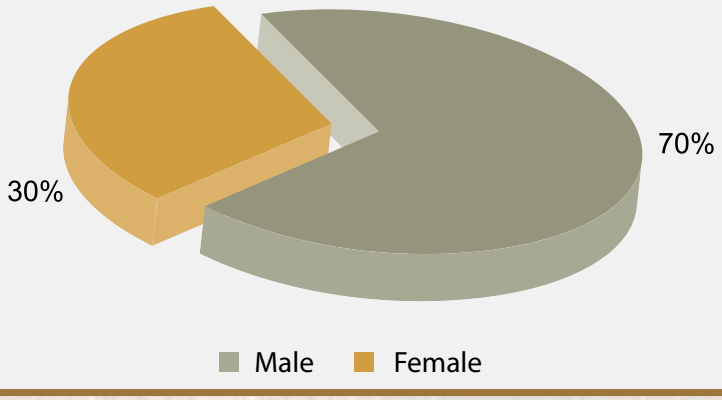


Figure 24 above depicts that male students dominated the BTech Agricultural Management enrolments with 70% and female students constituted 30%. The male students were: 27 African males, 17 White males and 1 Coloured male. The female students were: 18 African females, and 1 White female.

3.3.2.6 Agricultural Science-General Enrolments at Universities of Technology in 2008

Agricultural Science-General CESM includes Certificate, Diploma, BTech and MTech. Enrolments in this CESM decreases drastically from 372 students enrolled in 2007 to 135 during the 2008 academic year. Agricultural Science-General programmes at Universities of Technology are offered by CPUT, TUT and CUT.

Table 25 below presents a demographic breakdown of Agricultural Science-General enrolments during the 2008 academic year by level of qualification.

Table 25: Demographic breakdown of Agricultural Science-General enrolments by level of qualification

LEVEL	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Certificate	0	0	**0**	0	0	**0**	1	0	**1**	0	0	**0**	**1**	**1**
Diploma	33	38	**71**	1	1	**2**	14	5	**19**	0	0	**0**	**92**	**68**
BTech	3	0	**3**	0	0	**0**	12	3	**15**	0	0	**0**	**18**	**13**
MTech	15	5	**20**	1	0	**1**	2	1	**3**	0	0	**0**	**24**	**18**
TOTAL	**51**	**43**	**94**	**2**	**1**	**3**	**29**	**9**	**38**	**0**	**0**	**0**	**135**	**100**

Table 25 above illustrates that the enrolments in Diploma Agricultural Science-General accounted for 68% of the overall enrolments in this CESM followed by MTech with 18% and BTech with 13%. Certificate enrolments accounted for only 1%.

Figure 25: Racial breakdown of Diploma in Agricultural Science-General enrolments

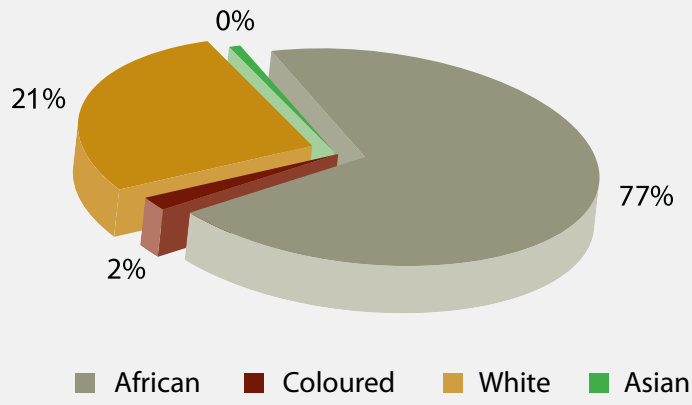


Figure 25 above depicts that African students accounted for 77% of the Diploma in Agricultural Science-General enrolments followed by Whites with 21% and Coloureds with 2%. There were no Asian students enrolled in this CESM at Diploma level during the 2008 academic year.

Figure 26: Gender breakdown of Diploma in Agricultural Science-General enrolments

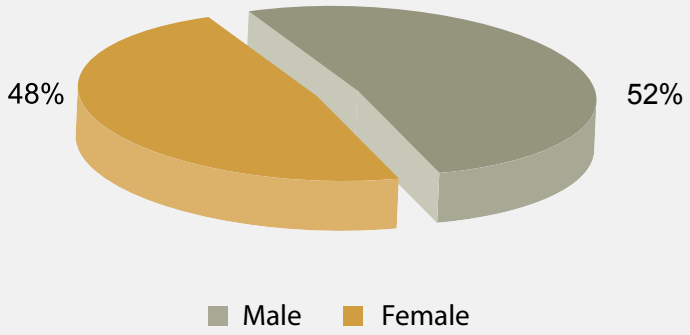


Figure 26 above depicts that male students dominated the Diploma Agricultural Management enrolments with 52% and female students constituted 48%. African males accounted for 69% of the male enrolments in this CESM at Diploma level followed by White males with 29% and Coloured male students with 2%.

Figure 27: Racial breakdown of BTech in Agricultural Science-General enrolments

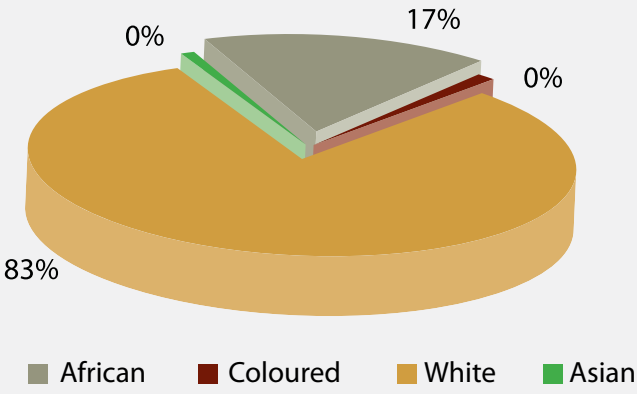


Figure 27 above indicates that White students dominated enrolments in Agricultural Science-General at BTech level with 83% followed by African students with 17%. No Coloured or Asians enrolled at BTech level in this CESM during the 2008 academic year.

Figure 28: Gender breakdown of BTech in Agricultural Science-General enrolments

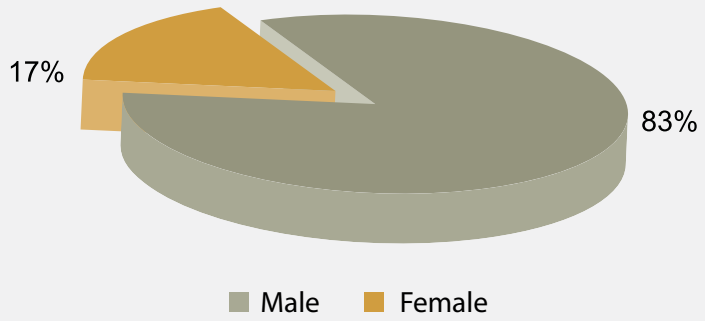


Figure 28 above depicts that male students dominated the BTech Agricultural Science-General enrolments with 83% and female students constituted 17%. White males accounted for 80% of the male enrolments in this CESM at BTech level followed by African males with 20%.

Figure 29: Racial breakdown of MTech in Agricultural Science-General enrolments

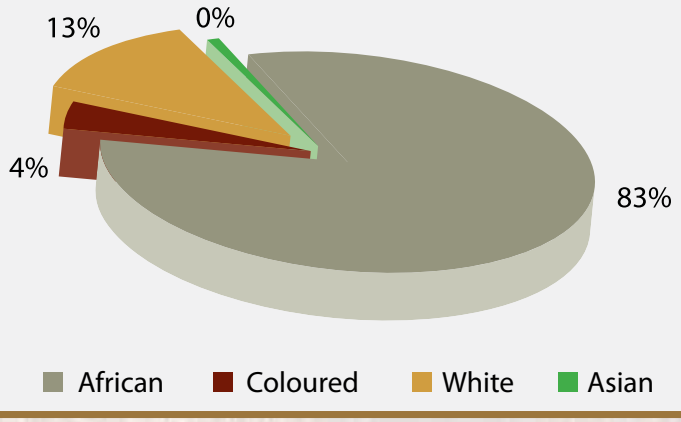


Figure 29 above depicts that African students accounted for 83% of the MTech in Agricultural Science-General enrolments followed by Whites with 13% and Coloureds with 4%. No Asian students enrolled during the 2008 academic year.

Figure 30: Gender breakdown of MTech in Agricultural Science-General enrolments

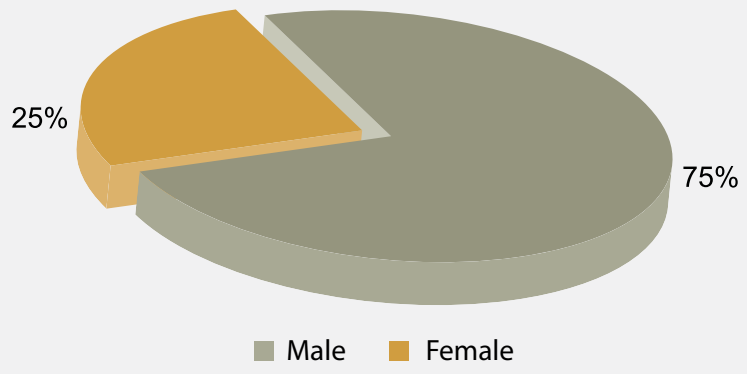


Figure 30 above depicts that male students dominated the MTech Agricultural Science-General enrolments with 75% and female students constituted 25%. African males accounted for 83% of the male enrolments in this CESM at MTech level followed by White males with 11% and Coloureds with 6%. No Asian male students enrolled during the 2008 academic year.

3.3.2.7 Renewable Natural Resources Enrolments at Universities of Technology in 2008

Renewable Natural Resources includes Diploma, BTech, MTech and DTech in Nature Conservation. TUT and DUT are the only Universities of Technology offering programmes in Renewable Natural Resources. Seven hundred and seventy nine (779) students enrolled in this CESM during the 2008 academic year.

Table 26 below presents a demographic breakdown of Renewable Natural Resources enrolments during the 2008 academic year by level of qualification.

Table 26: Demographic breakdown of Renewable Natural Resources enrolments by level of qualification

LEVEL	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Certificate	4	4	**8**	7	7	**14**	10	7	**17**	0	0	**0**	**39**	**5**
Diploma	256	210	**466**	2	3	**5**	71	64	**135**	4	1	**5**	**611**	**78**
BTech	44	22	**66**	0	0	**0**	24	18	**42**	0	0	**0**	**108**	**14**
MTech	6	0	**6**	0	0	**0**	13	2	**15**	0	0	**0**	**21**	**3**
TOTAL	**310**	**236**	**546**	**9**	**10**	**19**	**118**	**91**	**209**	**4**	**1**	**5**	**779**	**100**

Table 26 above shows that the enrolments at Diploma level in Renewable Natural Resources constituted 78%, followed by BTech with 14%, Certificate with 5% and MTech with 3%.

Figure 31: Racial breakdown of National Certificate in Renewable Natural Resources enrolments

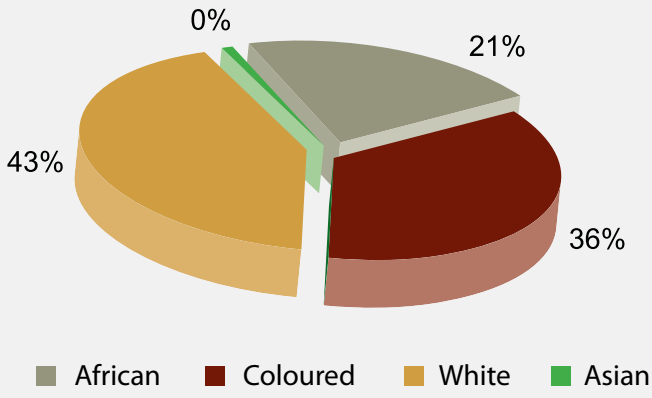


Figure 31 above depicts that White students accounted for 43% of the Certificate students in Renewable Natural Resources followed by Coloureds with 36% and Africans with 21%. No Asian students enrolled in this CESM at Certificate level during the 2008 academic year.

Figure 32: Gender breakdown of National Certificate in Renewable Natural Resources enrolments

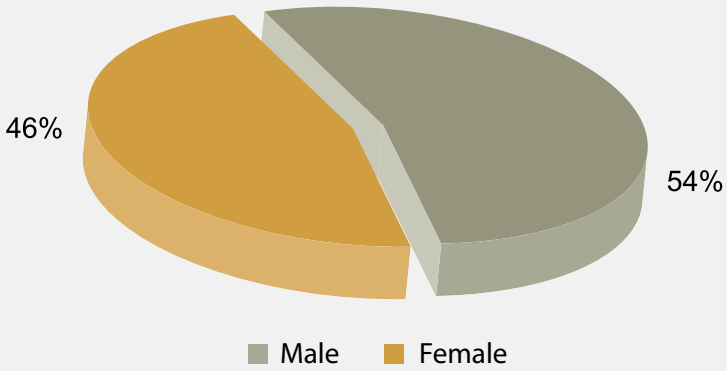


Figure 32 above depicts that male students dominated the Certificate students in Renewable Natural Resources with 54% and female students constituted 46%. White males accounted for 48% of the male students in this CESM at Certificate level followed by Coloured males with 33% and African males with 19%.

Figure 33: Racial breakdown of Diploma in Renewable Natural Resources enrolments

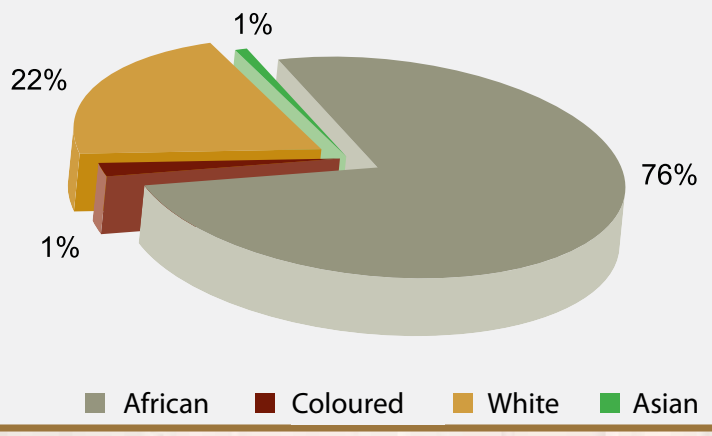


Figure 33 above depicts that Africans accounted for 76% of the Diploma Renewable Natural Resources enrolments followed by Whites with 22%, Asians and Coloureds constituted 1% each.

Figure 34: Gender breakdown of Diploma in Renewable Natural Resources enrolments

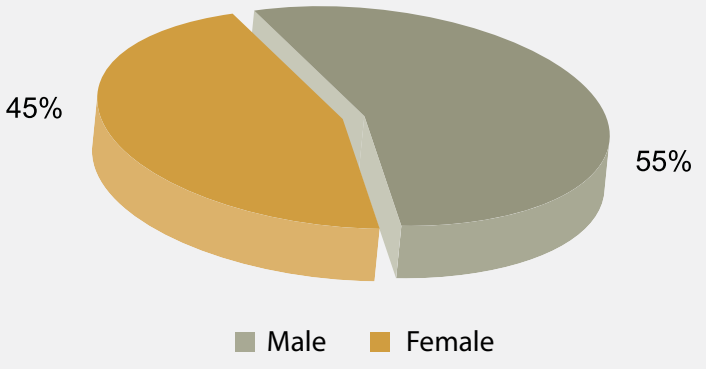


Figure 34 above depicts that male students dominated the Diploma in Renewable Natural Resources enrolments with 55% whilst female students constituted 45%. African male enrolments constituted 77% of the total male students for the Diploma Renewable Natural Resources followed by Whites with 21% whilst Coloureds and Asians accounted for 1% each.

Figure 35: Racial breakdown of BTech in Renewable Natural Resources enrolments

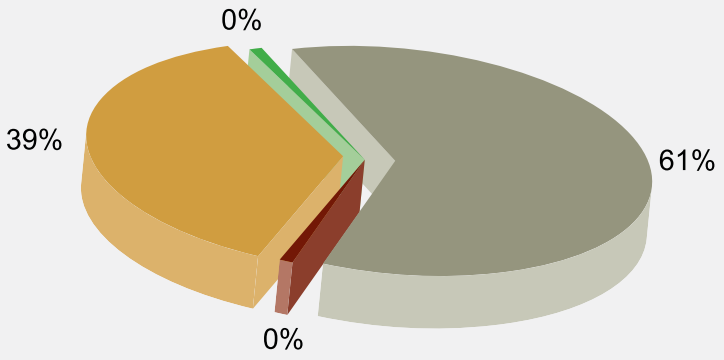


Figure 35 above depicts that African students dominated the BTech Renewable Natural Resources enrolments with 61% followed by White with 39%. No Coloureds or Asian enrolled in this CESM at BTech level during the 2008 academic year.

Figure 36: Gender breakdown of BTech in Renewable Natural Resources enrolments

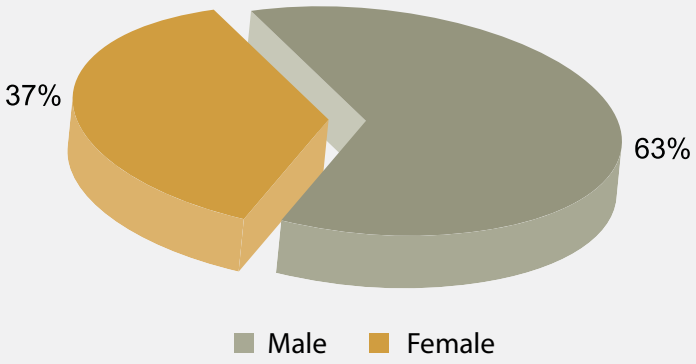


Figure 36 above depicts that male students dominated the BTech Renewable Natural Resources enrolments with 63% whilst female students constituted 37%.

Figure 37: Racial breakdown of MTech in Renewable Natural Resources enrolments

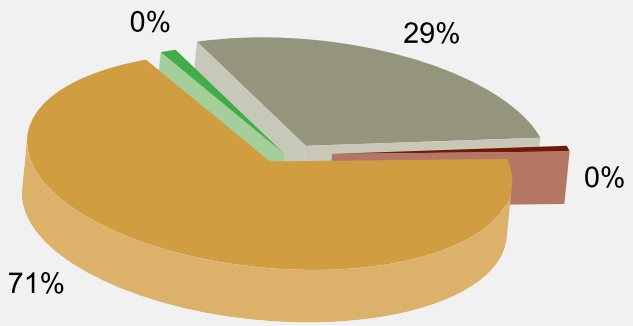


Figure 37 above depicts that White students dominated the MTech Renewable Natural Resources enrolments with 71% followed by Africans with 29%. No Coloured or Asian students enrolled in this CESM at MTech level during the 2008 academic year.

Figure 38: Gender breakdown of MTech in Renewable Natural Resources enrolments

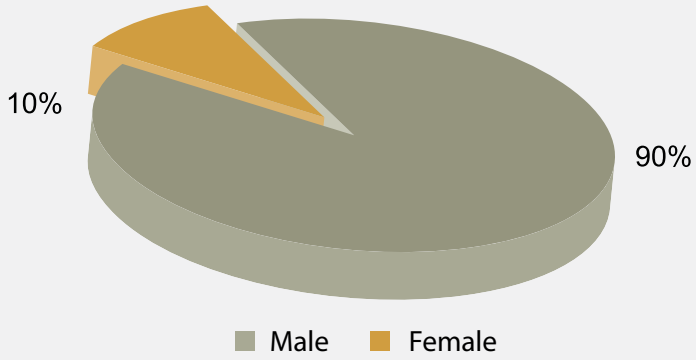


Figure 38 above depicts that male students dominated the MTech Renewable Natural Resources enrolments with 90% whereas female students constituted 10%.

3.3.2.8 Wildlife Management Enrolments at Universities of Technology in 2008

Wildlife Management CESM includes Diploma, BTech, MTech and DTech in Game Ranch Management. TUT is the only University of Technology offering this programme. Three hundred and fifty five (355) students registered for Wildlife Management in 2008 as compared to 407 students enrolled in 2007.

Table 27 below presents a demographic breakdown of the Diploma in Wildlife Management enrolments during the 2008 academic year by level of qualification.

Table 27: Demographic breakdown of Wildlife Management enrolments by level of qualification														
LEVEL	**African**			**Coloured**			**White**			**Asian**			**Total**	**%**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**		
Diploma	87	116	**203**	0	6	**6**	105	18	**123**	5	4	**9**	**341**	**96**
BTech	6	0	**6**	0	0	**0**	5	3	**8**	0	0	**0**	**14**	**4**
TOTAL	**93**	**116**	**209**	**0**	**0**	**0**	**110**	**21**	**131**	**5**	**4**	**9**	**355**	**100**

Table 27 above shows that Diploma enrolments constituted 96% of the total number of Wildlife enrolments during the 2008 academic year at Universities of Technology followed by BTech with 4%.

Figure 39: Racial breakdown of Diploma in Wildlife Management enrolments

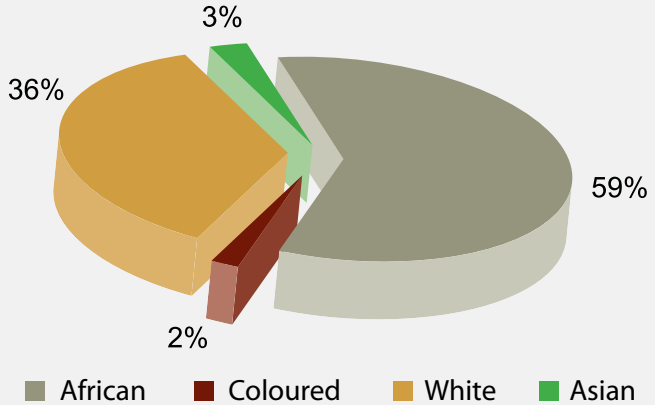


Figure 39 above indicates that enrolments at Diploma level in this CESM during the 2008 academic year were dominated by Africans with 59% followed by Whites with 36%, Asians with 3% and Coloureds with 2%.

Figure 40: Gender breakdown of Diploma in Wildlife Management enrolments

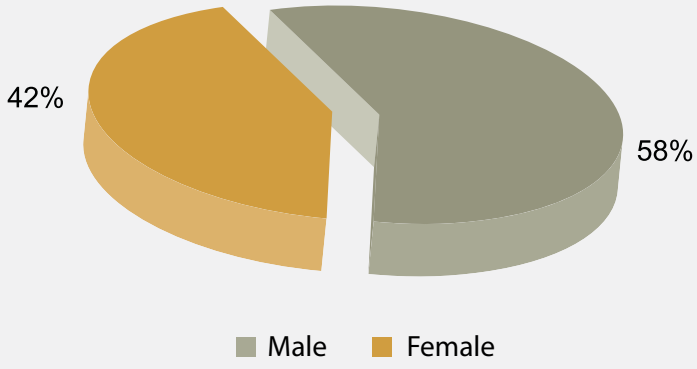


Figure 40 above shows that male students dominated the Diploma in Wildlife Management enrolments with 58% whilst female students constituted 42%.

Figure 41: Racial breakdown of BTech in Wildlife Management

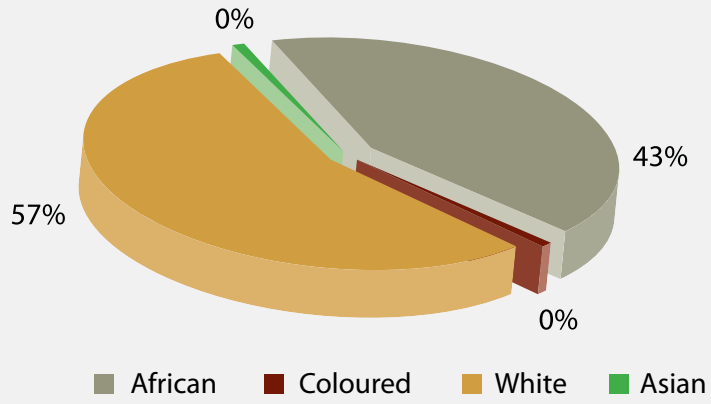


Figure 41 above depicts that Whites constituted 57% of the BTech enrolments in this CESM followed with Africans by 43%. No Coloureds or Asians enrolled in this CESM at BTech level during the 2008 academic year at Universities of Technology.

Figure 42: Gender breakdown of BTech in Wildlife Management

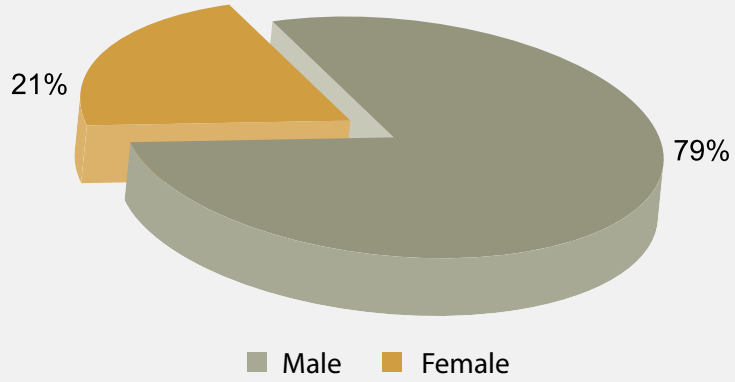


Figure 42 depicts that males accounted for the majority of BTech enrolments in Wildlife Management with 79% whilst females constituted 21%. African males constituted 55% of the male enrolments in this CESM, whilst Whites constituted 45%.

3.3.2.9 Agriculture Extension Enrolments at Universities of Technology in 2008

Agriculture Extension CESM includes Diploma, BTech, MTech and DTech in Agriculture: Development and Extension and the only University of Technology offering this programme is TUT. Two hundred and fifty five (255) African students enrolled in this CESM in 2008 as compared to 224 students enrolled in the 2007 academic year.

Table 28 below presents a demographic breakdown of Agricultural Extension enrolments during the 2008 academic year by level of qualification.

Table 28: Demographic breakdown of Agricultural Extensions enrolments by level of qualification														
LEVEL	**African**			**Coloured**			**White**			**Asian**			**Total**	**%**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**		
Diploma	100	143	**243**	0	0	**0**	0	0	**0**	0	0	**0**	**243**	**95**
BTech	7	5	**12**	0	0	**0**	0	0	**0**	0	0	**0**	**12**	**5**
TOTAL	**107**	**148**	**255**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**255**	**100**

Table 28 above shows that Diploma enrolments constituted 95% of the total number of Agricultural Extension enrolments during the 2008 academic year at Universities of Technology followed by BTech with 5%.

Of the 243 African students who enrolled for Diploma in this CESM, 143 were African females and 100 were African males. Of the 12 students registered for BTech in Agricultural Extension, 7 were males and 5 were females.

Figure 43: Gender breakdown of Diploma in Agricultural Extension enrolments

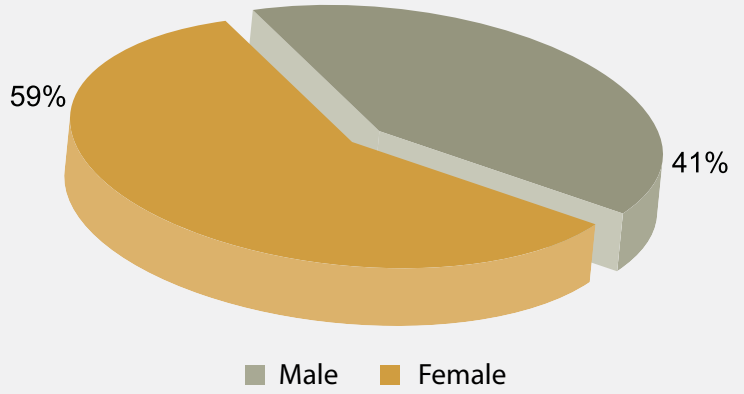


Figure 43 above depicts that females accounted for the majority of enrolments in Agricultural Extension with 59% whilst males constituted 41%.

Figure 44: Gender breakdown of BTech in Agricultural Extension enrolments

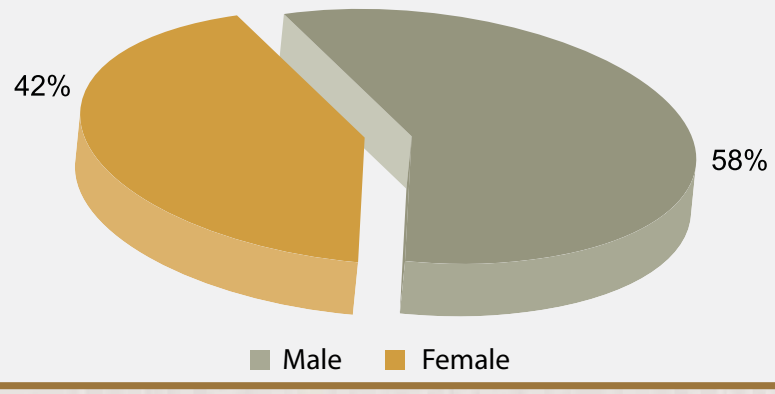


Figure 44 above depicts that males accounted for the majority of enrolments in Agricultural Extension with 58% whilst females constituted 42%

3.3.2.10 Veterinary Technology Enrolments at Universities of Technology in 2008

Veterinary Technology programmes are offered by TUT only. Fifty eight (58) students registered in this CESM in 2008 as compared to 67 students who registered during the 2007 academic year.

Table 29 below presents a demographic breakdown of Veterinary Technology enrolments during the 2008 academic year by level of qualification.

Table 29: Demographic breakdown of Veterinary Technology enrolments by level of qualification

LEVEL	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	13	14	**27**	0	0	**0**	2	3	**5**	0	0	**0**	**32**	**55**
BTech	9	3	**12**	0	0	**0**	2	9	**11**	0	0	**0**	**23**	**40**
MTech	0	0	**0**	0	0	**0**	1	2	**3**	0	0	**0**	**3**	**5**
TOTAL	**22**	**17**	**39**	**0**	**0**	**0**	**5**	**14**	**19**	**0**	**0**	**0**	**58**	**100**

Table 29 above illustrates that the Diploma enrolments accounted for 55% of the overall enrolments in this CESM followed by BTech with 40% and MTech with 5%.

Figure 45: Racial breakdown of Diploma in Veterinary Technology enrolments

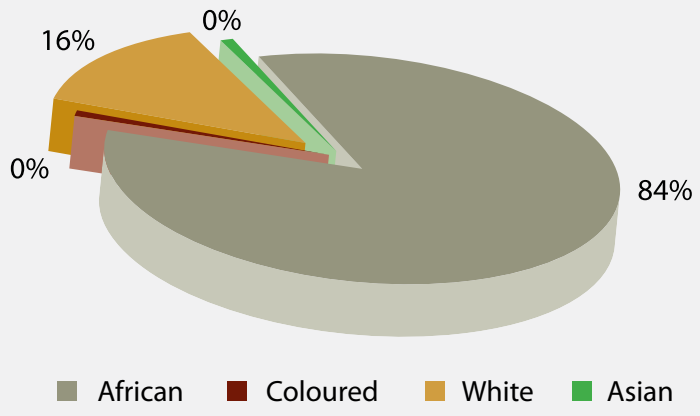


Figure 45 above indicates that African students dominated the Diploma in Veterinary Technology enrolments with 84%, followed by White with 16%. No Coloured or Asian students were enrolled in this CESM at Diploma level.

Figure 46: Gender breakdown of Diploma in Veterinary Technology enrolments

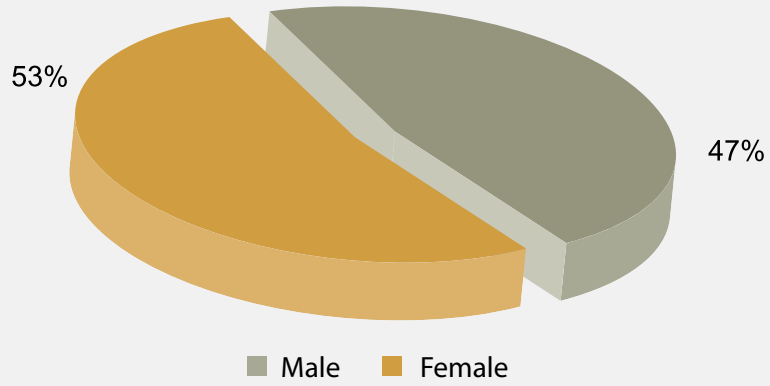


Figure 46 above show that female students dominated enrolments at Diploma level in Veterinary Technology with 53% and male students constituted 47%. African females accounted for 55% of the female enrolments in this CESM at Diploma level followed by White females with 45%. No Coloured and Asian females enrolled in this CESM at Diploma level during the 2008 academic year.

Figure 47: Racial breakdown of BTech in Veterinary Technology enrolments

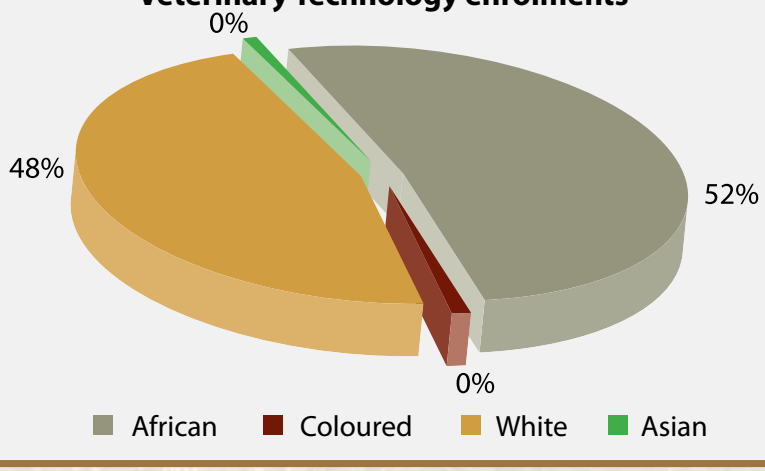


Figure 47 above indicates that African students constituted 52% of BTech Veterinary Technology enrolments followed by White students with 48%. No Asian or Coloured students enrolled at BTech level in this CESM during the 2008 academic year.

Figure 48: Gender breakdown of BTech in Veterinary Technology enrolments

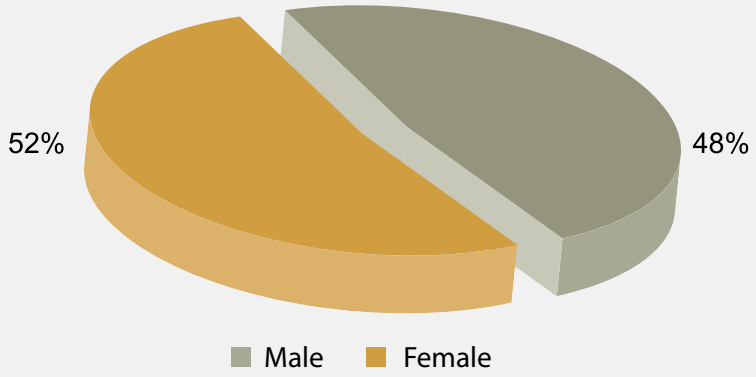


Figure 48 above depicts that female students dominated the BTech in Veterinary Technology enrolments with 52% and male students constituted 48%. White female students constituted 75% of the overall female enrolments and African female students constituted 25%.

Figure 49: Gender breakdown of MTech in Veterinary Technology enrolments

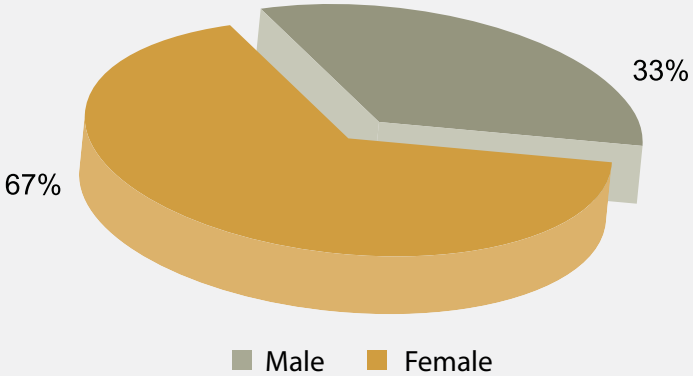


Figure 49 above indicates that female students constituted 67% of the MTech students in this CESM and male students constituted 33%. Only African students enrolled for MTech Veterinary Technology during the 2008 academic year.

3.3.2.11 Agricultural Biotechnology Enrolments at Universities of Technology in 2008

Agricultural Biotechnology programmes are offered by DUT only. Two hundred and eighteen (218) students enrolled in this CESM during the 2008 academic year, indicating a drop from 222 students registered during the 2007 academic year.

Table 30 below presents a demographic breakdown of Agricultural Biotechnology enrolments during the 2008 academic year by level of qualification.

Table 30: Demographic breakdown of Agricultural Biotechnology enrolments by level of qualification														
LEVEL	**African**			**Coloured**			**White**			**Asian**			**Total**	**%**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**		
Diploma	18	45	**63**	0	0	**0**	0	1	**1**	22	58	**80**	**144**	**66**
BTech	5	14	**19**	1	1	**2**	2	1	**3**	3	17	**20**	**44**	**20**
MTech	0	5	**5**	1	0	**1**	2	0	**2**	1	10	**11**	**19**	**9**
DTech	**1**	**1**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**5**	**9**	**11**	**5**
TOTAL	**24**	**65**	**89**	**2**	**1**	**3**	**4**	**2**	**6**	**30**	**90**	**120**	**218**	**100**

Table 30 above illustrates that Diploma enrolments in Agricultural Biotechnology constituted 66% followed by BTech with 20%, MTech and DTech with 9% and 5% respectively.

Figure 50: Racial breakdown of Diploma in Agricultural Biotechnology enrolments

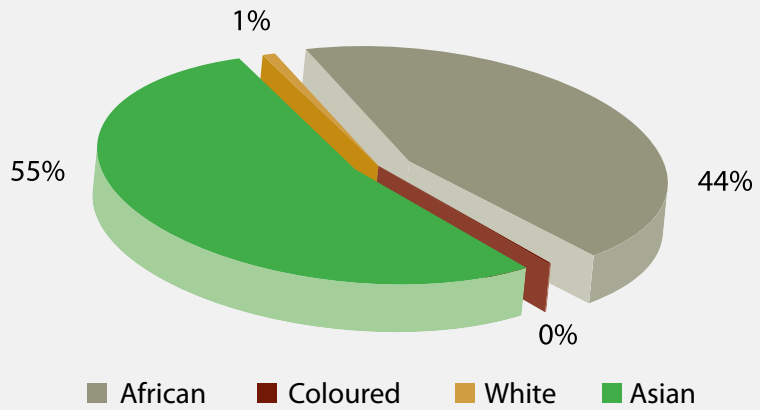


Figure 50 above indicates that Asian students constituted 55% of Diploma Agricultural Biotechnology students followed by African students with 44% and White students with 1%.

Figure 51: Gender breakdown of Diploma in Agricultural Biotechnology enrolments

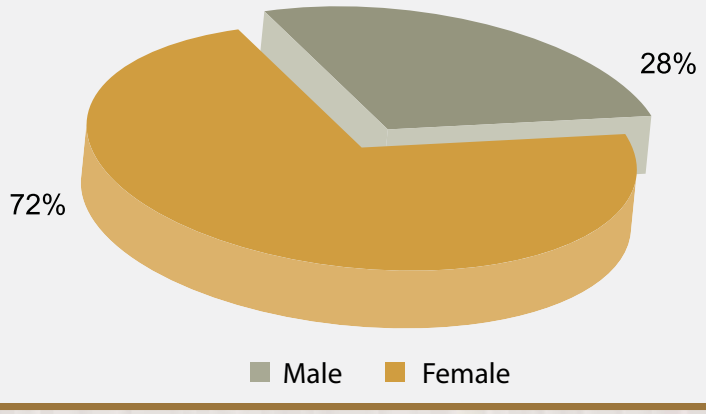


Figure 51 above indicates that female students dominated the Diploma Agricultural Biotechnology enrolments during the 2008 academic year with 72% and male students constituted 28%. Asian females dominated the female Diploma enrolments in this CESM with 56% followed by African females with 43%

and White female students with 1%. No Coloured female students registered for Diploma in this CESM during the 2008 academic year.

Figure 52: Racial breakdown of BTech in Agricultural Biotechnology enrolments

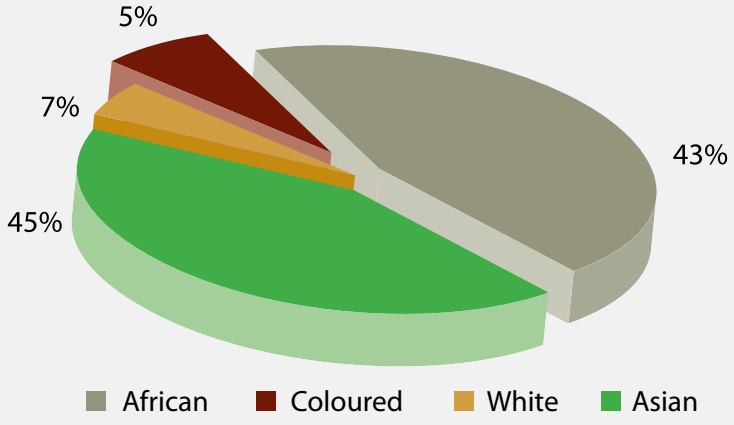


Figure 52 above indicates that Asians comprised 45% of the total BTech Agricultural Biotechnology enrolments followed by Africans with 43%. White students and Coloured students accounted for 7% and 5% respectively.

Figure 53: Gender breakdown of BTech in Agricultural Biotechnology enrolments

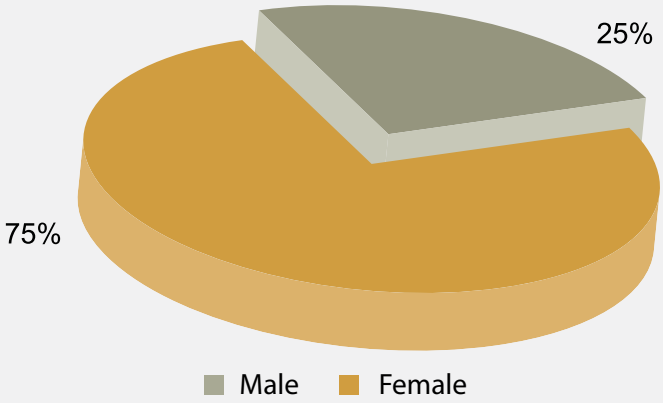


Figure 53 above indicates that female students dominated the BTech Agricultural Biotechnology enrolments during the 2008 academic year with 75%, whilst male students comprised 25%. Asian females dominated female BTech enrolments in this CESM with 52% followed by Africans with 42% and White and Coloured females with 3% each.

Figure 54: Racial breakdown of MTech in Agricultural Biotechnology enrolments

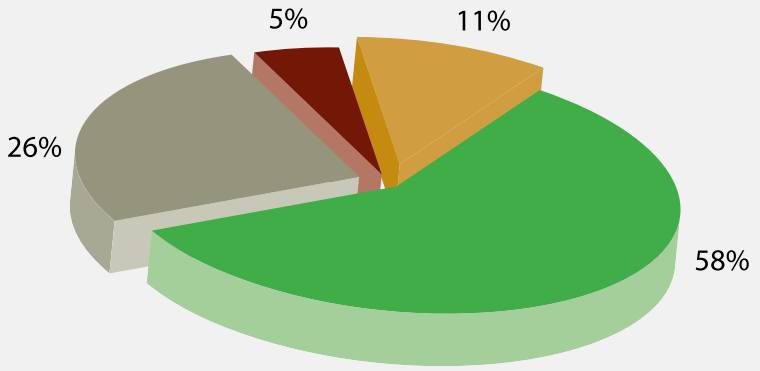


Figure 54 above indicates that Asians comprised 58% of the total MTech Agricultural Biotechnology enrolments followed by Africans with 26%. Coloured students and White students accounted for 11% and 5% of MTech enrolments in this CESM respectively.

Figure 55: Gender breakdown of MTech in Agricultural Biotechnology enrolments

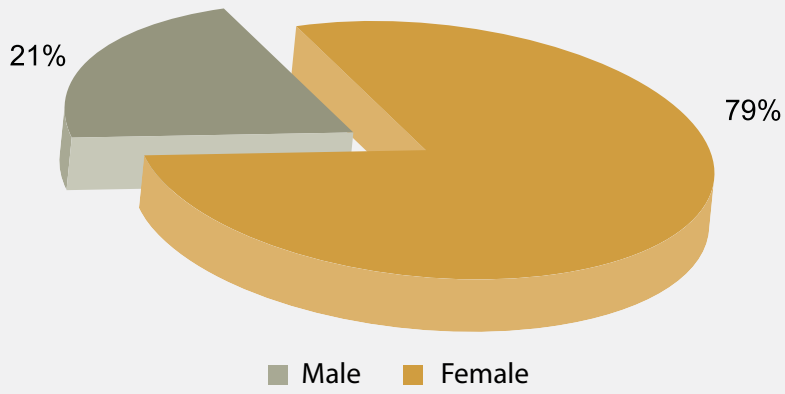


Figure 55 above indicates that female students dominated the MTech Agricultural Biotechnology enrolments during the 2008 academic year with 79% and male students constituted 21%.

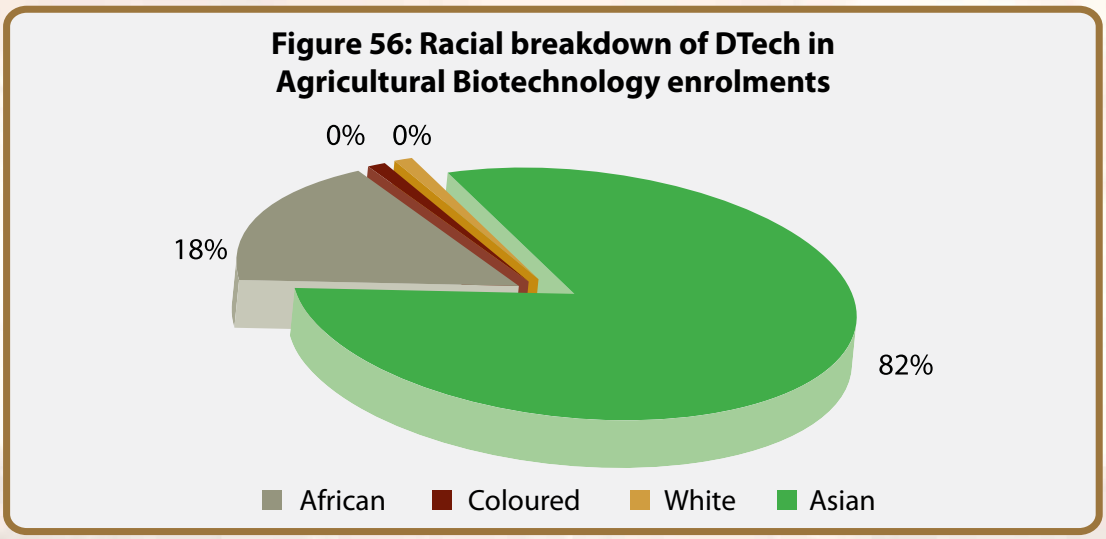


Figure 56 above indicates that Asians comprised 82% of the total DTech Agricultural Biotechnology enrolments followed by Africans with 18%. No Coloured or White students enrolled in this CESM at DTech level in the 2008 academic year.

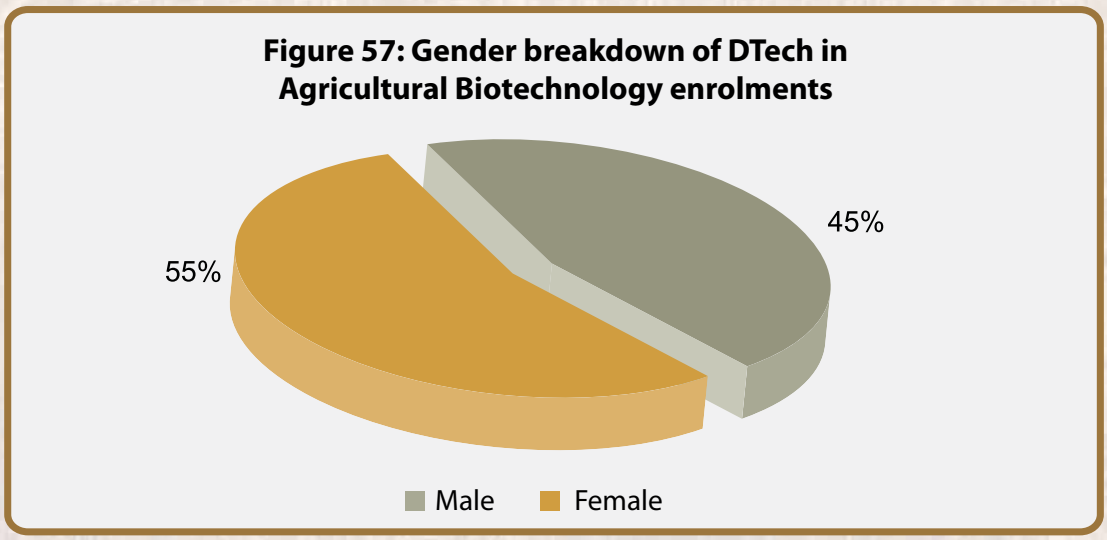


Figure 57 above indicates that female students dominated the DTech Agricultural Biotechnology enrolments during the 2008 academic year with 55% and male students constituted 45%.

3.3.2.12 Food Science and Technology Enrolments at Universities of Technology in 2008

Four hundred and sixty five (465) students enrolled in this CESM during the 2008 academic year, an increase from 273 students registered in 2007. These data were received from DUT and TUT.

Table 31 below presents a demographic breakdown of Food Science and Technology enrolments during the 2008 academic year by level of qualification.

Table 31: Demographic breakdown of Food Science and Technology enrolments by level of qualification														
LEVEL	**African**			**Coloured**			**White**			**Asian**			**Total**	**%**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**		
Certificate	11	24	**35**	2	10	**12**	2	4	**6**	2	0	**2**	**55**	**12**
Diploma	31	168	**199**	16	21	**37**	2	15	**17**	23	68	**91**	**344**	**73**
BTech	3	16	**19**	2	6	**8**	2	8	**10**	0	17	**17**	**54**	**12**
MTech	**0**	**7**	**7**	**0**	**0**	**0**	**0**	**3**	**3**	**0**	**2**	**2**	**12**	**3**
TOTAL	**45**	**215**	**260**	**20**	**37**	**57**	**6**	**30**	**36**	**25**	**87**	**112**	**465**	**100**

Table 31 above illustrates that Diploma enrolments in Food Science and Technology constituted 73% followed by Certificate and BTech with 12% each and MTech with 3%.

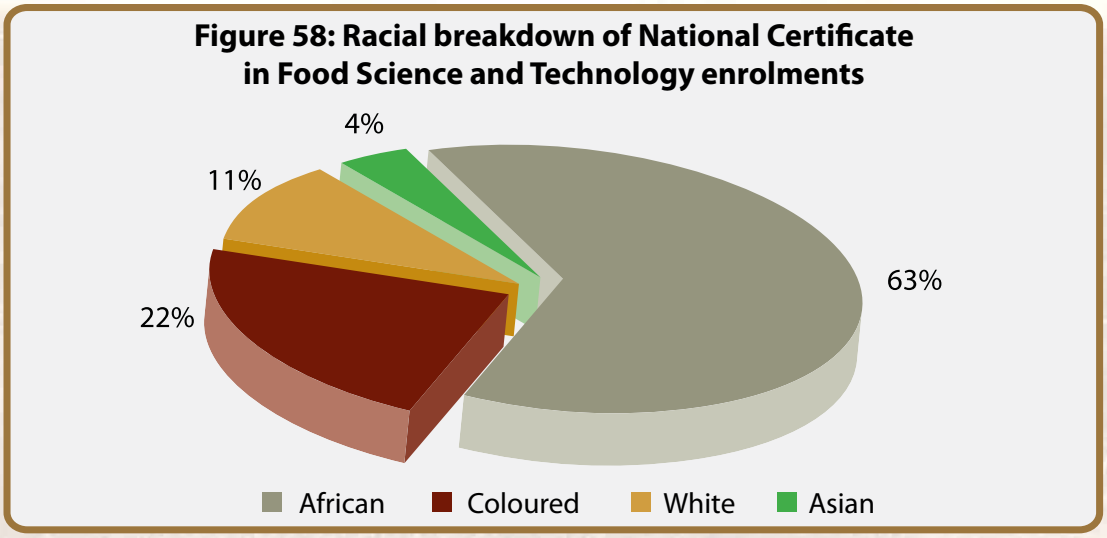


Figure 58 above indicates that Africans comprised 63% of National Certificate in Food Science and Technology enrolments followed by Coloureds with 22% whilst White and Asian students contribute 11% and 4% respectively.

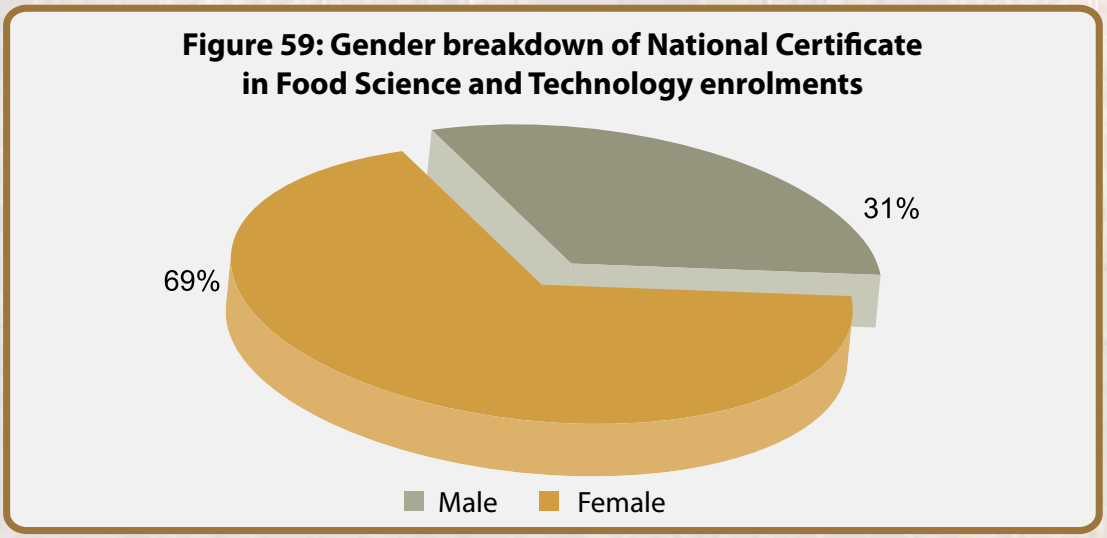


Figure 59 above indicates that female students dominated the National Certificate Food Science and Technology enrolments during the 2008 academic year with 69% whilst male students comprised 31%.

African females dominated the female National Certificate enrolments in this CESM with 63% followed by Coloured with 26% and White females with 11%.

Figure 60: Racial breakdown of Diploma in Food Science and Technology enrolments

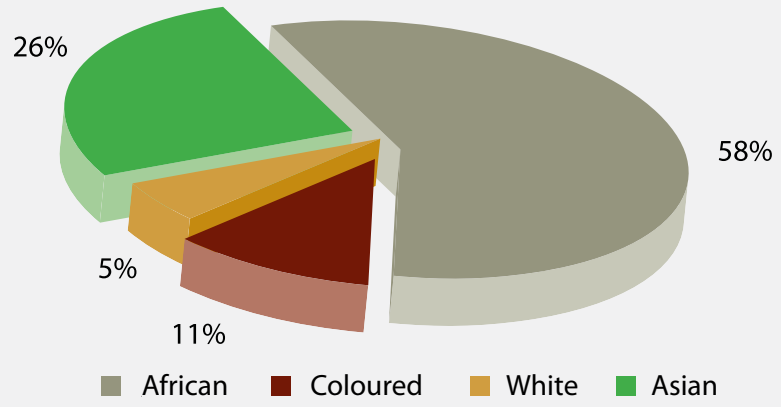


Figure 60 above indicates that Africans comprised 58% of the Diploma in Food Science and Technology enrolments followed by Asian with 26% whilst Coloured and White students contributed 11% and 5% respectively.

Figure 61: Gender breakdown of Diploma in Food Science and Technology enrolments

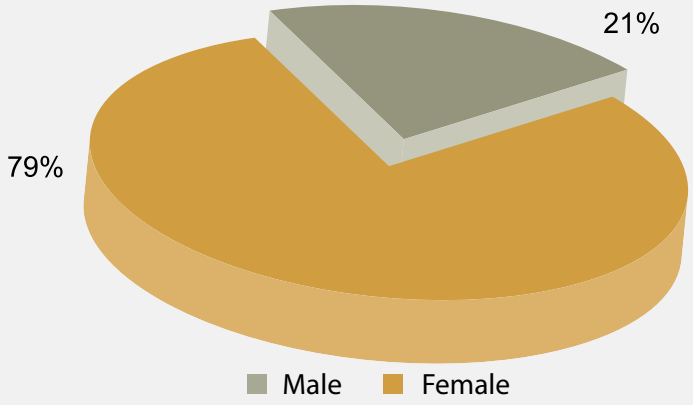


Figure 61 above indicates that female students dominated the Diploma in Food Science and Technology enrolments during the 2008 academic year with 79% whilst male students comprised 21%. African females dominated the female Diploma enrolments in this CESM with 61% followed by Asian females with 25 %, Coloured and White females with 8% and 6% respectively.

Figure 62: Racial breakdown of BTech in Food Science and Technology enrolments

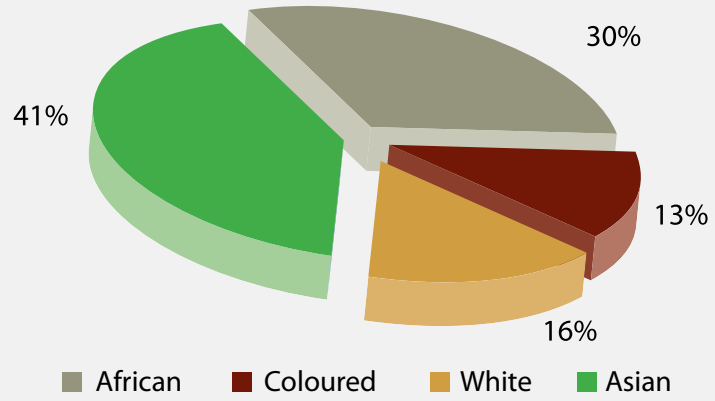


Figure 62 above indicates that Asians comprised 41% of the BTech Food Science and Technology enrolments followed by Africans with 30% whilst White and Coloured students contributed 16% and 13% respectively.

Figure 63: Gender breakdown of BTech in Food Science and Technology enrolments

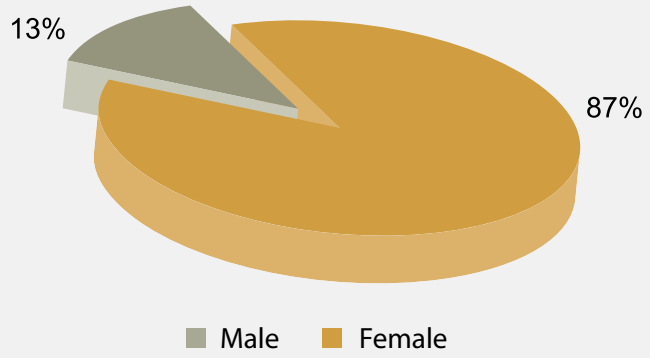


Figure 63 above indicates that female students dominated the BTech in Food Science and Technology enrolments during the 2008 academic year with 87% whilst male students comprised 13%. Asian females constituted 36% of the female Diploma enrolments in this CESM followed by African females with 34%, White and Coloured females with 17% and 13% respectively.

Figure 64: Racial breakdown of MTech in Food Science and Technology enrolments

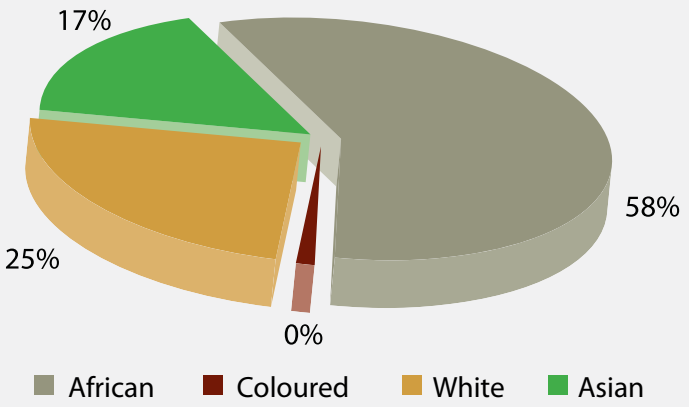


Figure 64 above indicates that Africans accounted for 58% of the MTech Food Science and Technology enrolments followed by Whites with 25% and Asians with 17%. No Coloured students enrolled in this CESM at MTech level.

3.3.2.13 Land Reclamation Enrolments at Universities of Technology in 2008

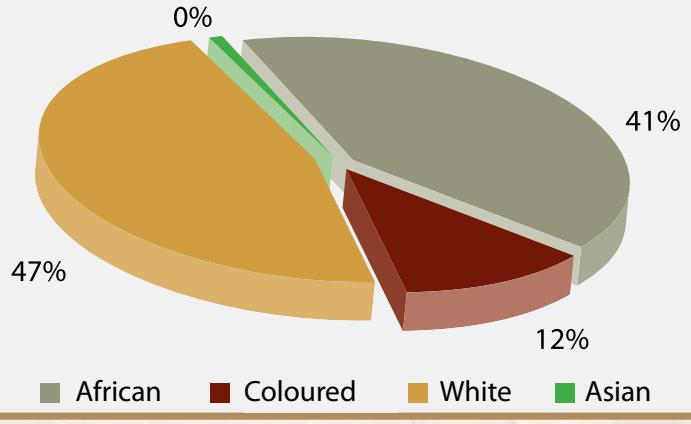
Land Reclamation CESM includes Diploma, BTech, MTech and DTech, Landscape Technology. Land Reclamation programmes are offered by TUT and DUT only. The enrolments in this CESM have dropped from 129 in 2007 to 56 during the 2008 academic year.

Table 32: Demographic breakdown of Land Reclamation enrolments by level of qualification

LEVEL	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Certificate	7	7	**14**	3	1	**4**	13	3	**16**	0	0	**0**	**34**	**62**
Diploma	1	2	**3**	2	0	**2**	10	6	**16**	0	0	**0**	**21**	**38**
TOTAL	**8**	**9**	**17**	**5**	**1**	**6**	**23**	**9**	**32**	**0**	**0**	**0**	**55**	**100**

Of the 55 students enrolled in this CESM, 34 registered at National Certificate level and 21 registered at Diploma level. This CESM is dominated by White students with 32 followed by Africans with 17 and Coloureds with 6 students.

Figure 65: Racial breakdown of National Certificate in Land Reclamation enrolments



Racial breakdown in Figure 65 above shows that Whites accounted for 47% of the National Certificate Land Reclamation enrolments followed by Africans with 41% and Coloureds accounted for 12%. No Asian students enrolled in this CESM during the 2008 academic year.

Figure 66: Gender breakdown of National Certificate enrolments

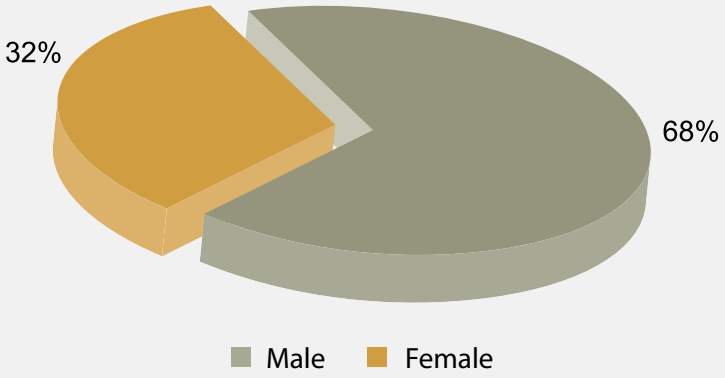


Figure 66 above depicts that males constituted 68% of the National Certificates in Land Reclamation, whilst females accounted for 32%. White males dominated the male enrolments in this CESM at National Certificate level with 57% followed by African males with 30% and Coloured with 13%.

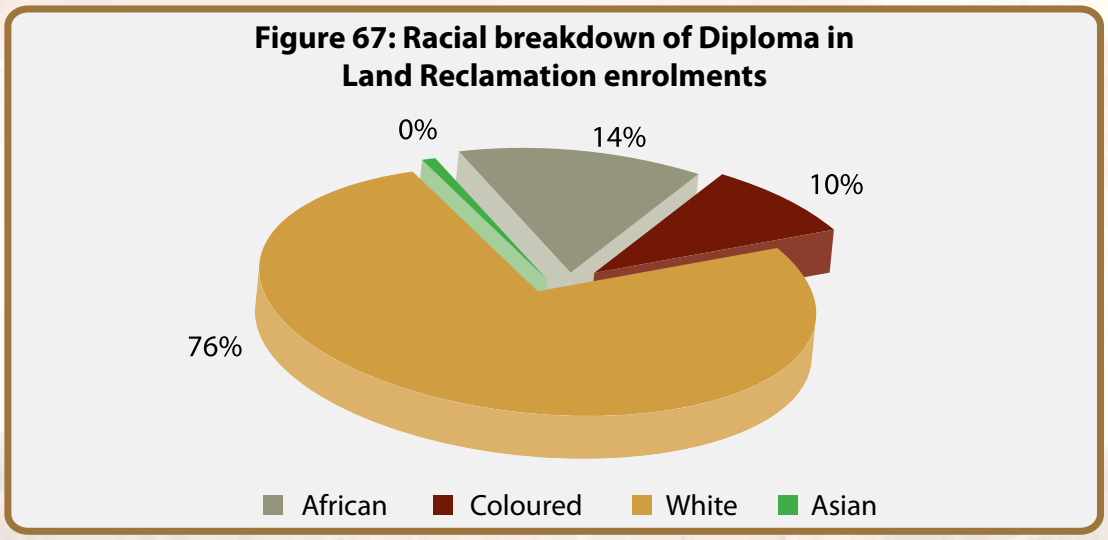


Figure 67 above shows that Whites accounted for 76 % of the Diploma Land Reclamation enrolments followed by Africans with 14% and Coloureds with 10%. No Asian students were enrolled at Diploma level in this CESM during the 2008 academic year.

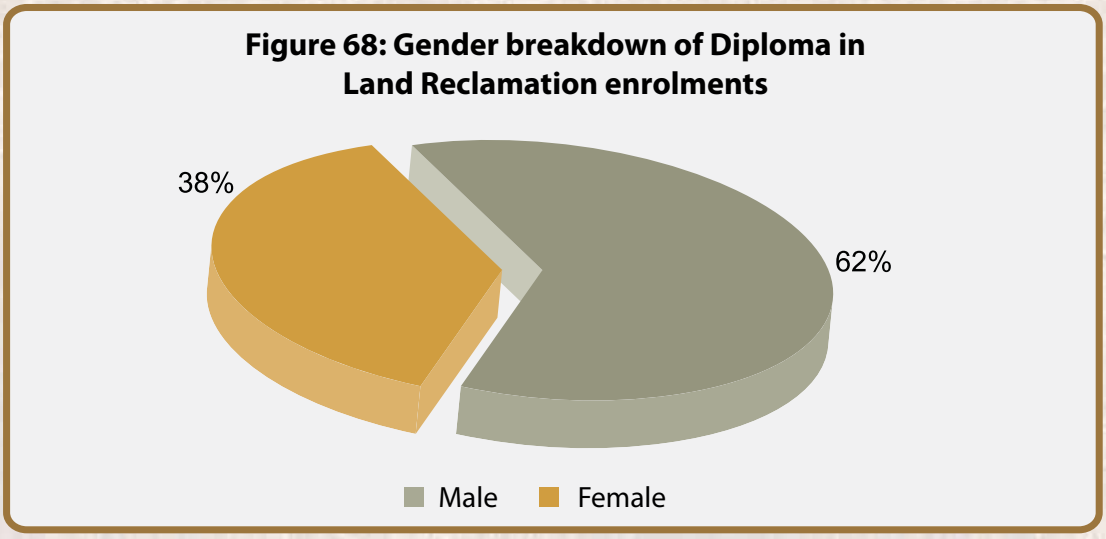


Figure 68 above depicts that males constituted 62% of the Diploma in Land Reclamation, whilst females accounted for 38%. White males dominated the male enrolments in this CESM at Diploma level with 77% followed by Coloured males with 15% and African males with 8%.

3.3.2.14 Rural Development Enrolments at Universities of Technology in 2008

Rural Development CESM includes Diploma, BTech, MTech and DTech, Agricultural Rural Development. These CESM programmes are offered by TUT only. Eight (8) African students registered in this CESM during the 2008 academic year.

Two (2) students enrolled at Diploma level: 1 was male and 1 was female. At BTech level 5 males and 1 female were enrolled. The other racial groups are not represented in this CESM.

Table 33: Demographic breakdown of Rural Development enrolments by level of qualification														
LEVEL	**African**			**Coloured**			**White**			**Asian**			**Total**	**%**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**		
Diploma	1	1	**2**	0	0	**0**	0	0	**0**	0	0	**0**	**2**	**25**
BTech	5	1	**6**	0	0	**0**	0	0	**0**	0	0	**0**	**6**	**75**
TOTAL	**6**	**2**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	**100**

3.4 Graduate outputs of Universities of Technology during the 2008 academic year

Table 34 and Figure 69 below present numbers of graduates at the Universities of Technology during the 2008 academic year.

Table 34: Graduate figures at Universities of Technology in 2008		
Name of University of Technology	**Number of AET Graduates**	**%**
CPUT	104	13
CUT	52	6
DUT	188	23
MANTEC	189	23
TUT	283	35
Total	**816**	**100**

Figure 69: Graduates at Universities of Technology in 2008

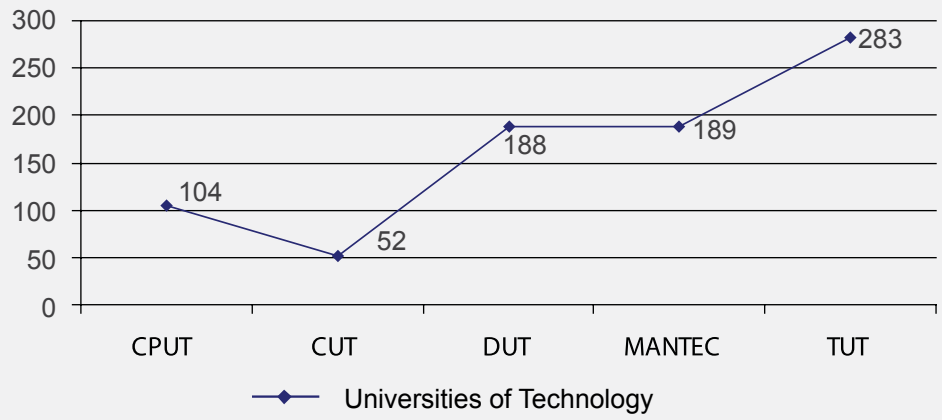


Figure 69 above shows that TUT is the only University of Technology which has graduates amounting to more than 200.

Table 35 below presents a demographic breakdown of graduates in AET programmes during the 2008 academic year from the Universities of Technology.

Table 35: Breakdown of graduates by gender and race per University of Technology during 2008													
Name of the University	**African**			**Coloured**			**White**			**Asian**			**Total**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
CPUT	4	4	**8**	8	2	**10**	73	13	**86**	0	0	**0**	**104**
CUT	13	6	**19**	0	0	**0**	31	2	**33**	0	0	**0**	**52**
DUT	28	68	**96**	1	2	**3**	4	8	**12**	10	67	**77**	**188**
MANTEC	104	84	**188**	0	0	**0**	1	0	**1**	0	0	**0**	**189**
TUT	124	86	**210**	1	0	**1**	46	25	**71**	1	0	**1**	**283**
TOTAL	**273**	**248**	**521**	**10**	**4**	**14**	**155**	**48**	**203**	**11**	**67**	**78**	**816**

Figure 70: Racial breakdown of AET graduates at Universities of Technology

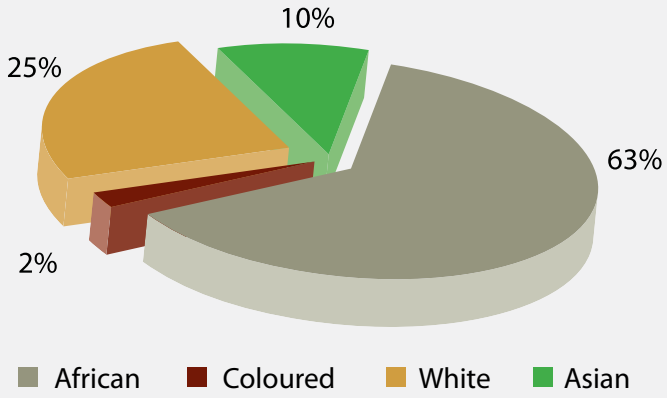


Figure 70 above indicates that African graduates constituted 63% of all the AET graduates at Universities of Technology during the 2008 academic year followed by White graduates with 25% and Asian graduates with 10%. Coloured graduates comprised 2% of the total number of graduates in 2008 from Universities of Technology.

Figure 71: Gender breakdown of AET graduates at Universities of Technology

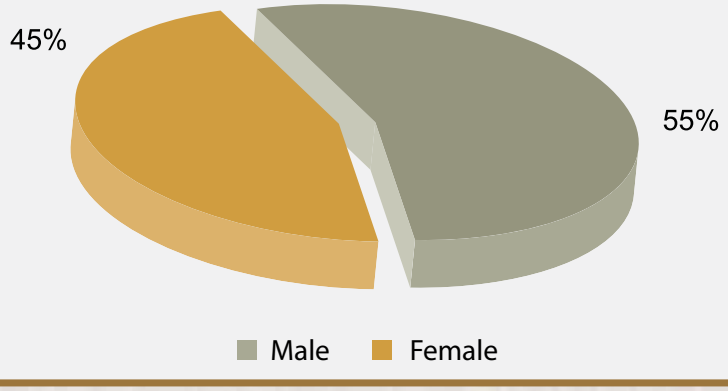
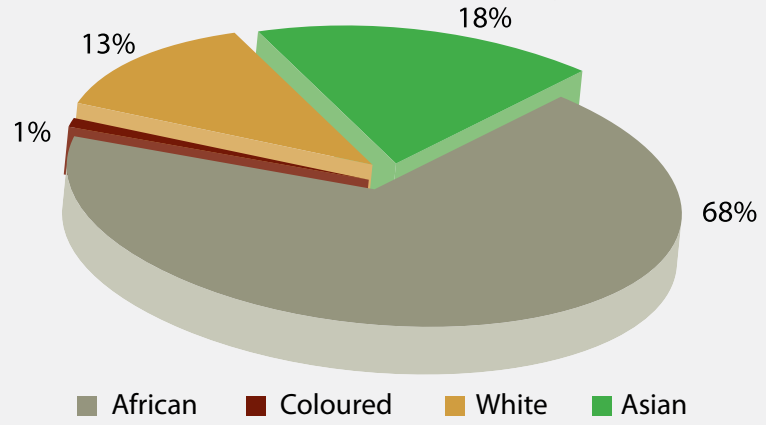


Figure 71 above indicates that male graduates constituted 55% of the overall AET graduates at Universities of Technology during 2008 and female graduates accounted for 45%.

Figure 72: Racial breakdown of AET female graduates at Universities of Technology



As depicted in Figure 72 above, African female graduates accounted for 68% of the total female graduates during the 2008 academic year. White female and Asian female graduates constituted 13% and 18% respectively. Coloured female graduates accounted for 1% of the total number of female graduates at Universities of Technology during the 2008 academic year

Figure 73: Racial breakdown of AET male graduates at Universities of Technology

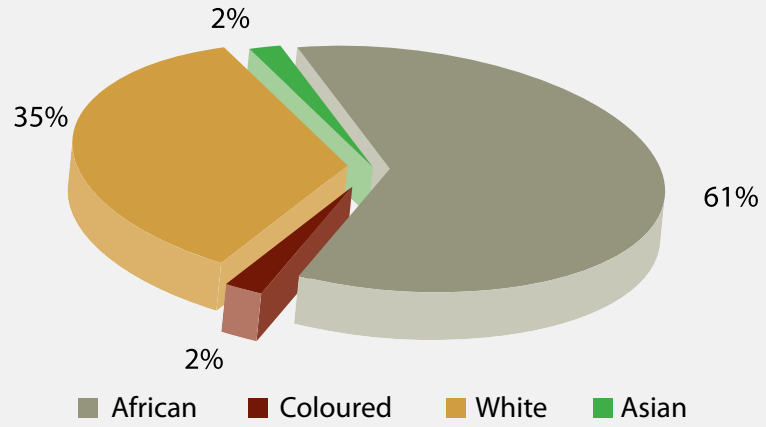


Figure 73 above shows that African and White graduates constituted 61% and 35% of the total male graduates respectively. Coloureds and Asians each comprised 2% of the total male graduates at Universities of Technology.

3.4.1 AET Graduates at Universities of Technology by Level of Qualification and CESM in 2008

Table 36 below indicates that Animal Science, Plant Science and Renewable Natural Resources have high graduate figures with 22%, 17% and 13% respectively. Other CESM categories accounted for less than 12% of the overall graduates each.

Table 36: Agricultural graduates at Universities of Technology by CESM & levels of qualification in 2008

CESM	N.H. CER.	DIPLOMA	BTECH	MTECH	DTECH	Total	%
Agricultural Management	0	48	33	0	0	**81**	**10**
Animal Science	1	160	21	1	0	**183**	**22**
Horticulture	0	16	0	0	0	**16**	**2**
Plant Science	0	102	35	2	0	**139**	**17**
Renewable Natural Resources	0	62	38	3	0	**103**	**13**
Wildlife Management	0	46	0	0	0	**46**	**6**
Agricultural Science-General	0	28	8	3	0	**39**	**5**
Agricultural Extension	0	34	0	0	0	**34**	**4**
Veterinary Technology	0	11	6	0	0	**17**	**2**
Biotechnology	0	52	21	4	0	**77**	**9**
Food Science	0	54	15	0	0	**69**	**8**
Rural Development	0	11	0	0	0	**11**	**1**
Land Reclamation	1	0	0	0	0	**1**	**0**
TOTAL	**2**	**624**	**177**	**13**	**0**	**816**	
Percentage	**0**	**76**	**22**	**2**	**0**		**100**

Table 36 above indicates that Diploma dominated the graduates at Universities of Technology during the 2008 academic year with 76%, followed by BTech with 22% and MTech with 2%. National Higher Certificate graduates were almost non existent with less than 1 percent.

Table 37: Demographic breakdown of National Higher Certificate graduates by CESM at Universities of Technology during 2008

CESM Category (Certificates)	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Animal Science	0	0	**0**	0	0	**0**	0	1	**1**	0	0	**0**	**1**
Land Reclamation	0	0	**0**	0	0	**0**	1	0	**1**	0	0	**0**	**1**
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**2**	**0**	**0**	**0**	**2**

The National Higher Certificate programmes are rated at NQF level 5. The data in Table 37 above depicts that only 2 Certificates were awarded during the 2008 academic year.

Table 38: Demographic breakdown of Diploma graduates by CESM at Universities of Technology in 2008														
CESM Category (Diploma)	**African**			**Coloured**			**White**			**Asian**			**Total**	**%**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**		
Agricultural Management	3	5	**8**	0	0	**0**	39	1	**40**	0	0	**0**	**48**	**8**
Animal Science	84	57	**141**	1	0	**1**	10	7	**17**	1	0	**1**	**160**	**26**
Horticulture	8	4	**12**	0	0	**0**	2	0	**2**	1	1	**2**	**16**	**3**
Plant Science	59	41	**100**	0	0	**0**	2	0	**2**	0	0	**0**	**102**	**16**
Renewable Natural Resources	29	18	**47**	0	0	**0**	11	4	**15**	0	0	**0**	**62**	**10**
Wildlife Management	9	14	**23**	0	0	**0**	19	2	**21**	1	1	**2**	**46**	**7**
Agricultural Science-General	1	0	**1**	1	1	**2**	19	6	**25**	0	0	**0**	**28**	**4**
Agricultural Extension	16	18	**34**	0	0	**0**	0	0	**0**	0	0	**0**	**34**	**5**
Veterinary Technology	5	3	**8**	0	0	**0**	0	3	**3**	0	0	**0**	**11**	**2**
Agricultural Biotechnology	4	17	**21**	0	0	**0**	0	1	**1**	3	27	**30**	**52**	**8**
Food Science	2	23	**25**	0	1	**1**	0	3	**3**	4	21	**25**	**54**	**9**
Rural Development	6	5	**11**	0	0	**0**	0	0	**0**	0	0	**0**	**11**	**2**
TOTAL	**226**	**205**	**431**	**2**	**2**	**4**	**102**	**27**	**129**	**10**	**50**	**60**	**624**	**100**

Table 38 above indicates that a total number of 624 graduates were awarded Diplomas in 2008. Animal Science and Plant Science graduates accounted for 26% and 16% of the overall diploma graduates respectively. All other CESMs comprise less than 10% of the total Diploma graduates.

African graduates dominated Diploma graduates with 68% followed by Whites with 21% and Asians with 10%. Coloureds constituted just 1% of the total number of Diploma graduates during the 2008 academic year.

Table 39: Demographic breakdown of BTech graduates by CESM at Universities of Technology in 2008														
CESM CATEGORY (BTECH)	**African**			**Coloured**			**White**			**Asian**			**Total**	**%**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**		
Agricultural Management	10	2	**12**	0	0	**0**	19	2	**21**	0	0	**0**	**33**	**19**
Animal Science	8	9	**17**	2	0	**2**	1	1	**2**	0	0	**0**	**21**	**12**
Plant Science	24	7	**31**	1	0	**1**	3	0	**3**	0	0	**0**	**35**	**20**
Renewable Natural Resources	21	8	**29**	1	0	**1**	6	2	**8**	0	0	**0**	**38**	**21**
Agricultural Science-General	0	2	**2**	3	0	**3**	3	0	**3**	0	0	**0**	**8**	**5**
Agricultural Biotechnology	3	6	**9**	0	0	**0**	2	0	**2**	1	9	**10**	**21**	**12**
Food Science	1	3	**4**	0	0	**0**	0	4	**4**	0	7	**7**	**15**	**8**
Veterinary Technology	1	2	**3**	0	0	**0**	1	2	**3**	0	0	**0**	**6**	**3**
TOTAL	**68**	**39**	**107**	**7**	**0**	**7**	**35**	**11**	**46**	**1**	**16**	**17**	**177**	**100**

Table 39 above indicates that there were 177 graduates at BTech level from Universities of Technology in 2008. This represents a 25% drop from the 237 graduates in 2007. Renewable Natural Resources, Plant Science and Agricultural Management accounted for 21%, 20% and 19% of the total number of graduates in BTech at Universities of Technology during the 2008 academic year respectively.

Africans were the largest recipients of BTech Degree during the 2008 academic year with 60% followed by Whites with 26%. Coloured and Asian graduates accounted for 10% and 4% of the overall number of BTech graduates produced at Universities of Technology during the 2008 academic year respectively.

Table 40: Demographic breakdown of Postgraduates graduates by CESM at Universities of technology in 2008

CESM Category (Postgraduate)	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
MTech (Animal Science)	0	0	**0**	0	0	**0**	1	0	**1**	0	0	**0**	**1**	**8**
MTech (Agricultural Science-General)	1	0	**1**	0	0	**0**	2	0	**2**	0	0	**0**	**3**	**23**
MTech (Plant Science)	1	1	**2**	0	0	**0**	0	0	**0**	0	0	**0**	**2**	**15**
(Biotechnology)	0	1	**1**	1	0	**1**	0	0	**0**	0	2	**2**	**4**	**31**
MTech (Renewable Resources)	1	0	**1**	0	0	**0**	1	1	**2**	0	0	**0**	**3**	**23**
TOTAL	**3**	**2**	**5**	**1**	**0**	**1**	**4**	**1**	**5**	**0**	**2**	**2**	**13**	**100**

As depicted in Table 40 above, 13 graduates received MTech Degree during the 2008 academic year. African and Whites constituted 38% each of the total MTech Degree at Universities of Technology, followed by Asians with 15% and Coloureds with 8%.

3.4.1.1 Agricultural Management Graduates at Universities of Technology in 2008

Eighty one (81) graduates received Agricultural Management qualifications during the 2008 academic year, 44% less compared with the 2007 academic year figure.

Table 41 below presents a demographic breakdown of Agricultural Management graduates by level of qualification during the 2008 academic year.

Table 41: Demographic breakdown of Agricultural Management graduates by level of qualification in 2008

LEVEL	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	3	5	**8**	0	0	**0**	39	1	**40**	0	0	**0**	**48**	**59**
BTech	10	2	**12**	0	0	**0**	19	2	**21**	0	0	**0**	**33**	**41**
TOTAL	**13**	**7**	**20**	**0**	**0**	**0**	**58**	**3**	**61**	**0**	**0**	**0**	**81**	**100**

Diploma graduates constituted 59% of the overall Agricultural Management graduates whilst BTech accounted for 41%.

Figure 74: Racial breakdown of Diploma graduates in Agricultural Management

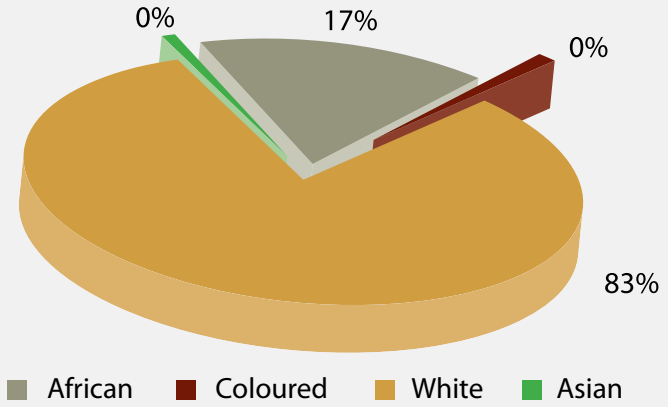


Figure 74 above indicates that Whites dominated the Diploma graduates in Agricultural Management with 83% followed by Africans with 17%. There were no Coloured or Asian graduates produced in Agricultural Management during the 2008 academic year.

Figure 75: Gender breakdown of Diploma graduates in Agricultural Management

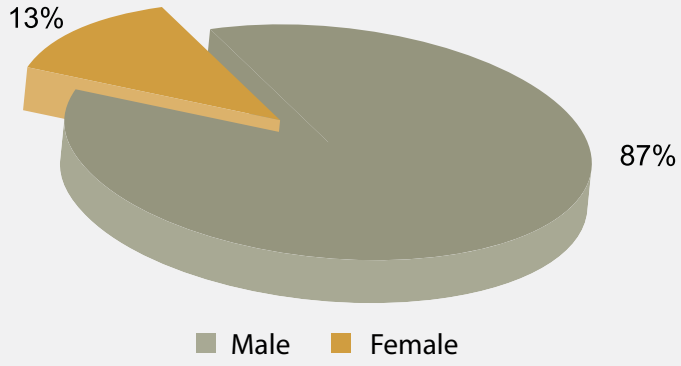


Figure 75 above indicates that male graduates constituted 87% of the Diploma graduates in Agricultural Management and female graduates accounted for 13%. White males constituted 93% of the male graduates followed by African males with 7%. African female graduates amounted to 5 whilst 1 White female qualified. Coloured and Asian females are not represented in this CESM at Diploma level.

Figure 76: Racial breakdown of BTech graduates in Agricultural Management

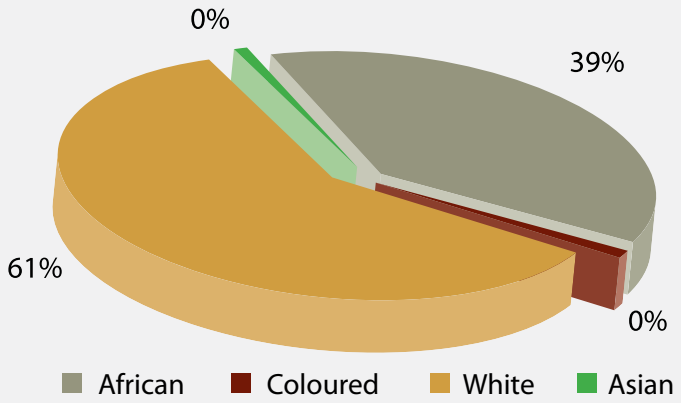


Figure 76 above indicates that Whites represented 61% of the BTech graduates in this CESM followed by Africans with 39%. There were no Coloured or Asian graduates in Agricultural Management during the 2008 academic year.

Figure 77: Gender breakdown of BTech graduates in Agricultural Management

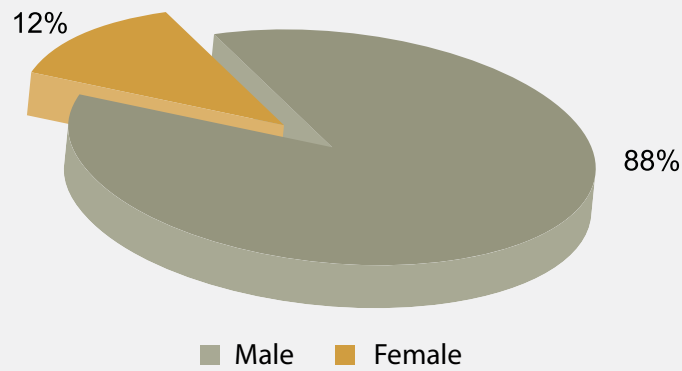


Figure 77 above indicates that male graduates constituted 88% of the BTech graduates in this CESM and female graduates accounted for 12%.

3.4.1.2 Animal Science Graduates at Universities of Technology in 2008

One hundred and eighty three (183) graduates received Animal Science qualifications during the 2008 academic year decreased by 12% compared with the 2007 academic year.

Table 42 below presents a demographic breakdown of Animal Science graduates during the 2008 academic year by level of qualification.

Table 42: Demographic breakdown of Animal Science graduates by level of qualification during 2008														
LEVEL	**African**			**Coloured**			**White**			**Asian**			**Total**	**%**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**		
N.H. Certificate.	0	0	**0**	0	0	**0**	0	1	**1**	0	0	**0**	**1**	**1**
Diploma	84	57	**141**	1	0	**1**	10	7	**17**	1	0	**1**	**160**	**87**
BTech	8	9	**17**	2	0	**2**	1	1	**2**	0	0	**0**	**21**	**11**
M Tech	0	0	**0**	0	0	**0**	1	0	**1**	0	0	**0**	**1**	**1**
TOTAL	**92**	**66**	**158**	**3**	**0**	**3**	**12**	**9**	**21**	**1**	**0**	**1**	**183**	**100**

Eighty seven percent (87%) of the total Animal Science graduates were Diploma graduates and 11% were BTech graduates. National Higher Certificates and MTech each constituted 1% of the overall Animal Science graduates.

As indicated in the Table 42 above, a total number of 160 graduates were produced in Diploma Animal Science level during the 2008 academic year.

Figure 78: Racial breakdown of Diploma graduates in Animal Science

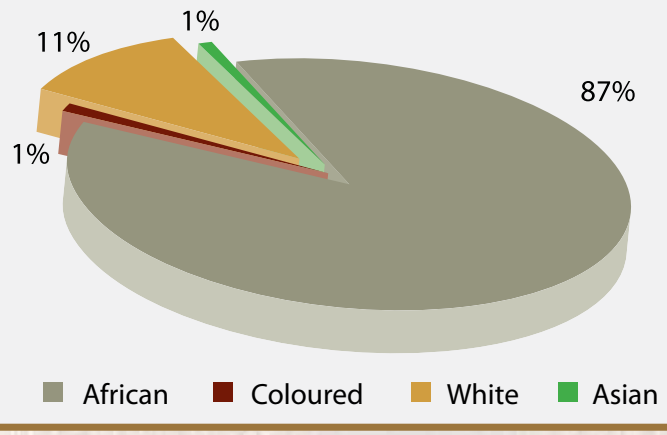


Figure 78 above shows that Africans constituted 87% of the total Diploma graduates in Animal Science followed by Whites with 11%. While Coloured and Asian graduates each constituted only 1% of the Diploma graduates in Animal Science during the 2008 academic year at Universities of Technology.

Figure 79: Gender breakdown of Diploma graduates in Animal Science

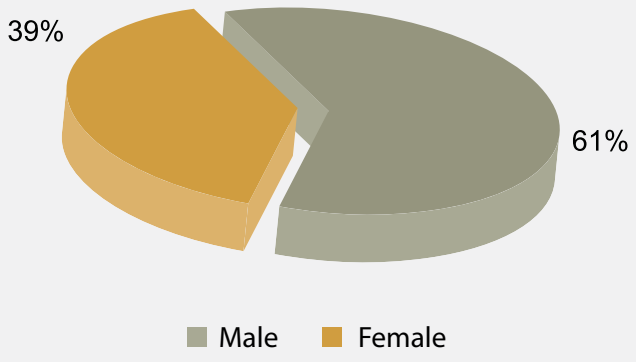


Figure 79 above shows that male graduates constituted 61% of the Diploma graduates in Animal Science and female graduates constituted 39%. Of the 96 males graduating in this CESM at Diploma level: 84 were Africans, 10 were Whites, 1 was Coloured and 1 was Asian. Fifty seven (57) African females and 7 White females qualified for the Diploma in Animal Science.

Figure 80: Racial breakdown of BTech graduates in Animal Science

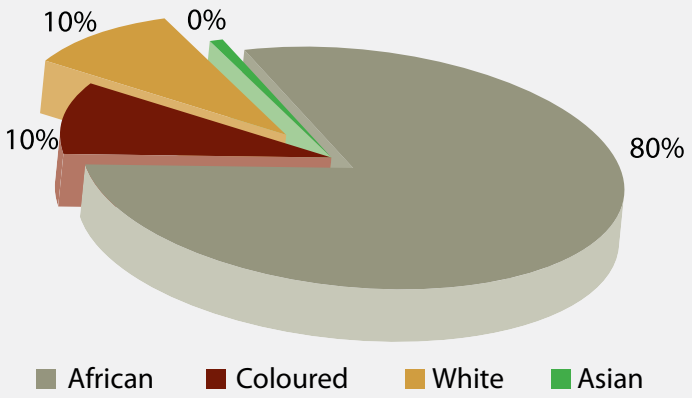


Figure 80 above depicts that African graduates dominated the BTech graduates in Animal Science with 80%, whilst Whites and Coloureds each constituted just 10%. No Asians graduated in this CESM at BTech level during the 2008 academic year at Universities of Technology.

Figure 81: Gender breakdown of BTech graduates in Animal Science

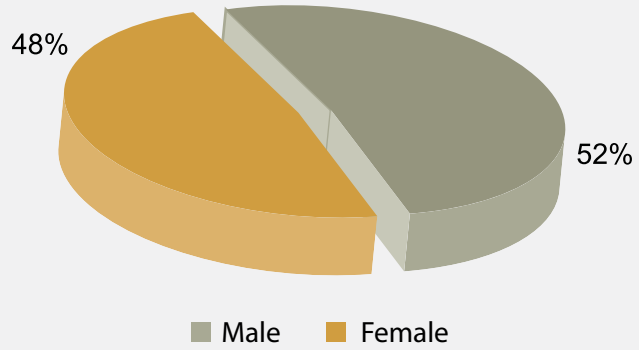


Figure 81 above shows that male graduates constituted 52% of the BTech graduates in Animal Science and female graduates constituted 48%. Of the 11 males graduating in this CESM at BTech level; 8 were Africans, 2 were Coloureds and 1 was White. Nine (9) African females and 1 White female qualified for the BTech Degree in Animal Science.

3.4.1.3 Horticulture Graduates at Universities of Technology in 2008

Sixteen (16) graduates received Horticulture qualifications at Universities of Technology during the 2008 academic year.

Table 43 below presents a demographic breakdown of Horticulture graduates during the 2008 academic year by level of qualification.

Table 43: Demographic breakdown of Horticulture graduates by level of qualification during 2008

LEVEL	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	8	4	**12**	0	0	**0**	2	0	**2**	1	1	**2**	**16**	**100**
TOTAL	**8**	**4**	**12**	**0**	**0**	**0**	**2**	**0**	**2**	**1**	**1**	**2**	**16**	**100**

Of the Diploma graduates were produced in this CESM during the 2008 academic year at Universities of Technology, 11 were male and 5 were female.

Figure 82: Racial breakdown of Diploma graduates in Horticulture

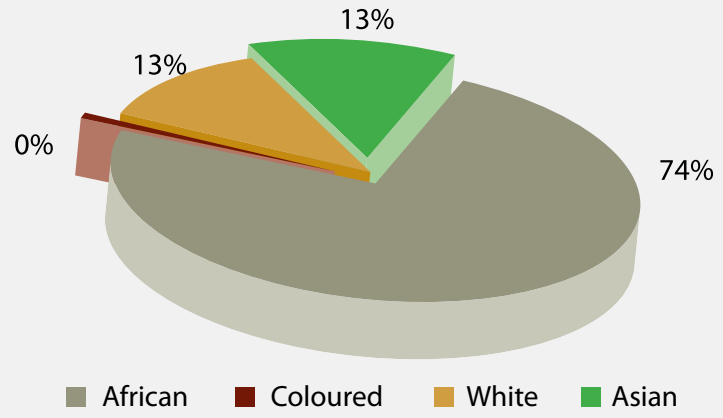
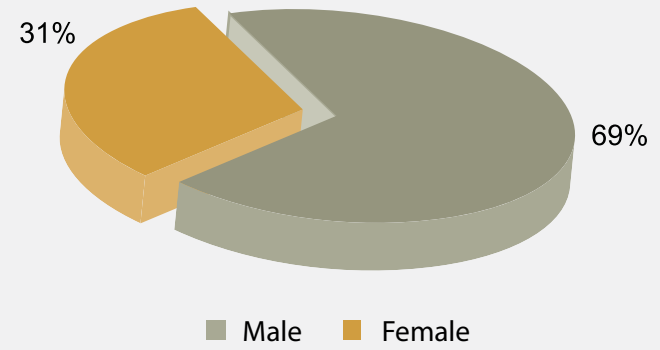


Figure 82 above depicts that African graduates dominated the Diploma graduates in Horticulture with 74% whilst Whites and Asians each constituted 13%. No Coloureds graduated in this CESM at Diploma level during the 2008 academic year.

Figure 83: Gender breakdown of Diploma graduates in Horticulture



As it appears in Figure 83 above, males dominated the Diploma graduates in Horticulture with 69% and females constituted 31%. African males represented 73% of the male graduates in this CESM at Diploma level, Whites constituted 18% and Asians constituted only 9%. Of the 5 females who graduated in this CESM at Diploma level in 2008:4 were African females and 1 was an Asian female.

3.4.1.4 Plant Science Graduates at Universities of Technology in 2008

A total number of 138 graduates were produced in this CESM at Universities of Technology during the 2008 academic year.

Table 44 below presents a demographic breakdown of Plant Science graduates during the 2008 academic year by level of qualification.

Table 44: Demographic breakdown of Plant Science graduates by level of qualification during 2008

LEVEL	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	59	41	**100**	0	0	**0**	2	0	**2**	0	0	**0**	**102**	**74**
BTech	24	7	**31**	1	0	**1**	3	0	**3**	0	0	**0**	**35**	**25**
M Tech	1	1	**2**	0	0	**0**	0	0	**0**	0	0	**0**	**2**	**1**
TOTAL	**84**	**49**	**133**	**1**	**0**	**1**	**5**	**0**	**5**	**0**	**0**	**0**	**139**	**100**

Seventy four percent (74%) of the total Plant Science graduates were Diploma graduates and 25% were BTech graduates. MTech constituted 1% of the overall Plant Science graduates.

As indicated in the Table 44 above the total number of 102 graduates was produced in Diploma Plant Science level during the 2008 academic year.

Figure 84: Racial breakdown of Diploma graduates in Plant Science

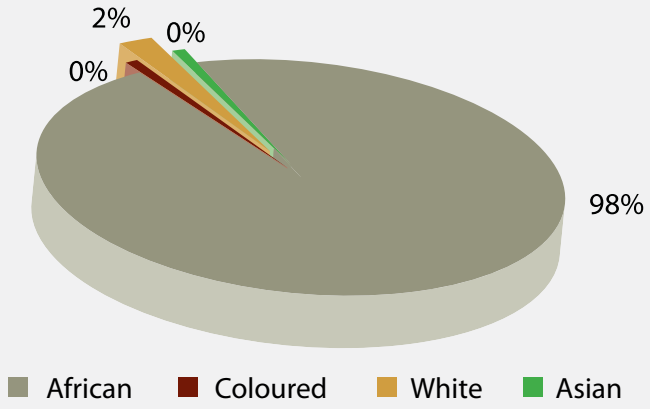


Figure 84 above illustrates that African graduates dominated the Diploma Plant Science with 98% followed by Whites with 2%. No Coloureds or Asians graduated in this CESM at Diploma level at Universities of Technology during the 2008 academic year.

Figure 85: Gender breakdown of Diploma graduates in Plant Science

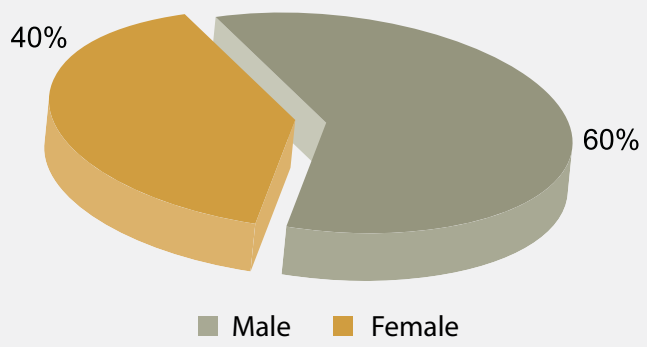


Figure 85 above indicates that males received more Diploma qualifications in this CESM 60% whilst females constituted 40%.

Figure 86: Racial breakdown of BTech graduates in Plant Science

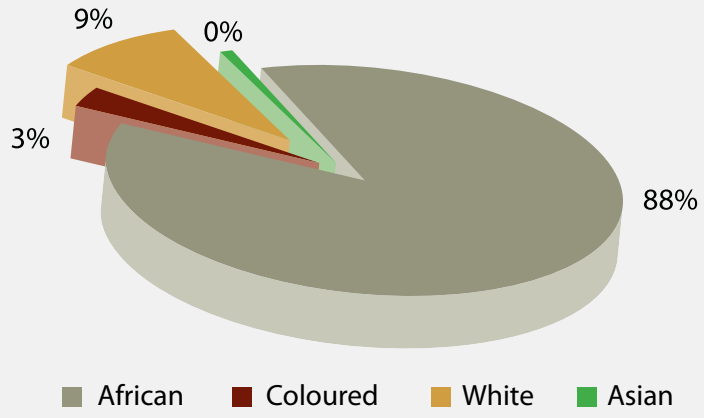


Figure 86 above indicates that Africans constituted 88% of the Bachelor of Technology Degree graduates in Plant Science followed by Whites with 9% and Coloureds with 3%. No Asians received BTech Degree in this CESM during the 2008 academic year at Universities of Technology.

Figure 87: Gender breakdown of BTech graduates in Plant Science

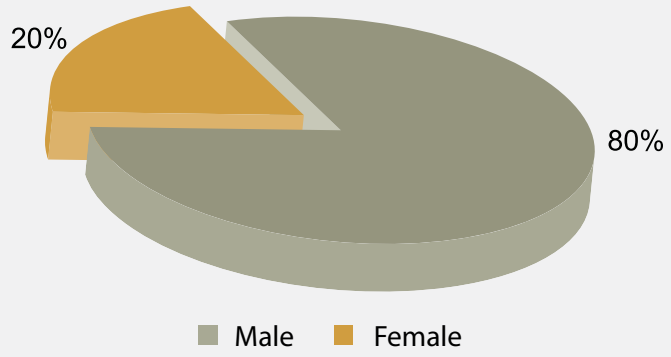


Figure 87 above depicts that male graduates dominated the BTech graduates in this CESM with 80% whilst females constituted 20%. Of the 28 males graduates in this CESM at BTech level: 24 were Africans, 3 were Whites and 1 was Coloured.

3.4.1.5 Agricultural Science-General Graduates at Universities of Technology in 2008

Graduates in this CESM dropped by 22% from 46 graduates in 2007 to 39 graduates in 2008.

Table 45 below presents a demographic breakdown of Agricultural Science-General graduates during the 2008 academic year by level of qualification.

Table 45: Demographic breakdown of Agricultural Science-General graduates by level of qualification during 2008

LEVEL	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	1	0	**1**	1	1	**2**	19	6	**25**	0	0	**0**	**28**	**71**
BTech	0	2	**2**	3	0	**3**	3	0	**3**	0	0	**0**	**8**	**21**
MTech	1	0	**1**	0	0	**0**	2	0	**2**	0	0	**0**	**3**	**8**
TOTAL	**2**	**2**	**4**	**4**	**1**	**5**	**24**	**6**	**30**	**0**	**0**	**0**	**39**	**100**

Seventy one percent (71%) of the total Agricultural Science-General graduates were Diploma graduates and 21% were BTech graduates. MTech constituted 8% of the overall Agricultural Science-General graduates.

As indicated in Table 45 above, 28 graduates were produced in the Diploma Agricultural Science-General in the 2008 academic year.

Figure 88: Racial breakdown of graduates in Agricultural Science-General

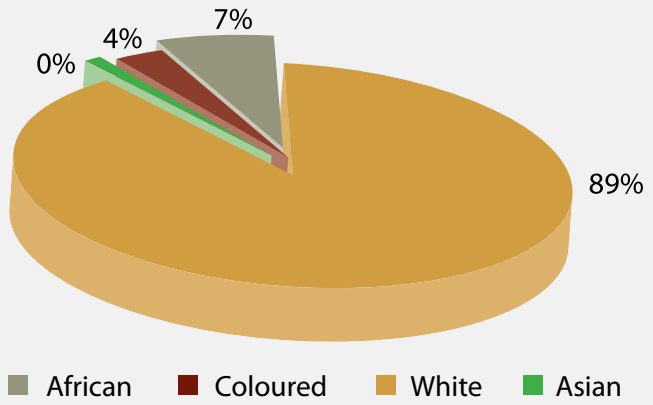


Figure 88 above indicates that Whites represented a majority of the Diploma graduates in this CESM with 89% followed by Coloured and African with 7% and 4% respectively. No Asians graduated in this CESM at Diploma level during the 2008 academic year.

Figure 89: Gender breakdown of Diploma graduates in Agricultural Science-General

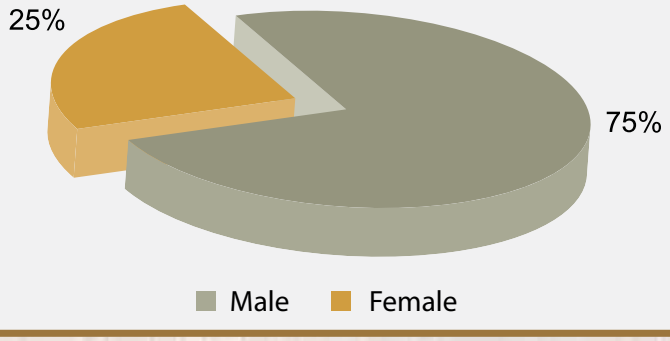


Figure 89 above depicts that male graduates dominated the Diploma graduates in this CESM with 75% whilst females constituted 25%. Of the 21 males graduating in this CESM at Diploma level 19 were Whites, 1 was African and 1 was Coloured. Six (6) White females and 1 Coloured female qualified for the Diploma in Agricultural Science-General at Universities of Technology during the 2008 academic year.

Figure 90: Racial breakdown of BTech graduates in Agricultural Science-General

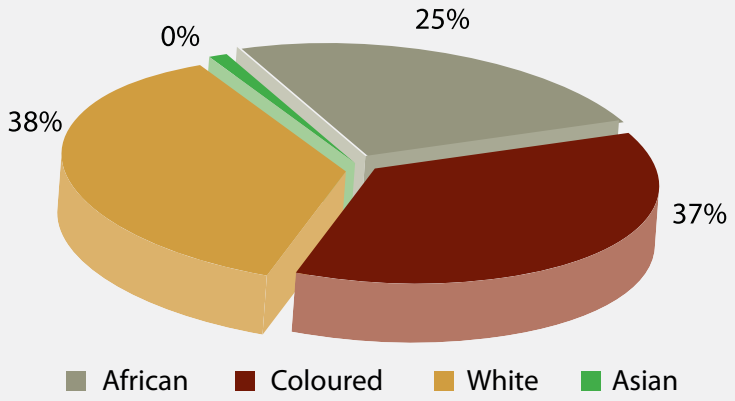


Figure 90 above indicates that Whites represented a majority of the Diploma graduates in this CESM with 38% followed by Coloureds with 37% and Africans with 25%. No Asians graduated in this CESM at Diploma level during the 2008 academic year.

Figure 91: Gender breakdown of BTech graduates in Agricultural Science-General

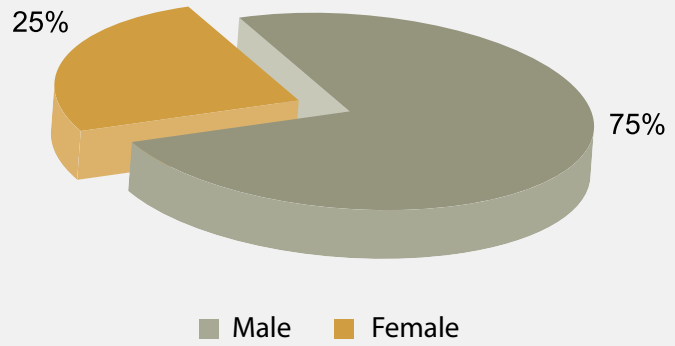


Figure 91 above depicts that male graduates dominated the BTech graduates in this CESM at BTech level with 75% whilst females constituted 25%. Of the 6 males graduating in this CESM at BTech level: 3 were Whites and 3 were Coloureds. Two (2) African females were awarded with BTech in Agricultural Science-General.

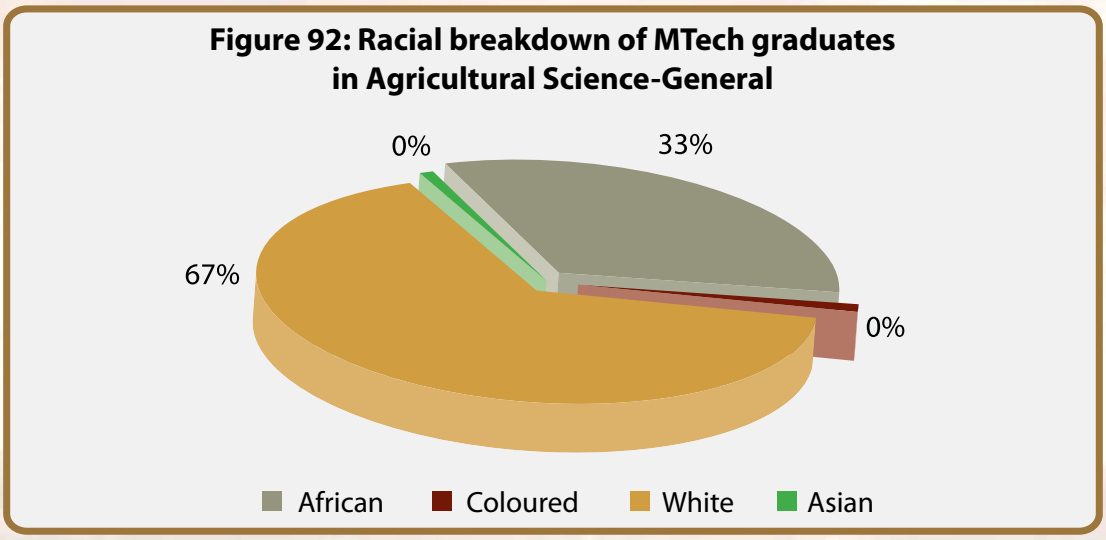


Figure 92 above indicates that Whites represented the majority of MTech graduates in this CESM with 67% followed by African graduates with 33%. No Coloureds or Asians graduated in this CESM at Diploma level during the 2008 academic year.

3.4.1.6 Agricultural Extension Graduates at Universities of Technology in 2008

Thirty four (34) Africans graduated in this CESM at Diploma level during the 2008 academic year, an increase of 37% from the 19 graduates in 2007.

Table 46 below presents a demographic breakdown of Agricultural Extension graduates during the 2008 academic year by level of qualification.

Table 46: Demographic breakdown of Agricultural Extensions graduates by level of qualification during 2008

LEVEL	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	16	18	**34**	0	0	**0**	0	0	**0**	0	0	**0**	**34**	**100**
TOTAL	**16**	**18**	**34**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**34**	**100**

Only Diploma graduates were produced in this CESM during the 2008 academic year at the Universities of Technology. Eighteen (18) female and 16 male graduates were produced in the CESM at Diploma level at Universities of Technology.

3.4.1.6 Agricultural Extension Graduates at Universities of Technology in 2008

Seventy seven (77) graduates received qualifications in Agricultural Biotechnology at Universities of Technology during the 2008 academic year.

Table 47 below presents a demographic breakdown of Agricultural Biotechnology graduates during the 2008 academic year by level of qualification.

Table 47: Demographic breakdown of Agricultural Biotechnology graduates by level of qualification during 2008

LEVEL	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	4	17	**21**	0	0	**0**	0	1	**1**	3	27	**30**	**52**	**68**
BTech	3	6	**9**	0	0	**0**	2	0	**2**	1	9	**10**	**21**	**27**
MTech	0	1	**1**	1	0	**1**	0	0	**0**	0	2	**2**	**4**	**5**
TOTAL	**7**	**24**	**31**	**1**	**0**	**1**	**2**	**1**	**3**	**4**	**38**	**42**	**77**	**100**

Diploma graduates constituted 68% of overall Agricultural Biotechnology graduates followed by BTech with 27% and MTech with 5% graduates.

Figure 93: Racial breakdown of Diploma graduates in Agricultural Biotechnology

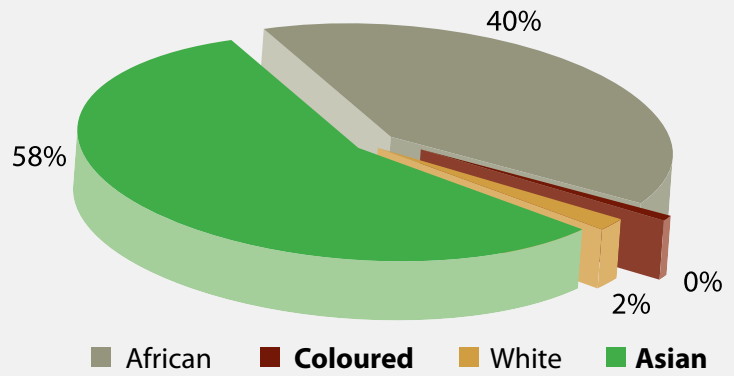
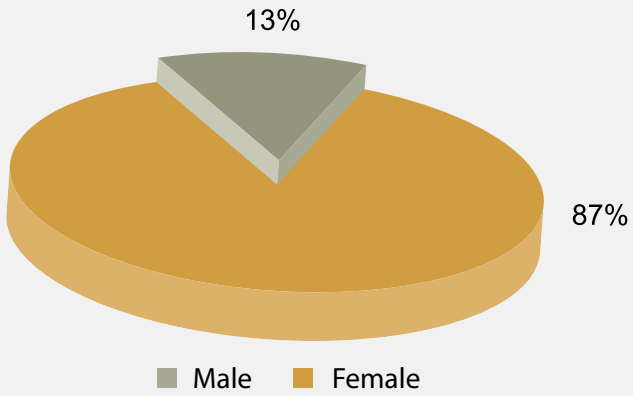


Figure 93 above depicts that Asians received 58% of the Diploma qualification followed by Africans with 40% whilst Whites accounted for 2%. No Coloureds graduated in this CESM during the 2008 academic year.

Figure 94: Gender breakdown of Diploma graduates in Agricultural Biotechnology



As was the case in the 2007 academic year, female graduates dominated the Diploma in Agricultural Biotechnology with 87% followed by males with 13%. African males accounted for 57% of the overall

Diploma male graduates in this CESM followed by Asians with 43%. Coloured and White males were not represented in this CESM. Asian and African females accounted for 60% and 38% respectively followed by White females with 2%. Coloured females were not represented in this CESM at Diploma level.

Figure 95: Racial breakdown of BTech graduates in Agricultural Biotechnology

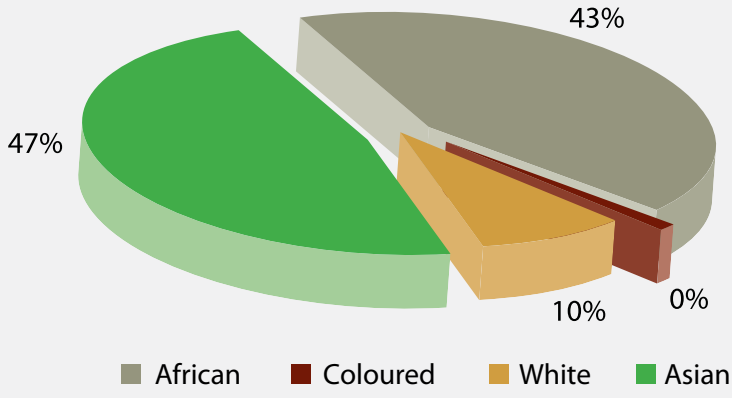


Figure 95 above indicates that Asian graduates dominated the BTech Degree graduates in Agricultural Biotechnology with 47% followed by Africans with 43%. White graduates accounted for 10% of the overall graduates in this CESM at BTech level during the 2008 academic year at Universities of Technology.

Figure 96: Gender breakdown of BTech graduates in Agricultural Biotechnology

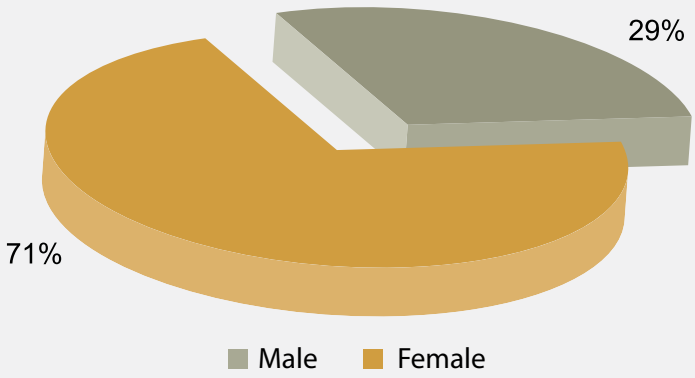


Figure 96 above depicts that female graduates dominated the BTech graduates in Agricultural Biotechnology with 71% and males constituted 29%. Asian females constituted 60% of the female graduates in this CESM at BTech level followed by African males with 40%.

Figure 97: Racial breakdown of MTech graduates in Agricultural Biotechnology

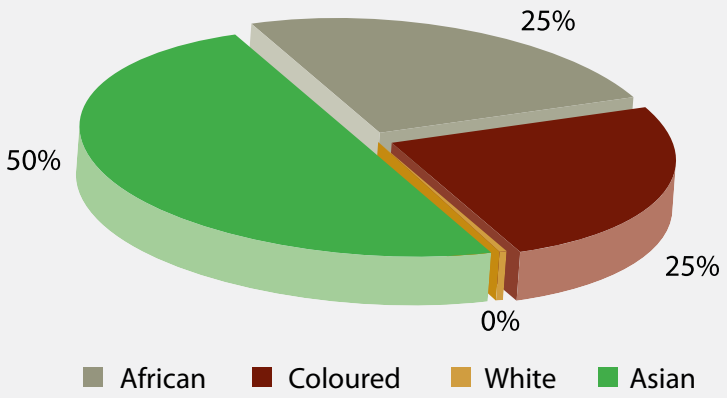


Figure 97 above indicates that Asians dominated the MTech graduates in Agricultural Biotechnology with 50%, followed by Africans and Coloureds with 25% each. Whites were not represented in this CESM at MTech level.

Figure 98: Gender breakdown of MTech graduates in Agricultural Biotechnology

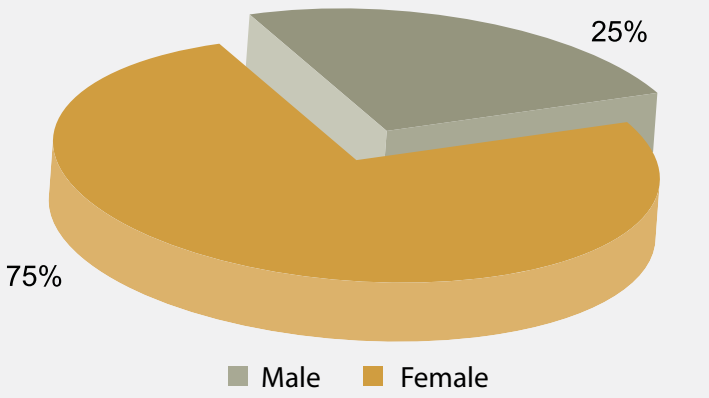


Figure 98 above depicts that female graduates dominated the MTech graduates in Agricultural Biotechnology with 75% and males constituted 25%. Asian females constituted 67% of the female graduates in this CESM at MTech level followed by African females with 33%.

3.4.1.8 Agricultural Food Technology Graduates at Universities of Technology in 2008

Sixty nine (69) graduates qualified in Agricultural Food Technology at Universities of Technology during the 2008 academic year.

Table 48 below presents a demographic breakdown of graduates in Food Technology in 2008 by level of qualification.

Table 48: Demographic breakdown of Agricultural Food Technology graduates by level of qualification in 2008														
LEVEL	**African**			**Coloured**			**White**			**Asian**			**Total**	**%**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**		
Diploma	2	23	**25**	0	1	**1**	0	3	**3**	4	21	**25**	**54**	**78**
BTech	1	3	**4**	0	0	**0**	0	4	**4**	0	7	**7**	**15**	**22**
TOTAL	**3**	**26**	**29**	**0**	**1**	**1**	**0**	**7**	**7**	**4**	**28**	**32**	**69**	**100**

Seventy eight percent (78%) of the total Agricultural Food Technology graduates were Diploma graduates and 22% were BTech graduates.

As indicated in the Table 48 above, a total number of 54 graduates was produced in Diploma Agricultural Food Technology level during the 2008 academic year.

Figure 99: Racial breakdown of Diploma graduates in Agricultural Food Technology

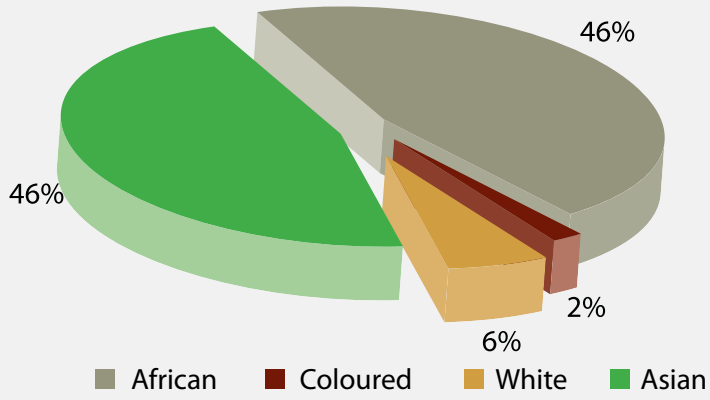


Figure 99 above indicates that Africans and Asians dominated the Diploma graduates in Food Technology with 46% each followed by Whites with 6% and Coloureds with 2%.

Figure 100: Gender breakdown of Diploma graduates in Agricultural Food Technology

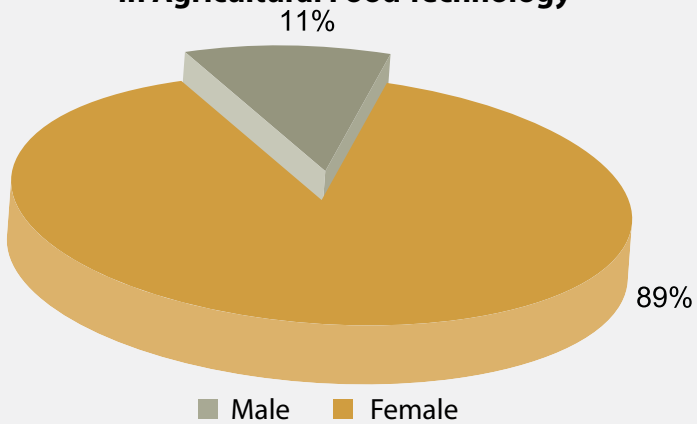


Figure 100 above depicts that female graduates dominated the Diploma graduates in Agricultural Food Technology with 89% and males constituted 11%. African females constituted 48% of the female

graduates in this CESM at Diploma level, followed by Asians with 44% and Whites with 6%. Coloured females constituted 2% of graduates in this CESM at Diploma level during the 2008 academic year.

Figure 101: Racial breakdown of BTech graduates in Agricultural Food Technology

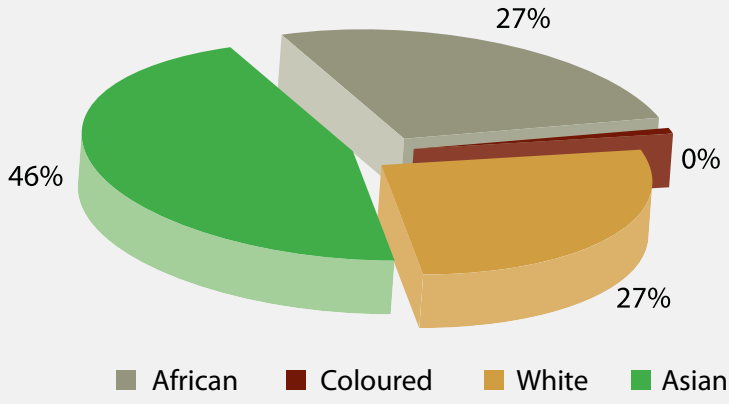


Figure 101 above indicates that Asians dominated the BTech graduates in Agricultural Food Technology with 46% followed by Africans and Whites with 27% each. Coloureds were not represented in this CESM at BTech level.

Figure 102: Gender breakdown of BTech graduates in Agricultural Food Technology

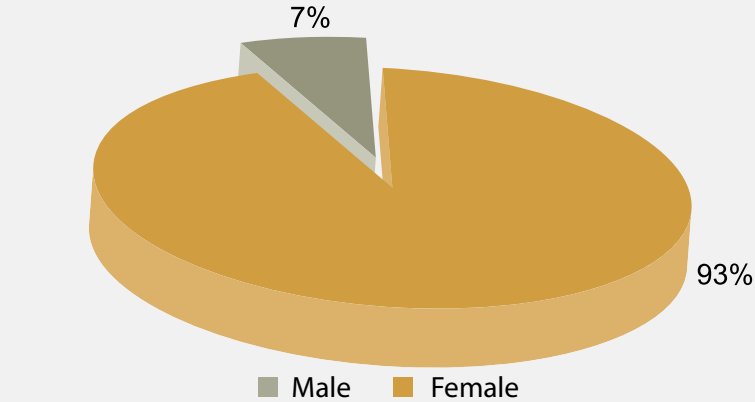


Figure 102 above depicts that female graduates dominated the BTech graduates in Agricultural Food Technology with 93% and males constituted 7%. Asian females constituted 50% of the female graduates in this CESM at BTech level, followed by Whites with 29% and Africans with 21%. Coloured females were not represented in this CESM at BTech during the 2008 academic year.

3.4.1.9 Land Reclamation Graduates at Universities of Technology in 2008

One (1) white female graduate qualified in Land Reclamation at a University of Technology during the 2008 academic year.

3.4.1.20 Renewable Natural Resources Graduates at Universities of Technology in 2008

Graduates in this CESM increased from 20 in 2007 to 103 during the 2008 academic year.

Table 49 below presents a demographic breakdown of graduates in Renewable Natural Resources in 2008 by level of qualification.

Table 49: Demographic breakdown of Renewable Natural Resources graduates by level of qualification during 2008

LEVEL	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	29	18	**47**	0	0	**0**	11	4	**15**	0	0	**0**	**62**	**60**
B Tech	21	8	**29**	1	0	**1**	6	2	**8**	0	0	**0**	**38**	**37**
M Tech	1	0	**1**	0	0	**0**	1	1	**2**	0	0	**0**	**3**	**3**
TOTAL	**51**	**26**	**77**	**1**	**0**	**1**	**18**	**7**	**25**	**0**	**0**	**0**	**103**	**100**

Sixty percent (60%) of the total number of Renewable Natural Resources graduates were Diploma graduates, 37% were BTech and 3% were MTech.

As indicated in the Table 49 above a total of 62 students graduated with the Diploma in Renewable Natural Resources during the 2008 academic year.

Figure 103: Racial breakdown of Diploma graduates in Renewable Natural Resources

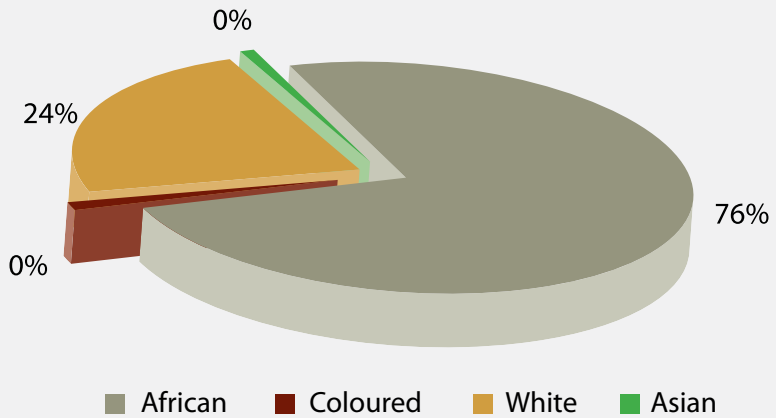


Figure 103 above indicates that Africans dominated the Diploma graduates in Renewable Natural Resources with 76%, followed by Whites with 24%. Asians and Coloureds were not represented in this CESM at Diploma level.

Figure 104: Gender breakdown of Diploma graduates in Renewable Natural Resources

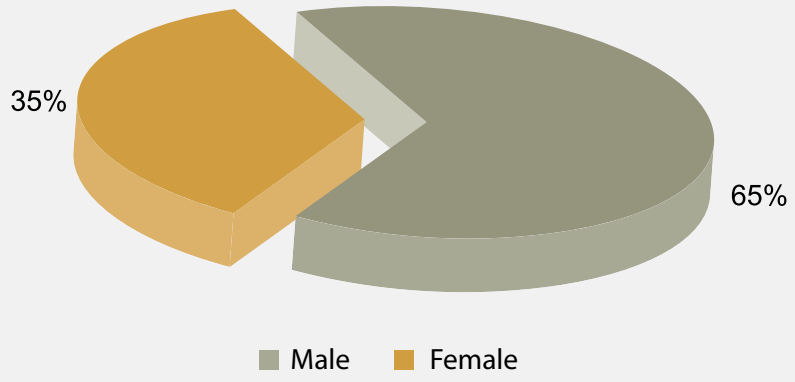


Figure 104 above depicts that male graduates dominated the Diploma graduates in Renewable Natural Resources with 65% and female constituted 35%. African males constituted 72% of the male graduates in this CESM at Diploma level followed by Whites with 28%.

Figure 105: Racial breakdown of BTech graduates in Renewable Natural Resources

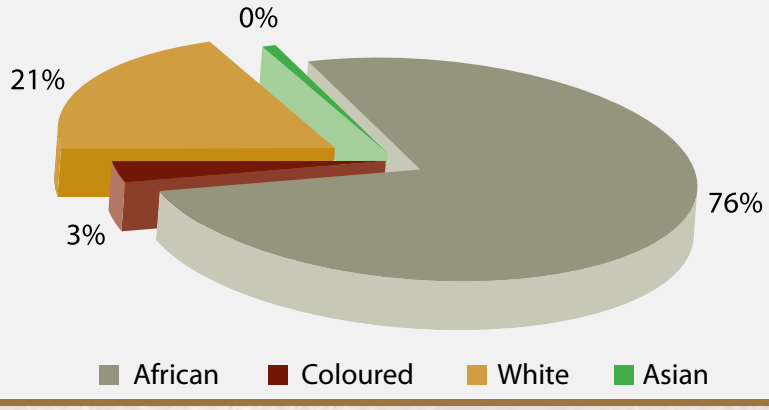


Figure 105 above indicates that Africans dominated the BTech graduates in Renewable Natural Resources with 76% followed by Whites with 21% and Coloureds with 3%. Asian graduates were not represented in this CESM at BTech level.

Figure 106: Gender breakdown of BTech graduates in Renewable Natural Resources

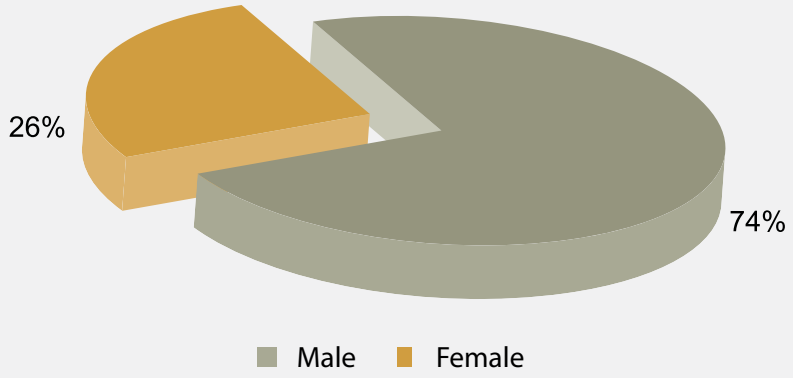


Figure 106 above depicts that male graduates dominated the BTech graduates in Renewable Natural Resources with 74% and females constituted 26%.

Figure 107: Racial breakdown of MTech graduates in Renewable Natural Resources

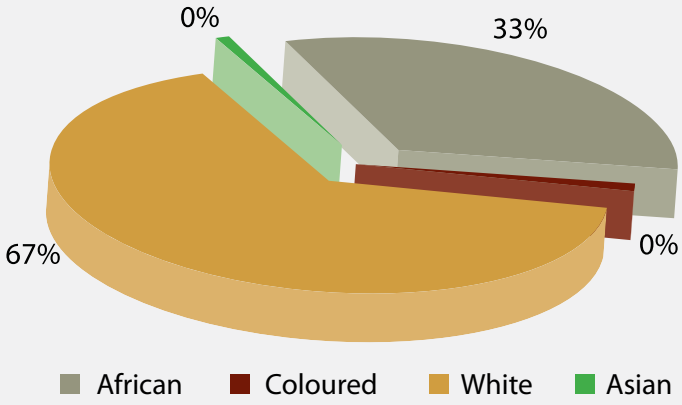


Figure 107 above indicates that Whites dominated the MTech graduates in Renewable Natural Resources with 67% followed by Africans with 33%. Coloureds and Asians were not represented in this CESM at MTech level.

Figure 108: Gender breakdown of MTech graduates in Renewable Natural Resources

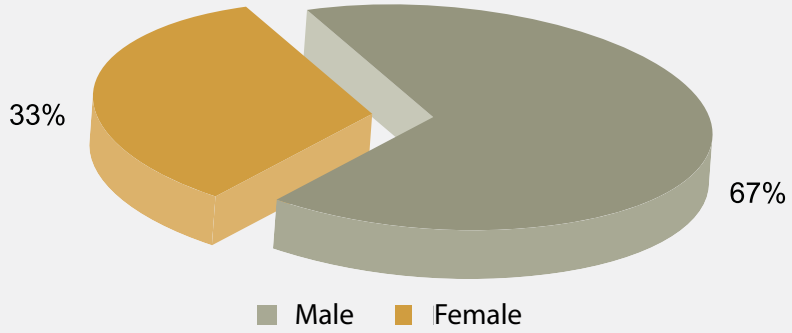


Figure 108 above depicts that male graduates dominated the MTech graduates in this CESM with 67%, whilst females constituted 33%.

Of the 2 males graduating in this CESM at MTech level, 1 was African and 1 was White. One White female qualified for MTech in Renewable Natural Resources during the 2008 academic year.

3.4.1.21 Rural Development Graduates at Universities of Technology in 2008

Eleven (11) Africans qualified in this CESM at Diploma level during the 2008 academic year.

Table 50 below presents a demographic breakdown of graduates in Rural Development in 2008 by level of qualification.

Table 50: Demographic breakdown of Rural Development graduates by level of qualification for 2008

LEVEL	African			Coloured			White			Asian			TOTAL	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	6	5	**11**	0	0	**0**	0	0	**0**	0	0	**0**	**11**	**100**
TOTAL	**6**	**5**	11	**0**	**0**	0	**0**	**0**	0	**0**	**0**	0	11	100

Figure 109: Gender breakdown of Diploma graduates in Rural Development

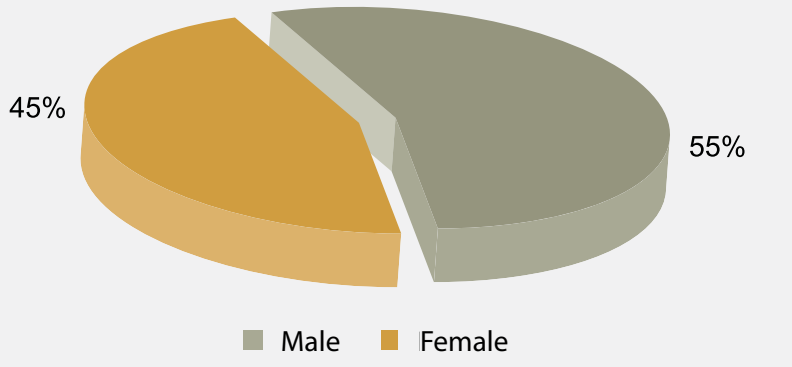


Figure 109 above depicts that male graduates dominated the Diploma graduates in Rural Development with 55% and females constituted 45%.

3.4.1.22 Wildlife Management Graduates at Universities of Technology in 2008

Forth Six (46) graduates were produced in this CESM at Universities of Technology during the 2008 academic year.

Table 51 below presents a demographic breakdown of graduates in Rural Development in 2008 by level of qualification.

Table 51: Demographic breakdown of Wildlife Management graduates by level of qualification for 2008

LEVEL	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	9	14	**23**	0	0	**0**	19	2	**21**	1	1	**2**	**46**	**100**
TOTAL	**9**	**14**	**23**	**0**	**0**	**0**	**19**	**2**	**21**	**1**	**1**	**2**	**46**	**100**

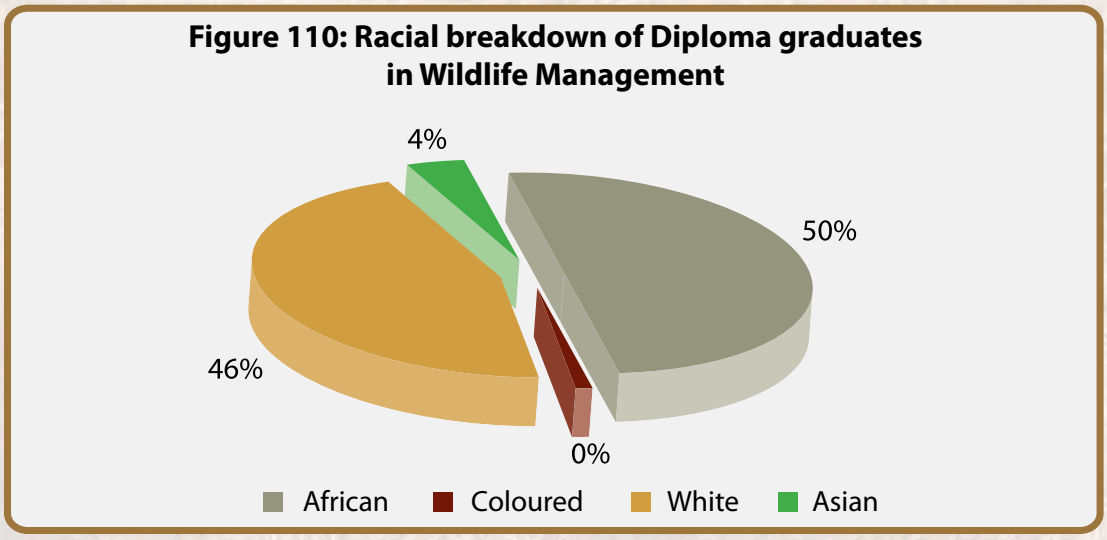


Figure 110 and Table 51 above indicates that Africans dominated the Diploma graduates in Wildlife Management with 50% followed by Whites with 46% and Asians with 4%. No Coloured graduates were produced in this CESM at Universities of Technology during the 2008 academic year.

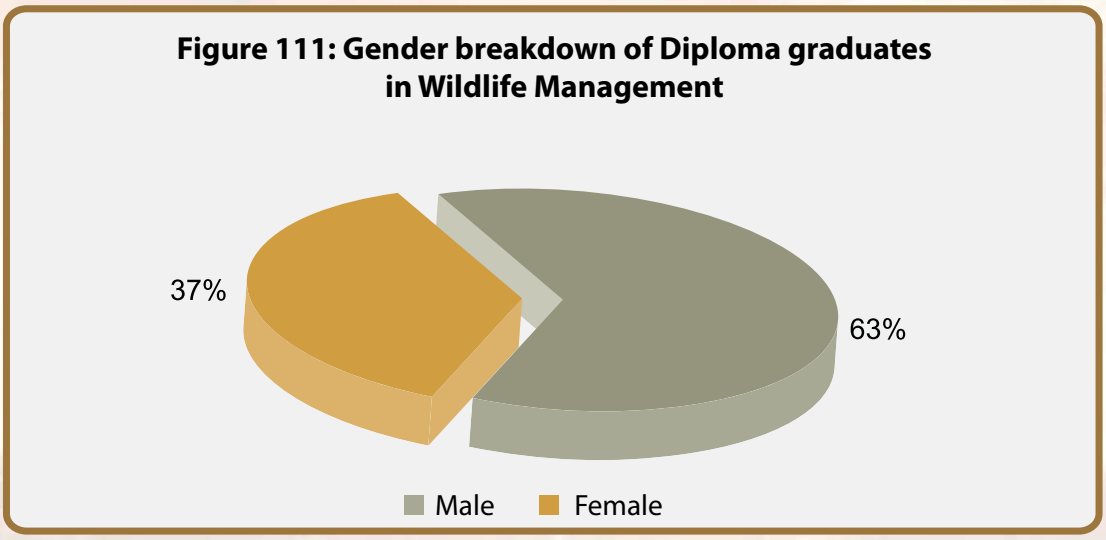


Figure 111 above depicts that male graduates dominated the Diploma graduates in Wildlife Management with 63% and females constituted 37%.

3.4.1.23 Veterinary Technology Graduates at Universities of Technology in 2008

Seventeen (17) graduates were produced in Veterinary Technology at Universities of Technology during the 2008 academic year.

Table 52 below presents a demographic breakdown of graduates in Veterinary Technology in 2008 by level of qualification.

Table 52: Demographic breakdown of Veterinary Technology graduates by level of qualification for 2008

LEVEL	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Diploma	5	3	**8**	0	0	**0**	0	3	**3**	0	0	**0**	**11**	**65**
BTech	1	2	**3**	0	0	**0**	1	2	**3**	0	0	**0**	**6**	**35**
TOTAL	**6**	**5**	**11**	**0**	**0**	**0**	**1**	**5**	**6**	**0**	**0**	**0**	**17**	**100**

Sixty five percent (65%) of the total Veterinary Technology graduates were Diploma graduates and 35% were BTech graduates.

As indicated in the Table 52 above, 11 graduates were produced in Diploma Veterinary Technology level during the 2008 academic year.

Figure 112: Racial breakdown of Diploma graduates in Veterinary Technology

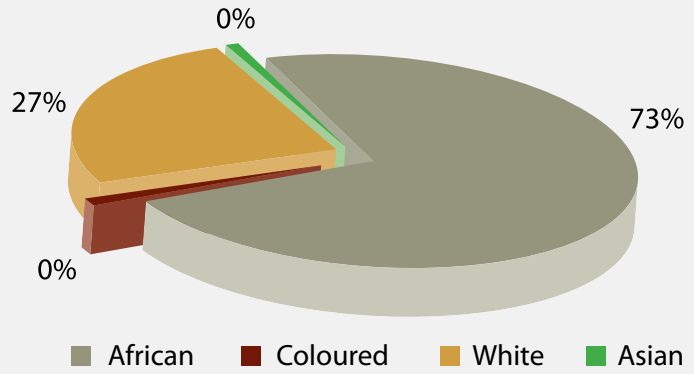


Figure 112 above indicates that Africans dominated the Diploma graduates in Veterinary Technology with 73% followed by Whites with 27%. Asians and Coloureds were not represented in this CESM during the 2008 academic year.

Figure 113: Gender breakdown of Diploma graduates in Veterinary Technology

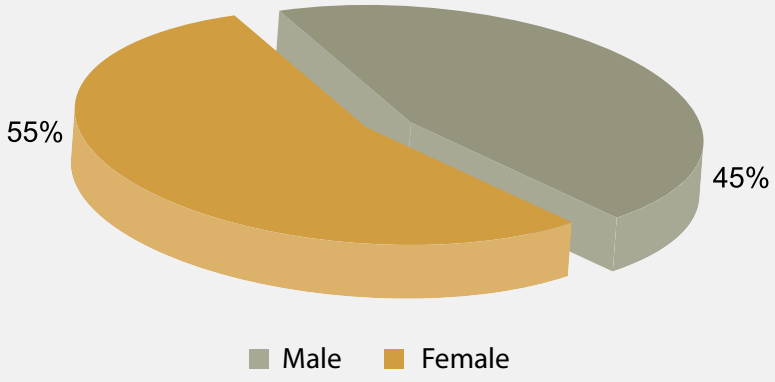


Figure 113 above depicts that female graduates dominated the Diploma graduates in Veterinary Technology with 55% and males constituted 45%. African and White females each constituted 50% of the female graduates in this CESM at Diploma level. African males constituted 100% of the male graduates in this CESM at Diploma level.

Figure 114: Racial breakdown of BTech graduates in Veterinary Technology

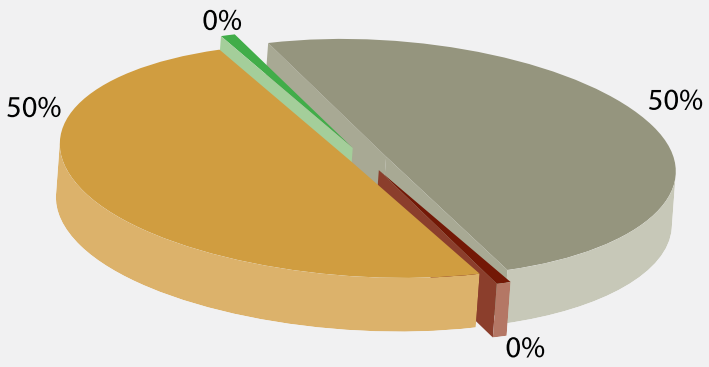


Figure 114 above indicates that Africans and Whites dominated the BTech graduates in Veterinary Technology with 50% each. Coloureds and Asians were not represented in this CESM during the 2008 academic year.

Figure 115: Gender breakdown of BTech graduates in Veterinary Technology

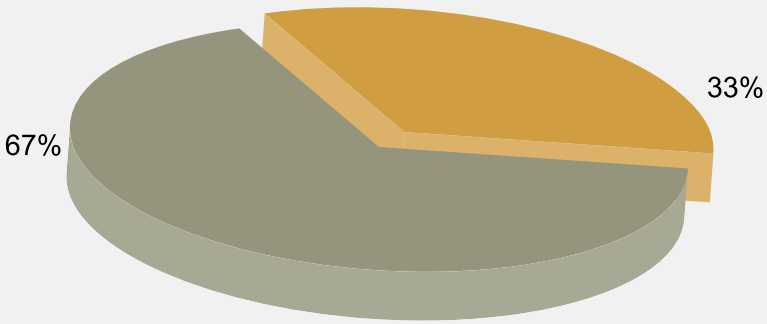


Figure 115 above depicts that female graduates dominated the BTech graduates in Veterinary Technology with 67% and males constituted 33%.

3.5 Conclusion

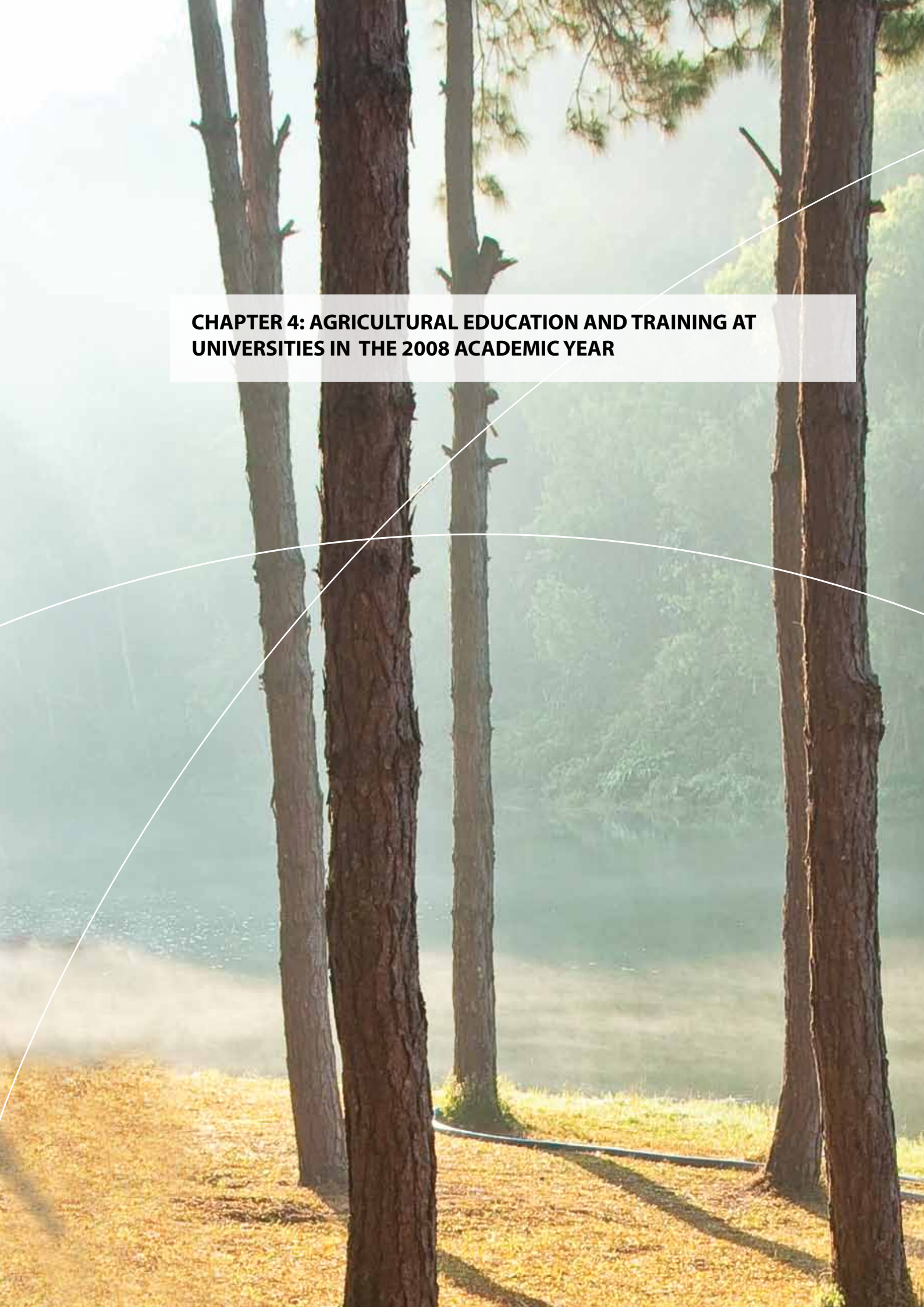
In the series of reports released by the DAFF since 2004, it has been evident that enrolments at Universities of Technology far outweigh graduates figures and this trend continues even during the 2008 academic year. Three thousand eight hundred and ninety four (3 894) students enrolled for agricultural programmes in 2008 as compared to 3 745 students in 2007. There was a slight decrease in the graduates figures as 816 graduates were produced in 2008 compared to 1 307 in 2007.

It is evident from the findings that generally Africans dominated both the enrolments and graduate figures at the Universities of Technology and this trend also continues from the 2004 academic year. From 3 894

enrolments registered at Universities of Technology, 72% are Africans, and out of 816 graduates 63% are Africans. Africans are almost dominating some of programmes that were hugely dominated by Whites in past three series of reports.

In almost all of the programmes males dominated enrolments and graduates across all race groups. It is only in four cases: in the case of Animal Science, Food Technology, Agricultural Biotechnology and Veterinary Technology females outweigh males in enrolment figures. The general trend is that males, particularly Africans and Whites constituted a higher number of graduates and enrolments, with African males dominating.

From the findings, TUT continues to record a bigger share of enrolments and graduates in all the Universities of Technology. This is attributed to the fact that the institution offers many agricultural programmes. CUT, FS and CPUT had the lowest number of both enrolments and graduates during the 2008 academic year.



CHAPTER 4: AGRICULTURAL EDUCATION AND TRAINING AT UNIVERSITIES IN THE 2008 ACADEMIC YEAR

CHAPTER 4

AGRICULTURAL EDUCATION AND TRAINING AT UNIVERSITIES DURING THE 2008 ACADEMIC YEAR

4.1 Introduction

There are 13 Universities which offer AET programmes in South Africa : Fort Hare, Free State, Johannesburg, KwaZulu-Natal, Limpopo, North West, Nelson Mandela Metropolitan, Pretoria, Stellenbosch, UNISA, Venda, Western Cape and Zululand. The report covers only nine Universities because no data were received from the Universities of KwaZulu-Natal, Johannesburg, Western Cape and Zululand, despite numerous attempts made to gather this data. The majority of these institutions offer agricultural qualifications from NQF levels 5 to 8, i.e. from University Diploma to Doctor of Philosophy (PhD) programmes.

4.2 Agricultural Education and Training programmes and National Qualification Framework offered at Universities in 2008

Universities offer various agricultural programmes and they vary in terms of scope. Table 53 present various programmes offered by these Universities.

Table 53: Agricultural programmes offered by Universities during 2008

	Fort Hare	North West	Free State	KwaZulu-Natal	Limpopo	Pretoria	Stellenbosch	Venda	Zululand	South Africa	Johannesburg	Western Cape	Nelson Mandela
Undergraduate Degree Programmes													
Veterinary Special Undergraduate Degree						X							
Veterinary Foreign Co-op						X							
Veterinary Sci (Non-Exam. Purp)						X							
Veterinary Foreign (Non-Ex Purp)													
N Certificate programmes													
N Certificate Commercial Floristry										X			
National Diploma programmes													
Veterinary Nursing						X							
N Dip Horticulture										X			
N Dip Nature Conservation										X			X
N Dip Open Space & Recreation Management										X			
Diploma in Disaster Management			X										
Diploma in Agriculture			X										
N. Dip Science and Agriculture				X									
Diploma in Rural Resource Management				X									
Diploma Food Security				X									
Diploma Animal Health		X								X			
Diploma in Agriculture: Animal Production			X							X			

Table 53: Agricultural programmes offered by Universities during 2008													
	Fort Hare	North West	Free State	KwaZulu-Natal	Limpopo	Pretoria	Stellenbosch	Venda	Zululand	South Africa	Johannesburg	Western Cape	Nelson Mandela
Diploma in Agriculture: Crop Production			X										
Undergraduate Degree Programmes													
Veterinary Special Undergraduate Degree						X							
Veterinary Foreign Co-op						X							
Veterinary Sci (Non-Exam. Purp)						X							
Veterinary Foreign (Non-Ex Purp)													
N Certificate programmes													
N Certificate Commercial Floristry										X			
National diploma programmes													
Veterinary Nursing						X							
N Dip Horticulture										X			
N Dip Nature Conservation										X			X
N Dip Open Space & Recreation Management										X			
Diploma in Disaster Management			X										
Diploma in Agriculture			X										
N. Dip Science and Agriculture				X									
Diploma in Rural Resource Management				X									
Diploma Food Security				X									
Diploma Animal Health		X								X			
Diploma in Agriculture: Animal Production			X							X			
Diploma in Agriculture: Crop Production			X										
Diploma in Agriculture: Agricultural Management			X							X			X
Diploma in Agriculture: Natural Resources			X										
Univ. Dip Ext and Rural Develop						X							
Diploma in Agric Economics and Management		X											
Nature Conservation													X
N. Diploma: Landscape Technology										X			
Forestry													X
Game Ranch Management													X
Diploma in Food Technology											X		
B Tech programmes													
B Tech Horticulture										X			
B Tech Nature Conservation										X			
B Tech Agricultural Management										X			X
B Tech Food Technology											X		
B.A. Degree programmes													
B Human Ecology										X			
B Consumer Science Educations										X			
B Consumer Science						X				X			

Table 53: Agricultural programmes offered by Universities during 2008

	Fort Hare	North West	Free State	KwaZulu-Natal	Limpopo	Pretoria	Stellenbosch	Venda	Zululand	South Africa	Johannesburg	Western Cape	Nelson Mandela
B Human Ecology (Community Nutrition)										X			
B Human Ecology (Community Agriculture)										X			
B. Agric-Economics	X												
B. Agric-Ext/Prod	X												
B. and Agric. Sci. (UP) Foreign Post D. Fellowship						X							
B & Agric Sci. (FRD) Foreign Post D. Fellowship						X							
B. Agric: Irrigation Management			X										
B. Agric: Animal Production Management			X										
B. Agric: Mixed Farming Management			X										
B. Agric: Crop Production Management			X										
B. Agric: Agriculture Management			X	X									
B. Agric: Wildlife Management			X										
B .Agric Management /Admin					X		X						
B .Agric			X	X			X	X					
Bachelor of Family Ecology								X					
Bachelor of Forestry							X						
B Agric Admin					X		X						
B Agric Admin Agri-business Management							X						
B Agric Admin Business Specific Farm Management-Viticulture							X						
Bachelor of Agri Business Management						X		X					
Bachelor of Family Ecology and Consumer Science								X					
BSc Degree Programmes													
Biotechnology			X			X						X	
Biodiversity and Conservation (Botany and Zoology)												X	
Agricultural Engineering				X									
BVSc						X							
Viticulture & Oenology							X						
BSc Agric Soil Science and Chemistry							X						
BSc Agric Soil Science and Horticulture							X						
BSc Agric Soil Science and Viticulture							X						
BSc Agric Horticulture and Entomology							X						
BSc Agric Horticulture and Genetics							X						
BSc Agric Horticulture and Agric Economics							X						
BSc Agric Horticulture and Plant Pathology							X						
BSc Agric Agronomy and Entomology							X						
BSc Agric Agronomy and Genetics							X						

Table 53: Agricultural programmes offered by Universities during 2008

	Fort Hare	North West	Free State	KwaZulu-Natal	Limpopo	Pretoria	Stellenbosch	Venda	Zululand	South Africa	Johannesburg	Western Cape	Nelson Mandela
BSc Food Science and Biochemistry			X										
BSc Food Science & Microbiology			X										
BSc Food Science & Chemistry			X										
BSc Agric. Econ. Agri-Business Management						X			X				
BSc Animal Science and Animal Genetics						X							
BSc Food Science & Technology						X							
BSc Genetics: Plant Breeding						X							
BSc Plant Production						X							
BSc Plant Protection						X							
BSc Food Management						X							
BSc Nutrition & Food Science						X							
BSc Agric Genetics & Plant Pathology							X						
BSc Conservation Ecology							X						
BSc Agriculture							X						
BSc Agriculture Science										X			
B Inst. Agrar. programmes													
B.Inst. Agrar: Agric. Econ: Animal Production						X							
B. Inst. Agrar: Agronomy/Horticulture						X							
B. Inst. Agrar: Animal Production						X							
B. Inst. Agrar: Animal Production Management						X							
B. Inst. Agrar: Crop Protection						X							
B. Inst. Agrar: Food Production & Process.						X							
B. Inst. Agrar: Land-Use Planning						X							
B. Inst. Agrar: Plant Protection						X							
B. Inst. Agrar: Rural Development Management						X							
Honours Degree programmes													
B Agric Admin							X						
BSc Conservation Ecology							X						
BSc Biodiversity and Conservation (Hons)												X	
BSc Food Science							X						
BSc in Geography										X			
B A. Geography										X			
B .Agric	X		X	X									
BSc Food Science						X							
B .Agric. Extension	X												
B .Agric. Crop/Horticulture	X												
B .Agric. Pasture/Livestock	X												
B .Agric. Management			X	X									

Table 53: Agricultural programmes offered by Universities during 2008													
	Fort Hare	North West	Free State	KwaZulu-Natal	Limpopo	Pretoria	Stellenbosch	Venda	Zululand	South Africa	Johannesburg	Western Cape	Nelson Mandela
B. Agric. Admin					X		X						
Rural Development								X					
B Agric Admin (Hons) Horticulture							X						
BSc Agric: Animal Health		X											
BSc Agric: Crop Science	X	X											
BSc Agric: Animal Science	X	X							X				
BSc Agric: Economics	X	X	X										
BSc Agric: Extension		X											
BSc Agric: Land Management		X											
BSc Forestry							X						
BSc Agric			X				X		X				
BSc Biotechnology			X										
BSc Soil Science	X		X										
BSc Medicinal Plant Science						X							
BSc Plant Breeding			X										
BSc Plant Pathology			X										
BSc Plant Science						X							
BSc Animal Science	X		X										
BSc Wildlife Management			X										
B.Com.(Hons): Actuarial Science						X							
B.Com. (Hons): Agricultural Economics						X							
B. Inst. Agrar. (Hons): Agribusiness Management						X							
B. Inst. Agrar. (Hons): Agricultural Economics						X							
B. Inst. Agrar. (Hons): Crop Protection						X							
B. Inst. Agrar. (Hons): Extension						X							
B. Inst. Agrar. (Hons): Food Processing						X							
B. Inst. Agrar. (Hons): Food Production and Process.						X							
B. Inst. Agrar. (Hons): Land-Use Planning						X							
B. Inst. Agrar. (Hons): Plant Production						X							
B. Inst. Agrar. (Hons): Rural Devel. Planning						X							
M Tech programmes													
M Tech Nature Conservation										X			
M Tech Food Technology											X		
Masters Degree programmes													
MMedVet: Small Animal Surgery											X		
MMedVet: Theriogenology											X		
MMedVet: Bovine Medicine											X		
MMedVet: Equine Medicine											X		

Table 53: Agricultural programmes offered by Universities during 2008

	Fort Hare	North West	Free State	KwaZulu-Natal	Limpopo	Pretoria	Stellenbosch	Venda	Zululand	South Africa	Johannesburg	Western Cape	Nelson Mandela
MMedVet: Small Animal Medicine											X		
MMedVet: Pathology											X		
MMedVet:Anaesthesiology											X		
MMedVet:Diagnostic Imaging											X		
MMedVet: Pig Herd Health											X		
MMedVet: Clinical Laboratory Diagnostics											X		
MMedVet: Wildlife Diseases											X		
MMedVet: Cattle Herd Health											X		
MMedVet: Small Stock Herd Health											X		
MMedVet:Ophthalmology											X		
MMedVet: Equine Surgery											X		
MMedVet: Pharmalogy											X		
MSc. Veterinary Tropical Diseases						X							
MSc Anatomy and Physiology						X							
MSc Companion Animal Clinical Studies						X							
MSc Para clinical Studies						X							
MSc Production Animal Studies						X							
MSc Vet. Industrial Pharmacology						X							
M Phil Livestock Industry Management							X						
M Phil Livestock Industry: Aquaculture							X						
M Phil Livestock Industry: Pig Production Sciences							X						
M Phil Livestock Industry: Poultry Science							X						
Assisted Reproduction							X						
MSc Zoology						X							
M Phil Livestock Industry : Dairy Science							X						
M Phil Agriculture							X						
M A Geography										X			
Master in Human Ecology										X			
Master of Consumer Science										X			
M. Agric. Admin/ Management				X	X		X						
M .A. Agriculture			X	X									
MSc Geography										X			
MSc Environmental Science										X			
Masters in Veterinary Medicine						X							
M .Phil							X						
M Sc Food Science							X						
MSc Nutrition						X							
M Sc. Research Based						X							

Table 53: Agricultural programmes offered by Universities during 2008

	Fort Hare	North West	Free State	KwaZulu-Natal	Limpopo	Pretoria	Stellenbosch	Venda	Zululand	South Africa	Johannesburg	Western Cape	Nelson Mandela
M Forestry							X						
MSc Forestry							X						
MSc Agriculture		X	X	X	X		X	X	X				
MSc Conservation Ecology							X						
MSc Food Science and Technology						X	X	X					
Masters in Rural Development								X					
M. A. Agric Economics	X				X	X							
M .A. Agric Extension	X				X								
M .Phil Environmental Studies	X												
MSc Agric: Crop Science	X				X								
MSc Agric: Animal Science	X					X	X						
MSc Agric: Soil Science	X				X	X	X						
MSc Agric: Horticulture	X				X	X	X						
MSc Plant Production						X							
MSc Agric: Pasture Science	X				X								
MSc Agric: Geography and Environmental Science	X												
MSc Agric: Plant Protection & Plant Pathology					X								
MSc Agronomy						X							
MSc Agric: Remote Sensing					X								
M .A : Disaster Management			X										
M .A: Sustainable Agriculture			X										
M. Com: Agric Economics						X							
M. Inst. Agrar: Agric. Economics						X							
M. Inst. Agrar: Agronomy						X							
M. Inst. Agrar: Animal Production Management						X							
M. Inst. Agrar: Animal Production						X							
M. Inst. Agrar: Crop Protection						X							
M. Inst. Agrar: Environmental Management						X							
M. Inst. Agrar: Extension						X							
M. Inst. Agrar: Food Processing						X							
M. Inst. Agrar: Food Production & Processing						X							
M. Inst. Agrar: Horticulture						X							
M. Inst. Agrar: Land Devel.						X							
M. Inst. Agrar: Land-Use Planning						X							
M. Inst. Agrar: Plant Production: Agronomy						X							
M. Inst. Agrar: Plant Production: Horticulture						X							
M. Inst. Agrar: Plant Protection						X							
M. Inst. Agrar: Rural Develop.& Ecotourism						X							

Table 53: Agricultural programmes offered by Universities during 2008

	Fort Hare	North West	Free State	KwaZulu-Natal	Limpopo	Pretoria	Stellenbosch	Venda	Zululand	South Africa	Johannesburg	Western Cape	Nelson Mandela
M. Inst. Agrar: Rural Development Planning						X							
M. Inst. Agrar: Rural Household Devel. (Diss)						X							
M. Inst. Agrar: Sust. Ecol. Management						X							
M. Inst. Agrar: Sust. Insect Management.						X							
MSc Agric Agronomy						X	X						
MSc Agric Entomology, Nematology and Insect pest management						X	X						
Wildlife (M. Inst. Agrar)						X							
MSc Animal Breeding & and Genetics						X							
MSc Agric Aquaculture							X						
MSc Agric Plant Pathology							X						
MSc Agric Genetics							X						
MSc Genetics						X							
MSc Mammalogy (Course Work)						X							
MSc Biochemistry						X							
MSc Microbiology						X							
MSc Genetics						X							
MSc Plant Biotechnology						X							
PhD Degree Programmes													
PhD : Agricultural Administration							X						
PhD: Literature & Philosophy in Geography										X			
PhD : Geography										X			
PhD: Environmental Management										X			
PhD: Environmental Science										X			
PhD: Agrarian Extension						X							
PhD: Agricultural Economics	X					X							
PhD (Agric) Animal Science							X						
PhD (Agric) Animal Physiology							X						
PhD (Agric) Plant Pathology							X						
PhD (Agric) Horticulture							X						
PhD (Agric) Soil Science							X						
PhD (Agric) Genetics							X						
PhD (Agric) Entomology							X						
PhD: Agronomy						X							
PhD (Agric) Agronomy							X						
PhD: Animal Production						X							
PhD: Animal Science						X							
PhD: Crop Protection						X							
PhD: Food Science						X	X						

Table 53: Agricultural programmes offered by Universities during 2008													
	Fort Hare	North West	Free State	KwaZulu-Natal	Limpopo	Pretoria	Stellenbosch	Venda	Zululand	South Africa	Johannesburg	Western Cape	Nelson Mandela
PhD: Horticultural Science						X							
PhD: Pasture Science						X							
PhD: Plant Production: Agronomy						X							
PhD: Plant Production: Horticulture						X							
PhD: Plant Production: Pasture Science						X							
PhD: Rural Development Planning						X							
PhD: Soil Science	X					X							
PhD: Soil Science and Plant Nutrition						X							
PhD. Agriculture				X	X	X	X	X	X				
PhD Science and Agriculture				X									
PhD Crop Science	X												
PhD Geography and Environmental Science	X												
PhD Anatomy and Physiology						X							
PhD Companion Anim.Clin.Studies						X							
PhD Para clinical Sciences						X							
PhD Production Animal Studies						X							
PhD Veterinary Tropical Diseases						X							
PhD Conservation Ecology							X						
PhD Forestry							X						

Table 54 below outlines the NQF ratings at Universities, i.e. the programme levels and matching NQF levels of these programmes (Department of Agriculture, Forestry and Fisheries, 2005). These ratings have remained very static amongst the institutions since 2004 with less substantial changes from one year to the next, except where an institution looses accreditation completely. This largely occurs due to an institution's inability to obtain prescribed credits for a particular qualification or unit standards.

Table 54: NQF levels at Universities		
NQF Level	**Band**	**Types of qualification and Certificates**
8	Higher Education and Training Band	Doctorate/ Further Research Degree
7		Higher Degree/Professional Qualifications
6		First Degree/ Higher Diplomas
5		Diplomas/Occupational Certificates

The rating of the University programmes in terms of NQF standards precisely resembles that of Universities of Technology. The lowest agricultural qualification offered at both Universities is the NQF level 5 i.e. diploma and the highest qualification is NQF level 8 which is the PhD.

4.3 Enrolments in Agricultural Education and Training Programmes at Universities in 2008

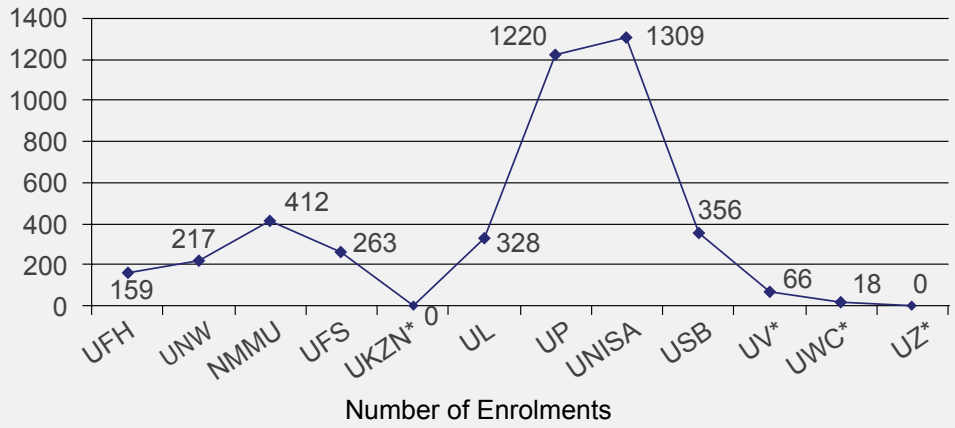
A total number of 4 348 students registered for agricultural programmes at Universities during the 2008 academic year.

Table 55 below depicts the enrolments at Universities during the 2008 academic year.

Table 55: AET enrolment figures at Universities in 2008

Name of the University	Number of AET graduates	Percentage (%)
University of Fort Hare	159	4
North West University	217	5
Nelson Mandela Metropolitan University	412	10
University of Johannesburg*	0	0
University of Free State	263	6
University of KwaZulu-Natal*	0	0
University of Limpopo	328	8
University of Pretoria	1220	28
University of South Africa	1309	30
University of Stellenbosch	356	8
University of Venda	66	2
University of Western Cape	18	0
University of Zululand*	0	0
TOTAL	**4348**	**100**
*No data received from this institution		

Figure 116: Enrolments at Universities in 2008



As illustrated in Table 55 and Figure 116 above, University of South Africa and University of Pretoria had the highest number of students than any other University and dominated enrolments with 30% and 28% respectively. Nelson Mandela Metropolitan University enrolled a significant number of students comprising 10% of the total number of enrolments at Universities during the 2008 academic year. Likewise in previous years, North West, Fort Hare, Free State, Limpopo, Stellenbosch and Venda attracted less than 10% of the total enrolments in agricultural education and training at Universities during the 2008 academic year. In

2008 the number of students enrolled at Universities decreased significantly by 70% from 14 503 in 2007 to 4 330. This might be as a result of other Universities that did not submit their data.

As it has been the trend in the past academic years, institutions with many programmes had the highest numbers of registrations than those institutions with fewer programmes during the 2008 academic year. During the 2008 academic year institutions like Venda, Fort Hare and North West which offer relatively fewer agricultural education and training programmes attracted relatively few students during the 2008 academic year.

4.3.1 Demographic Breakdown of Agricultural Education and Training Enrolments at Universities in 2008

Table 56 below depicts a demographic breakdown of AET enrolments at Universities during the 2008 academic year.

Table 56: Demographic breakdown of AET enrolments at Universities in 2008

Name of the University	African			Coloured			White			Asian			Total	%
		F	T	M	F	T	M	F	T	M	F	T		
University of Fort Hare	91	68	**159**	0	0	**0**	0	0	**0**	0	0	**0**	**159**	**4**
University of North West	113	104	**217**	0	0	**0**	0	0	**0**	0	0	**0**	**217**	**5**
Nelson Mandela Metropolitan University	138	84	**222**	6	4	**10**	138	42	**180**	0	0	**0**	**412**	**9**
University of Free State	83	55	**138**	1	0	**1**	105	17	**122**	1	1	**2**	**263**	**6**
University of KwaZulu-Natal	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**
University of Limpopo	162	165	**327**	0	0	**0**	1	0	**1**	0	0	**0**	**328**	**8**
University of Pretoria	144	181	**325**	10	14	**24**	272	546	**818**	13	40	**53**	**1220**	**28**
University of South Africa	514	565	**1079**	17	17	**34**	82	93	**175**	7	14	**21**	**1309**	**30**
University of Stellenbosch	39	20	**59**	16	20	**36**	159	102	**261**	0	0	**0**	**356**	**8**
University of Venda	37	29	**66**	0	0	**0**	0	0	**0**	0	0	**0**	**66**	**2**
University of Western Cape	7	4	**11**	3	2	**5**	1	1	**2**	0	0	**0**	**18**	**0**
University of Zululand	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**	**0**
TOTAL	**1328**	**1275**	**2603**	**53**	**57**	**105**	**758**	**801**	**1559**	**21**	**55**	**76**	**4348**	**100**

Figure 117: Gender breakdown of AET enrolments at Universities

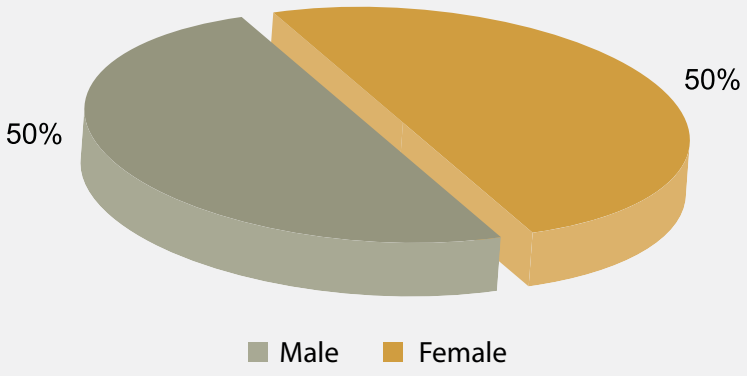
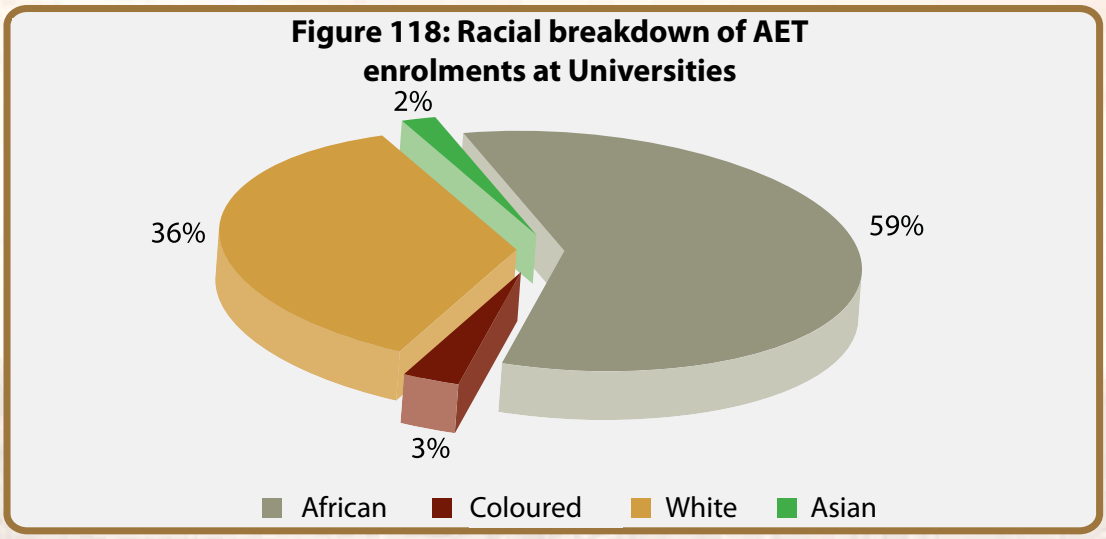


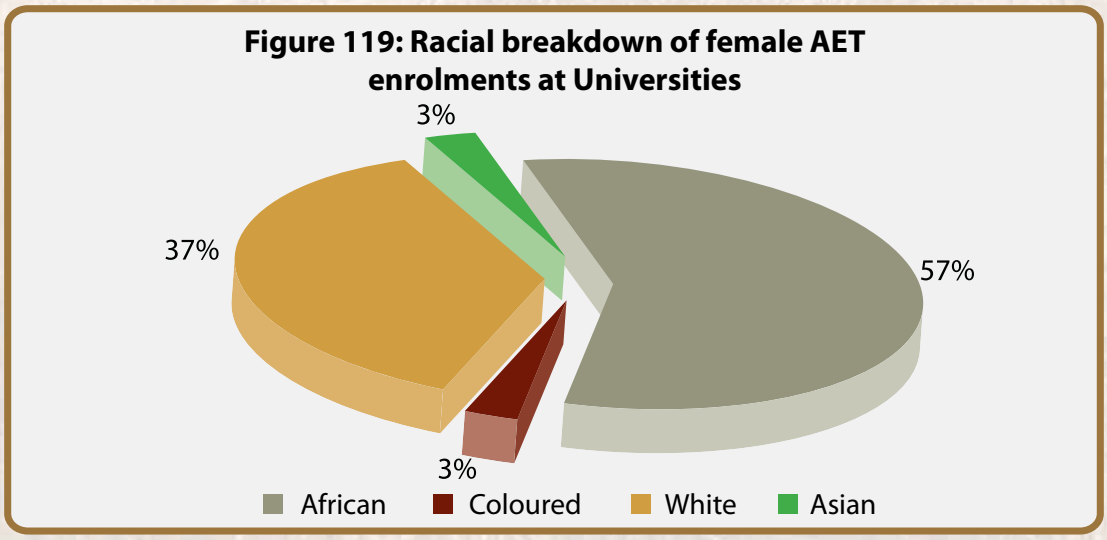
Figure 117 and Table 56 above indicates that gender breakdown of AET enrolments at Universities during the 2008 academic year was equal with 50% each.

Figure 118: Racial breakdown of AET enrolments at Universities

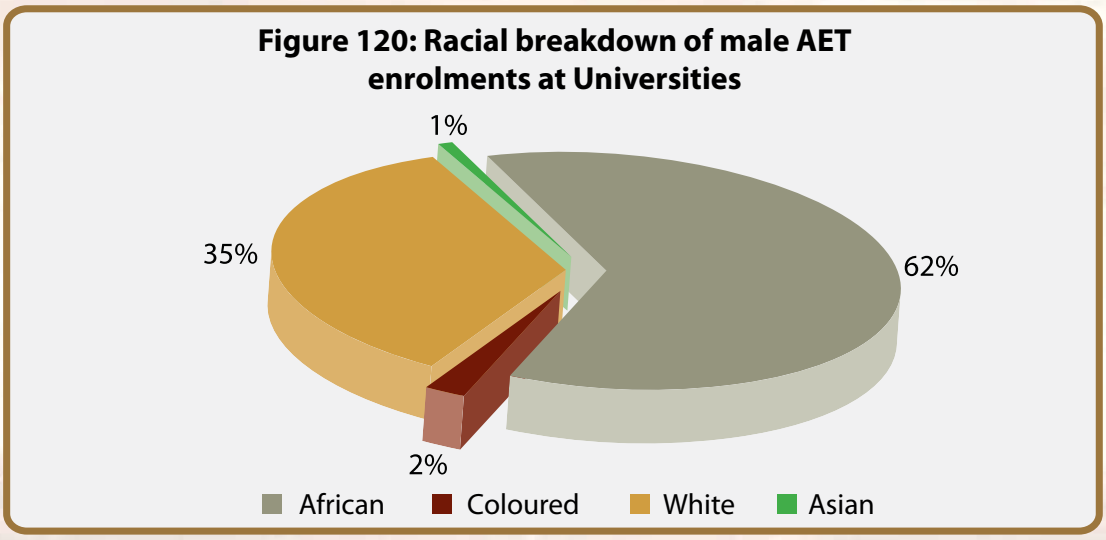


As depicted in Figure 118 above, Africans constituted the majority of AET enrolments at Universities during the 2008 academic year with 59% followed by Whites with 36%. Coloured and Asian students accounted for 5% collectively.

Figure 119: Racial breakdown of female AET enrolments at Universities



Racial female classification in Figure 119 above shows that Africans dominated the female AET enrolments with 57% followed by Whites with 37%. Asian and Coloured females enrolled at Universities in the 2008 academic year accounted for 3% each.



According to Figure 120 above, African and White males respectively accounted for 62% and 35% of the male student population at Universities during the 2008 academic year. Coloureds and Asians respectively constituted 2% and 1% of the total male enrolments during the 2008 academic year.

4.3.2 Agricultural Enrolments at Universities by CESM in 2008

Table 57 below presents enrolments at Universities by Category of Education Subject Matter (CESM).

Table 57: Agricultural enrolments in Universities in 2008 by CESM and academic level

CESM	Under-graduate Degree	Post-graduate Diploma	Honours	Masters	PhD	Total	%
Agricultural Economics (Science Stream)	125	0	23	17	0	**165**	**4**
Agricultural Economics (Art Stream)	28	0	0	0	4	**32**	**1**
Agricultural Economics (BCom Stream)	0	0	3	0	0	**3**	**0**
Agricultural Economics (AgriBusiness)	34	0	0	0	0	**34**	**1**
Agricultural Science (Art Stream)	112	0	0	45	1	**158**	**4**
Agricultural Science (Science Stream)	418	0	8	39	9	**474**	**11**
Agric. Extension	25	18	0	24	2	**69**	**2**
Agric. Extension (Inst.Agrar Stream)	0	0	1	0	0	**1**	**0**
Agric. Food Science	60	0	13	15	7	**95**	**2**
Animal Science	473	0	55	61	19	**608**	**14**
Horticulture	190	0	14	6	0	**210**	**5**
Plant Science	58	0	29	37	13	**137**	**3**
Plant Science (Inst.Agrar Stream)	0	0	11	1	0	**12**	**0**
Soil Science	35	0	2	27	1	**65**	**1**
Forestry	172	0	1	11	2	**186**	**4**
Renewable Natural Resources	19	0	0	7	4	**30**	**1**
Agric. Management	632	0	5	90	0	**727**	**17**
Other Agric. and Renewable Resources	1	31	0	4	0	**36**	**1**
Rural Development	0	0	2	4	0	**6**	**0**
Agric Econ (Inst. Agrar. Stream)	**0**	**0**	**2**	**1**	**0**	3	**0**

Table 57: Agricultural enrolments in Universities in 2008 by CESM and academic level							
CESM	**Under-graduate Degree**	**Post-graduate Diploma**	**Honours**	**Masters**	**PhD**	**Total**	**%**
Environmental Management	37	0	44	4	9	**94**	**2**
Environmental Management (Inst. Agrar. Stream)	0	0	0	4	0	**4**	**0**
Land Reclamation (Land Use)	0	0	1	0	0	**1**	**0**
Agronomy	24	0	3	4	2	**33**	**1**
Agronomy (Inst.Agrar. Stream)	0	0	0	3	0	**3**	**0**
Wildlife	415	0	12	15	2	**444**	**10**
BSc Veterinary Biology	271	0	0	0	0	**271**	**6**
Veterinary Nursing	0	0	0	0	0	**0**	
Microbiology	39	0	15	13	4	**71**	**2**
Consumer Science	250	0	0	13	1	**264**	**6**
Biotechnology	46	0	30	14	22	**112**	**3**
TOTAL	**3464**	**49**	**274**	**459**	**102**	**4348**	
Percentage	**80**	**1**	**6**	**11**	**2**		**100**

Table 57 above depicts the various agricultural programmes offered by Universities under each CESM. The focus of this section is on the AET enrolments by level of qualification per CESM and the demographic breakdown of enrolments in each CESM.

As shown in Table 57 above Undergraduate Degree level dominated the overall AET enrolments at Universities with 80% followed by Masters enrolments with 11%. Honours and PhD enrolments accounted for 6% and 2% respectively. Postgraduate Diploma registered the least number of students with 1% of the overall enrolments. This can logically be attributed to the fact that relatively few institutions offer Postgraduate Diploma programmes.

As indicated in Table 57 above, Agricultural management, Animal Science, and Agricultural Science, (Science Stream) accounted for 17%, 14% and 11% of the total enrolments at Universities respectively followed by Wildlife with 10%.

4.3.3 Breakdown of Agricultural Education and Training Enrolments at Universities by CESM in 2008

Table 58 below outlines the enrolments at Undergraduate Degree level at Universities for 2008.

Table 58: Enrolments in Undergraduate Degree programmes by CESM at Universities in 2008													
CESM Category (Undergraduate Degree)	**African**			**Coloured**			**White**			**Asian**			**Total**
	Total	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Agricultural Economics (Science Stream)	**66**	57	**123**	0	0	**0**	2	0	**2**	0	0	**0**	**125**
Agricultural Economics (Art Stream)	**15**	13	**28**	0	0	**0**	0	0	**0**	0	0	**0**	**28**
Agricultural Eco. (AgriBusiness)	**13**	7	**20**	1	0	**1**	12	1	**13**	0	0	**0**	**34**
Agricultural Science (Art Stream)	**16**	11	**27**	6	8	**14**	56	15	**71**	0	0	**0**	**112**
Agricultural Science (Science Stream)	**87**	110	**197**	4	7	**11**	86	108	**194**	3	13	**16**	**418**

Table 58: Enrolments in Undergraduate Degree programmes by CESM at Universities in 2008													
CESM Category (Undergraduate Degree)	**African**			**Coloured**			**White**			**Asian**			**Total**
	Total	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Agric. Extension	**10**	15	**25**	0	0	**0**	0	0	**0**	0	0	**0**	**25**
Agric. Food Science	**7**	13	**20**	4	4	**8**	5	26	**31**	0	1	**1**	**60**
Animal Science	**158**	157	**315**	6	6	**12**	67	75	**142**	0	4	**4**	**473**
Plant Science	**22**	20	**42**	0	0	**0**	8	8	**16**	0	0	**0**	**58**
Soil Science	**21**	10	**31**	0	0	**0**	3	1	**4**	0	0	**0**	**35**
Forestry	**84**	34	**118**	7	1	**8**	41	5	**46**	0	0	**0**	**172**
Horticulture	**79**	78	**157**	5	1	**6**	18	7	**25**	2	0	**2**	**190**
Renewable Natural Resources	**0**	0	**0**	0	0	**0**	15	4	**19**	0	0	**0**	**19**
Other Agric. and Renewable Resources	**0**	0	**0**	0	0	**0**	0	1	**1**	0	0	**0**	**1**
Agric. Management	**259**	279	**538**	2	1	**3**	81	9	**90**	1	0	**1**	**632**
Environmental Management	**13**	24	**37**	0	0	**0**	0	0	**0**	0	0	**0**	**37**
Agronomy	**8**	9	**17**	0	0	**0**	6	1	**7**	0	0	**0**	**24**
Wildlife Management	**121**	117	**238**	3	5	**8**	103	63	**166**	1	2	**3**	**415**
Consumer Science	**21**	61	**82**	4	13	**17**	8	128	**136**	2	13	**15**	**250**
BSc Veterinary Biology	**10**	9	**19**	2	2	**4**	82	155	**237**	3	8	**11**	**271**
Biotechnology	**14**	10	**24**	0	1	**1**	9	10	**19**	0	2	**2**	**46**
Microbiology	**2**	13	**15**	1	0	**1**	11	10	**21**	0	2	**2**	**39**
TOTAL	**1026**	**1047**	**2073**	**45**	**99**	**94**	**613**	**627**	**1240**	**12**	**45**	**52**	**3464**

As indicated in Table 58 above, Agricultural Management, Animal Science, Agricultural Science (Science Stream) and Wildlife Management contributed the highest number of Undergraduate Degree enrolments at Universities with 18%, 14% and 12% respectively. The lowest figures at Undergraduate Degree level were recorded at Renewable Natural Resources, Agronomy, Agricultural Extension and Agricultural Economics (Art Stream) with 1%.

Africans constituted 60% of the total enrolments at Undergraduate Degree level followed by White students with 36%. Coloured and Asian enrolments at Undergraduate Degree level were relatively very low and collectively they constituted less than 5%.

Table 59 below outlines the enrolments at Postgraduate Diploma level at Universities for 2008.

Table 59: Postgraduate Diploma enrolments by CESM at Universities in 2008													
CESM Category (Postgraduate Diploma)	**African**			**Coloured**			**White**			**Asian**			**Total**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Other Agric. and Renewable Resources	21	6	**27**	1	0	**1**	1	2	**3**	0	0	**0**	**31**
Agricultural Extension	14	4	**18**	0	0	**0**	0	0	**0**	0	0	**0**	**18**
TOTAL	**35**	**10**	**45**	**1**	**0**	**1**	**1**	**2**	**3**	**0**	**0**	**0**	**49**

At Postgraduate Diploma level, Other Agricultural and Renewable Resource and Agricultural Extension constituted the enrolments with 63% and 37% respectively.

African and White students contributed 92% and 6% of the total Postgraduate Diploma enrolments during the 2008 academic year respectively. Coloured students contributed 2% and no Asians registered for Postgraduate Diploma studies in Universities during the 2008 academic year.

Table 60 below outlines the enrolments at Honours Degree level at Universities during the 2008 academic year.

Table 60: Enrolments in Honours Degree by CESM at Universities in 2008

CESM Category (Honours)	African			Coloured			White			Asian			Total
	Total	F	T	M	F	T	M	F	T	M	F	T	
Agricultural Economics (Science Stream)	**12**	4	**16**	0	0	**0**	7	0	**7**	0	0	**0**	**23**
Agricultural Economics (BCom Stream)	**0**	1	**1**	0	0	**0**	2	0	**2**	0	0	**0**	**3**
Agricultural Science (Science Stream)	**0**	3	**3**	0	0	**0**	4	1	**5**	0	0	**0**	**8**
Horticulture	**7**	7	**14**	0	0	**0**	0	0	**0**	0	0	**0**	**14**
Agric. Food Technology	**1**	1	**2**	0	0	**0**	2	9	**11**	0	0	**0**	**13**
Animal Science	**9**	6	**15**	0	0	**0**	20	18	**38**	2	0	**2**	**55**
Plant Science	**4**	9	**13**	0	0	**0**	1	13	**14**	1	1	**2**	**29**
Soil Science	**1**	0	**1**	0	0	**0**	1	0	**1**	0	0	**0**	**2**
Forestry	**0**	0	**0**	0	0	**0**	1	0	**1**	0	0	**0**	**1**
Rural Development	**1**	1	**2**	0	0	**0**	0	0	**0**	0	0	**0**	**2**
Environmental Management	**15**	22	**37**	0	0	**0**	2	3	**5**	1	1	**2**	**44**
Agric. Management	**1**	0	**1**	0	0	**0**	4	0	**4**	0	0	**0**	**5**
Land Reclamation	**0**	0	**0**	0	0	**0**	0	1	**1**	0	0	**0**	**1**
Agronomy	**0**	3	**3**	0	0	**0**	0	0	**0**	0	0	**0**	**3**
Microbiology	**0**	1	**1**	0	0	**0**	4	10	**14**	0	0	**0**	**15**
Biotechnology	**2**	3	**5**	0	0	**0**	12	8	**20**	3	2	**5**	**30**
Wildlife	**0**	0	**0**	0	0	**0**	7	5	**12**	0	0	**0**	**12**
Agricultural Extension (Inst.Agrar Stream)	**0**	1	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Plant Science (Inst.Agrar Stream)	**7**	2	**9**	0	0	**0**	2	0	**2**	0	0	**0**	**11**
Agric. Economics (Inst. Agrar. Stream)	**1**	1	**2**	0	0	**0**	0	0	**0**	0	0	**0**	**2**
TOTAL	**61**	**65**	**126**	**0**	**0**	**0**	**69**	**68**	**137**	**7**	**4**	**11**	**274**

Animal Science, Environmental Management, Plant Science and Biotechnology registered the highest number of students at Honours level with 20%, 16%, 11% and 10% respectively. The other programmes constituted less than 10% of the overall Honours enrolments at Universities during the 2008 academic year.

Whites constituted the majority of enrolments at 50% whilst African students' enrolments accounted for 46% at Honours degree level during the 2008 academic year. Asian students constituted 4% and no Coloured enrolled at Honours Degree level during the 2008 academic year.

Table 61 below outlines the enrolments at Masters level at Universities during the 2008 academic year.

Table 61: Enrolments in Masters Degree by CESM at Universities in 2008

CESM Category (Masters)	African			Coloured			White			Asian			Total
	Total	F	T	M	F	T	M	F	T	M	F	T	
Agricultural Economics (Science Stream)	**9**	6	**15**	0	0	**0**	2	0	**2**	0	0	**0**	**17**
Agricultural Science (Art Stream)	**24**	12	**36**	0	0	**0**	4	5	**9**	0	0	**0**	**45**
Agricultural Science (Science Stream)	**11**	5	**16**	0	3	**3**	12	7	**19**	1	0	**1**	**39**
Agric. Extension	**9**	14	**23**	0	0	**0**	1	0	**1**	0	0	**0**	**24**
Agric. Food Technology	**2**	1	**3**	1	0	**1**	1	10	**11**	0	0	**0**	**15**
Animal Science	**9**	7	**16**	0	2	**2**	14	28	**42**	1	0	**1**	**61**
Horticulture	**4**	2	**6**	0	0	**0**	0	0	**0**	0	0	**0**	**6**
Plant Science	**13**	12	**25**	0	0	**0**	8	4	**12**	0	0	**0**	**37**
Soil Science	**13**	7	**20**	1	0	**1**	3	1	**4**	1	1	**2**	**27**
Forestry	**4**	1	**5**	1	1	**2**	2	2	**4**	0	0	**0**	**11**
Renewable Natural Resources	**3**	3	**6**	0	0	**0**	0	0	**0**	0	1	**1**	**7**
Rural Development	**4**	0	**4**	0	0	**0**	0	0	**0**	0	0	**0**	**4**
Agric. Management	**48**	41	**89**	0	0	**0**	1	0	**1**	0	0	**0**	**90**
Other Agric. and Renewable Resources	**3**	1	**4**	0	0	**0**	0	0	**0**	0	0	**0**	**4**
Environmental Management	**3**	1	**4**	0	0	**0**	0	0	**0**	0	0	**0**	**4**
Agronomy	**2**	1	**3**	0	0	**0**	1	0	**1**	0	0	**0**	**4**
Biotechnology	**3**	0	**3**	1	0	**1**	3	5	**8**	0	2	**2**	**14**
Microbiology	**2**	4	**6**	0	0	**0**	2	5	**7**	0	0	**0**	**13**
Wildlife	**0**	1	**1**	0	0	**0**	9	5	**14**	0	0	**0**	**15**
Consumer Science	**0**	6	**6**	0	0	**0**	0	7	**7**	0	0	**0**	**13**
Plant Science (Inst. Agrar Stream)	**0**	0	**0**	0	1	**1**	0	0	**0**	0	0	**0**	**1**
Agric. Economics (Inst. Agrar. Stream)	**1**	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Agronomy (Inst.Agrar Stream)	**2**	1	**3**	0	0	**0**	0	0	**0**	0	0	**0**	**3**
Environmental Management (Inst. Agrar. Stream)	**1**	3	**4**	0	0	**0**	0	0	**0**	0	0	**0**	**4**
TOTAL	**170**	**129**	**299**	**4**	**7**	**11**	**63**	**79**	**142**	**3**	**4**	**7**	**459**

Agricultural Management, Animal Science, Agricultural Science (Art Stream) and Agricultural Science (Science Stream) are the programmes that have registered the highest number of Masters students with 20%, 13%, 10% and 9% respectively. The lowest figures at Masters Level were recorded at Agricultural Economics (Inst. Agrar Stream) and Plant Science (Inst. Agrar Stream) with less than 1% during the 2008 academic year.

Africans accounted for 65% of the Masters Degree enrolments at Universities followed by White students with 31%. Coloureds and Asians collectively constituted 4% of the total Masters enrolments during the 2008 academic year.

Table 62 below presents the enrolments at the PhD level at Universities during the 2008 academic year.

Table 62: Enrolments in PhD Degree by CESM at Universities in 2008

CESM Category (PhD)	African			Coloured			White			Asian			Total
	Total	F	T	M	F	T	M	F	T	M	F	T	
Agricultural Economics (Art Stream)	**1**	3	**4**	0	0	**0**	0	0	**0**	0	0	**0**	**4**
Agricultural Science (Science Stream)	**5**	0	**5**	0	0	**0**	2	2	**4**	0	0	**0**	**9**
Agricultural Science (Art Stream)	**1**	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Agronomy	**1**	0	**1**	0	0	**0**	1	0	**1**	0	0	**0**	**2**
Animal Science	**7**	3	**10**	1	0	**1**	4	4	**8**	0	0	**0**	**19**
Biotechnology	**5**	5	**10**	2	1	**3**	2	6	**8**	1	0	**1**	**22**
Consumer Science	**0**	1	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Environmental Management	**5**	2	**7**	1	0	**1**	1	0	**1**	0	0	**0**	**9**
Renewable Natural Resources	**1**	3	**4**	0	0	**0**	0	0	**0**	0		**0**	**4**
Agric. Extension	**1**	1	**2**	0	0	**0**	0	0	**0**	0	0	**0**	**2**
Agric. Food Science	**3**	2	**5**	0	0	**0**	0	2	**2**	0	0	**0**	**7**
Forestry	**1**	0	**1**	0	0	**0**	1	0	**1**	0	0	**0**	**2**
Microbiology	**1**	0	**1**	0	0	**0**	0	3	**3**	0	0	**0**	**4**
Plant Science	**4**	4	**8**	0	0	**0**	1	4	**5**	0	0	**0**	**13**
Wildlife	**0**	0	**0**	0	0	**0**	0	2	**2**	0	0	**0**	**2**
Soil Science	**1**	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
TOTAL	**37**	**24**	**61**	**4**	**1**	**5**	**12**	**23**	**35**	**1**	**0**	**1**	**102**

Students who enrolled for Animal Science at PhD level accounted for 21%, followed by Plant Science with 14%, Biotechnology with 11%, Agricultural Science (Science Stream) and Environmental Management with 10% each. The other programmes each registered less than 10% of the total number of PhD enrolments during the 2008 academic year.

African students constituted 59% of the total PhD enrolments during the 2008 academic year followed by White students with 37%. Coloured and Asian students collectively accounted for 4%.

4.3.3.1 Agricultural Economics (Science Stream) Enrolments at Universities in 2008

One hundred and sixty five (165) students registered in this CESM during the 2008 academic year. Programmes in this CESM are offered by the Universities of Fort Hare, Free State, Limpopo, North West and Pretoria. Agricultural Economics (Science stream) includes programmes in: Agricultural Economics/ Livestock/Extension, Agricultural Economics/Plant Production, Agricultural Economics (General), Agricultural Economics (Natural) and Environmental Economics.

Table 63 below presents a demographic breakdown of Agricultural Economics (Science Stream) enrolments during the 2008 academic year by academic level.

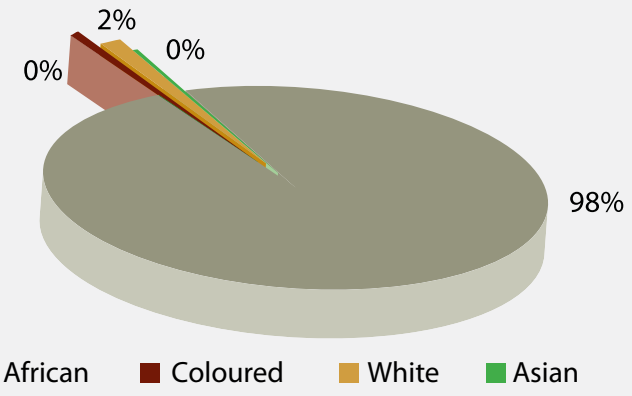
Table 63: Demographic breakdown of Agricultural Economics (Science Stream) enrolments at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	66	57	**123**	0	0	**0**	2	0	**2**	0	0	**0**	**125**
Honours	12	4	**16**	0	0	**0**	7	0	**7**	0	0	**0**	**23**
Masters	9	6	**15**	0	0	**0**	2	0	**2**	0	0	**0**	**17**
TOTAL	**87**	**67**	**154**	**0**	**0**	**0**	**11**	**0**	**11**	**0**	**0**	**0**	**165**

Undergraduate Degree students constituted 76% of the total enrolments in this CESM during the 2008 academic year. Honours enrolments accounted for 14% of the total students enrolled in Agricultural Economics (Science Stream) and Masters accounted for 10%. No Postgraduate Diploma and PhD students enrolled in this CESM.

One hundred and twenty five (125) students registered at Undergraduate Degree level in Agricultural Economics (Science Stream) during the 2008 academic year.

Figure 121: Racial breakdown of Undergraduate Degree in Agricultural Economics (Science Stream) enrolments



In Figure 121 above Africans accounted for 98% of the Undergraduate Degree enrolments in this CESM whilst Whites constituted 2%. No Coloured or Asian students were registered in Agricultural Economics (Science Stream) at Undergraduate Degree level during the 2008 academic year.

Figure 122: Gender breakdown of Undergraduate Degree in Agricultural Economics (Science Stream) enrolments

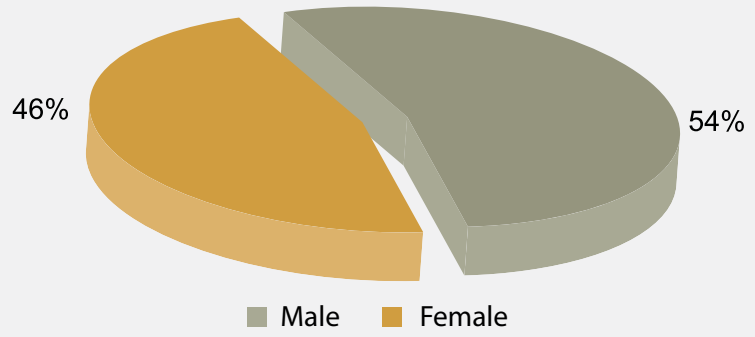


Figure 122 above indicates that males dominated the Undergraduate Degree enrolments in this CESM during the 2008 academic year with 54% and females accounted for 46%. African males comprised the majority of the male enrolments in this CESM at Undergraduate Degree level with 97% whilst White males accounted for 3%.

Twenty three (23) students enrolled for Honours in Agricultural Economics (Science Stream) during the 2008 academic year.

Figure 123: Racial breakdown of Honours in Agricultural Economics (Science Stream) enrolments

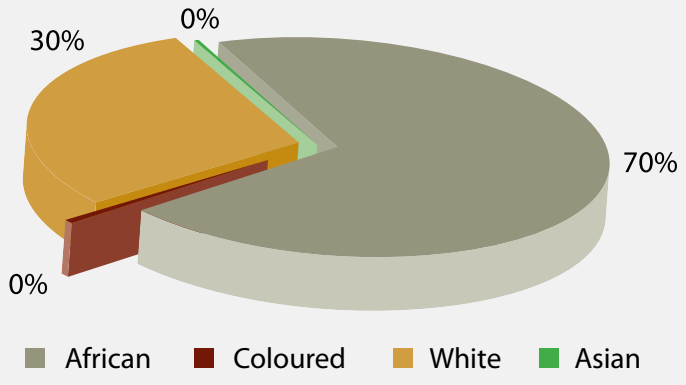
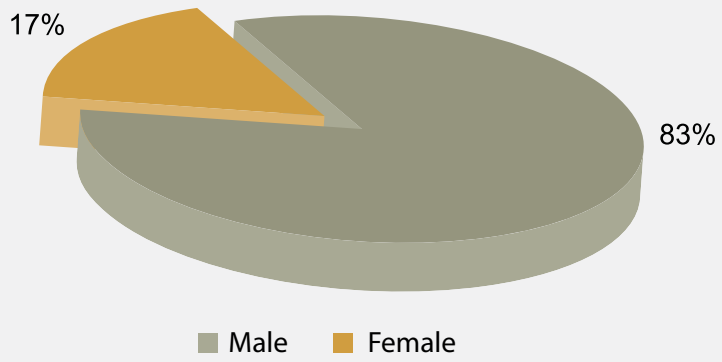


Figure 123 above shows that Africans dominated the Honours enrolments in Agricultural Economics (Science Stream) with 70% followed by Whites with 30%. Coloured and Asian students were not represented at Honours Degree level in this CESM.

Figure 124: Gender breakdown of Honours In Agricultural Economics (Science Stream) enrolments



Gender breakdown in Figure 124 above illustrates that males dominated the Honours enrolments in this CESM with 83% whilst females comprised 17%.

Seventeen (17) students enrolled for Masters in Agricultural Economics (Science Stream) at Universities during the 2008 academic year.

Figure 125: Racial breakdown of Masters in Agricultural Economics (Science Stream) enrolments

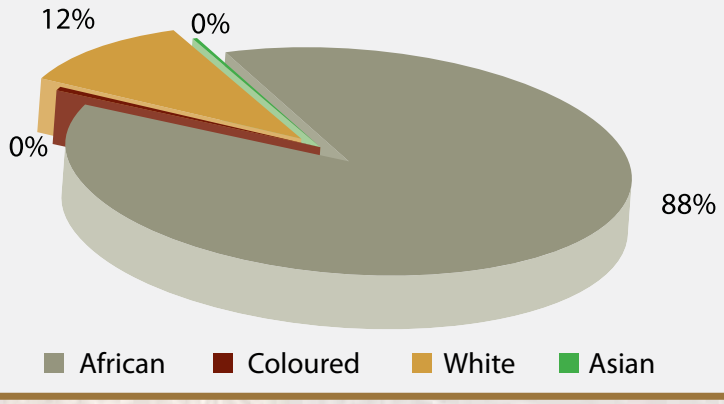


Figure 125 above shows that Africans dominated Masters enrolments in Agricultural Economics (Science Stream) with 88% and Whites accounted for 12%. Coloureds and Asians were not represented in this CESM during the 2008 academic year.

Figure 126: Gender breakdown of Masters in Agricultural Economics (Science Stream) enrolments

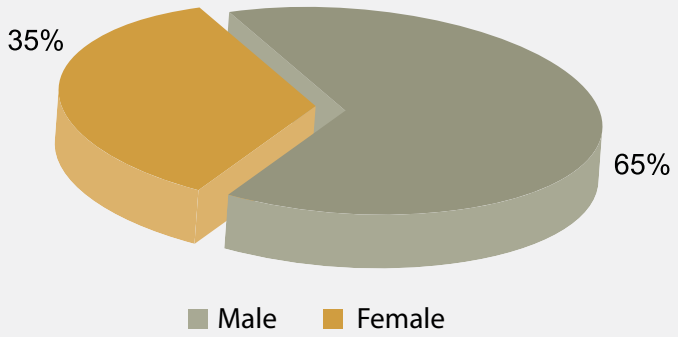


Figure 126 above indicates that males dominated Agricultural Economics (Science Stream) Masters enrolments with 65%, whilst females accounted for 35%.

4.3.3.2 Agricultural Economics (Art Stream) Enrolments at Universities in 2008

Thirty two (32) African students registered in this CESM during the 2008 academic year at Universities. University of Fort Hare is the only institution which offered programmes in Agricultural Economics (Art Stream) during the 2008 academic year.

Table 64 below presents a demographic breakdown of Agricultural Economics (Art Stream) enrolments during the 2008 academic year by level of qualification.

Table 64: Demographic breakdown of Agricultural Economics (Art Stream) enrolments at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	15	13	**28**	0	0	**0**	0	0	**0**	0	0	**0**	**28**
Honours	1	3	**4**	0	0	**0**	0	0	**0**	0	0	**0**	**4**
TOTAL	**16**	**16**	**32**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**32**

Undergraduate Degree students accounted for 87% of the total enrolments in this CESM during the 2008 academic year, whereas Honours students constituted 13%. All the 28 students enrolled at Undergraduate Degree level in Agricultural Economics (Art Stream) were Africans: 15 were males and 13 were females.

At Honours Degree level: 3 African females and 1 African male were enrolled during the 2008 academic year.

4.3.3.3 Agricultural Economics (BCom Stream) Enrolments at Universities in 2008

Three (3) students enrolled in Agricultural Economics (BCom Stream) during the 2008 academic year at Universities. Programmes in this CESM are offered by University of Pretoria only.

Table 65 below presents a demographic breakdown of Agricultural Economics (BCom Stream) enrolments during the 2008 academic year by academic level.

Table 65: Demographic breakdown of Agricultural Economics (BCom Stream) enrolments at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Honours	0	1	**1**	0	0	**0**	2	0	**2**	0	0	**0**	**3**
TOTAL	**0**	**1**	**1**	**0**	**0**	**0**	**2**	**0**	**2**	**0**	**0**	**0**	**3**

Three (3) students enrolled for Honours at Universities in this CESM in the 2008 academic year.

4.3.3.4 Agricultural Economics (Agribusiness Management) Enrolments at Universities in 2008

Thirty four (34) students enrolled in Agricultural Economics (Agribusiness Management) during the 2008 academic year. Institutions offering programmes in this CESM are the University of Pretoria, University of Stellenbosch and University of Venda. This CESM includes programmes in Agricultural Economics: Agribusiness Management.

Table 66: Demographic breakdown of Agricultural Economics (Agribusiness Management) enrolments at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	13	7	**20**	1	0	**1**	12	1	**13**	0	0	**0**	**34**
TOTAL	**13**	**7**	**20**	**1**	**0**	**1**	**12**	**1**	**13**	**0**	**0**	**0**	**34**

All the 34 students who enrolled in this CESM during the 2008 academic year were registered at Undergraduate Degree level.

Figure 127: Racial breakdown of Undergraduate Degree in Agricultural Economics (Agribusiness Management) enrolments

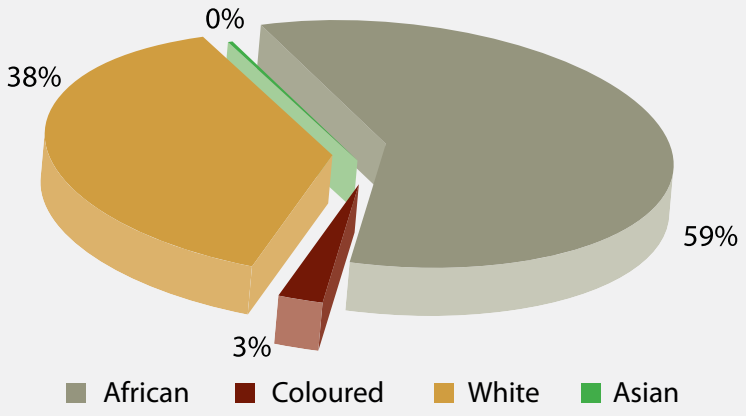
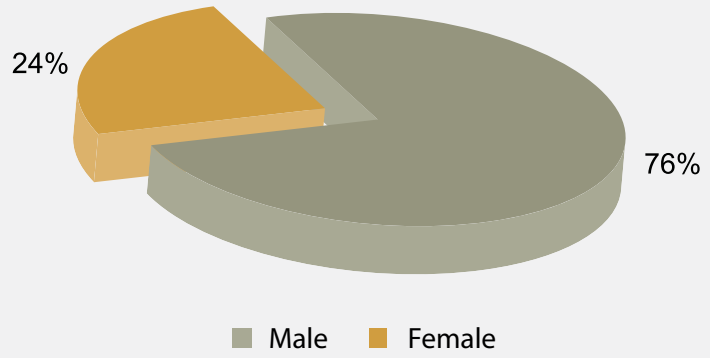


Figure 127 above indicates that Africans dominated the Undergraduate Degree in this CESM with 59% followed by Whites with 38% and Coloureds with 3%. No Asians enrolled in this CESM at Undergraduate Degree during the 2008 academic year.

Figure 128: Gender breakdown of Undergraduate Degree in Agricultural Economics (Agribusiness Management) enrolments



Gender breakdown in Figure 128 above shows a male domination of this CESM at Undergraduate Degree level with 76% whilst females constituted 24%. African males accounted for 52% of the Agricultural Economics (Agribusiness Management) Undergraduate Degree enrolments, whilst White males constituted 48%. No Coloured females were registered in this CESM at Undergraduate level during the 2008 academic year.

4.3.3.5 Agricultural Science (Art Stream) Enrolments at Universities in 2008

One hundred and fifty eight (158) students enrolled in this CESM during the 2008 academic year. This CESM includes programmes such as Agriculture and programmes in this CESM are offered by University of Free State, University of Venda and University of Stellenbosch.

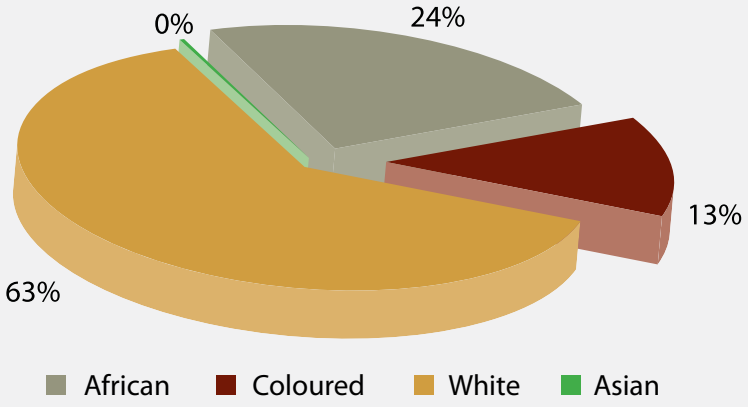
Table 67 below presents a demographic breakdown of Agricultural Science (Art Stream) enrolments during the 2008 academic year by level of qualification.

Table 67: Demographic breakdown of Agricultural Science (Art Stream) enrolments at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate Degree	16	11	**27**	6	8	**14**	56	15	**71**	0	0	**0**	**112**
Masters	24	12	**36**	0	0	**0**	4	5	**9**	0	0	**0**	**45**
PhD	1	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
TOTAL	**41**	**23**	**64**	**6**	**8**	**14**	**60**	**20**	**80**	**0**	**0**	**0**	**158**

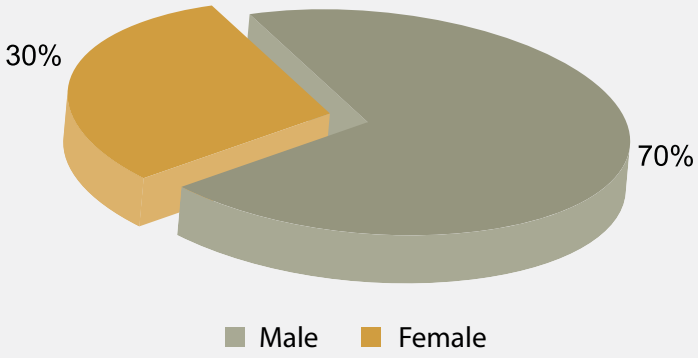
Undergraduate Degree accounted for 71% of total enrolments in this CESM. Masters and PhD students registered in Agricultural Science (Art Stream) during the 2008 academic year constituted 28% and 1% respectively.

Figure 129: Racial breakdown of Undergraduate Degree in Agricultural Science (Art Stream) enrolments



As shown in Figure 129 above, Whites accounted for 63% of the Undergraduate Degree enrolments in this CESM followed by Africans with 24% and Coloureds with 13%. Asians were not represented in this CESM at Undergraduate Degree level during the 2008 academic year.

Figure 130: Gender breakdown of Undergraduate Degree in Agricultural Economics (Art Stream) enrolments



In Figure 130 above it is indicated that males were dominant in this CESM at Undergraduate Degree level with 70% whilst females accounted for 30%. White male students accounted for 44% and African males constituted 32% of the Undergraduate Degree in Agricultural Science (Science Stream) followed by Coloureds with 24%.

Forty five (45) students enrolled at Masters Degree level in Agricultural Science (Art Stream) during the 2008 academic year.

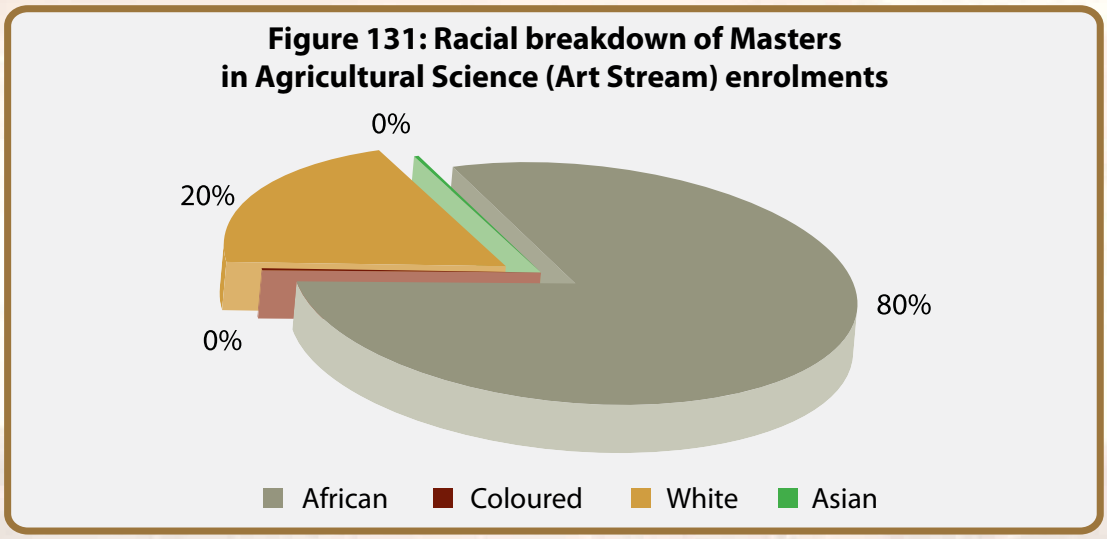
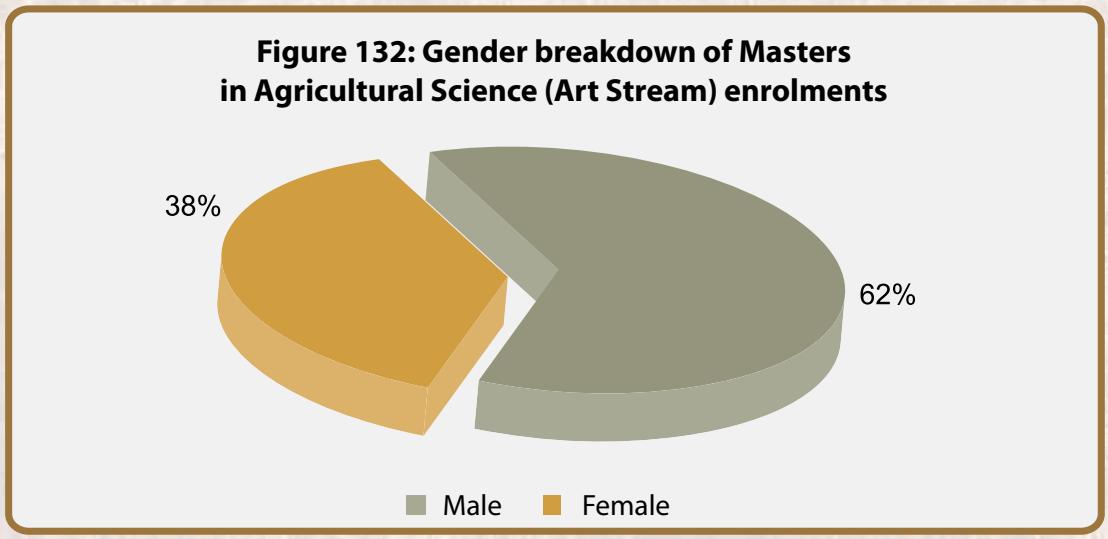


Figure 131 above depicts that Africans were the majority in the Masters enrolments of Agricultural Science (Art Stream) with 80% followed by Whites with 20%. Coloureds and Asians were not represented in this CESM at Masters level.



As shown in Figure 132 above, males dominated the Masters enrolments in this CESM with 62% whilst female students constituted 38%. African males comprised 86% of the male enrolments in this CESM at Masters degree level and Whites accounted for 14%.

One (1) African male student registered for PhD level in this CESM during the 2008 academic year.

4.3.3.6 Agricultural Science (Science Stream) Enrolments at Universities in 2008

Four hundred and seventy four (474) students enrolled in Agricultural Science (Science Stream) during the 2008 academic year. Institutions offering programmes in Agricultural Science (Science Stream) are University of Free State, University of Stellenbosch, University of Limpopo, University of Venda and University of South Africa. The Agricultural Science (Science Stream) includes programmes in the following: BSc Agric General and Agriculture, Science and Agriculture, BSc Agriculture , Rural Engineering and BSc Computer Information Systems.

Table 68 below presents a demographic breakdown of Agricultural Science (Science Stream) enrolments during the 2008 academic year by level of qualification.

Table 68: Demographic breakdown of Agricultural Science (Science Stream) enrolments at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	87	110	**197**	4	7	**11**	86	108	**194**	3	13	**16**	**418**
Honours	0	3	**3**	0	0	**0**	4	1	**5**	0	0	**0**	**8**
Masters	11	5	**16**	0	3	**3**	12	7	**19**	1	0	**1**	**39**
PhD	5	0	**5**	0	0	**0**	2	2	**4**	0	0	**0**	**9**
TOTAL	**103**	**118**	**221**	**4**	**10**	**14**	**104**	**118**	**222**	**4**	**13**	**17**	**474**

The enrolments to the Undergraduate Degree accounted for 88% of the total enrolments in this CESM followed by Masters with 8% whilst Honours and PhD accounted for 2% each.

Four hundred and eighteen (418) students enrolled for Agricultural Science (Science Stream) at Undergraduate Degree level during the 2008 academic year.

Figure 133: Racial breakdown of Undergraduate Degree in Agricultural Science (Science Stream) enrolments

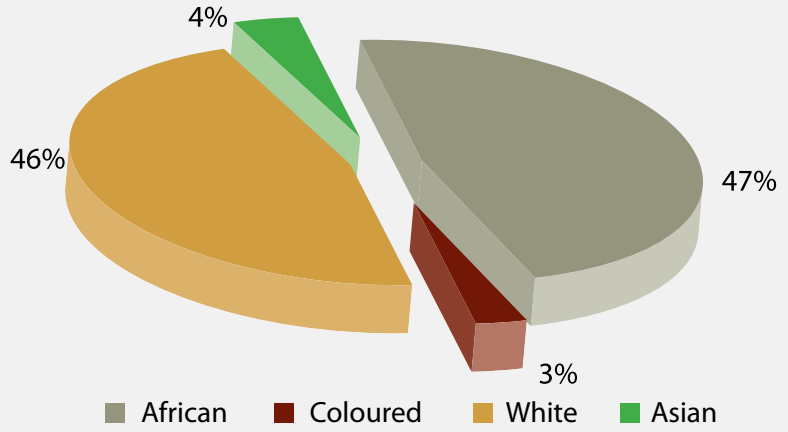


Figure 133 above indicates that African and White students constituted the majority of the Undergraduate Degree enrolments in this CESM. Coloured and Asian students accounted for 4% and 3% respectively of Undergraduate Degree enrolments in this CESM during the 2008 academic year.

Figure 134: Gender breakdown of Undergraduate Degree in Agricultural Science (Science Stream) enrolments

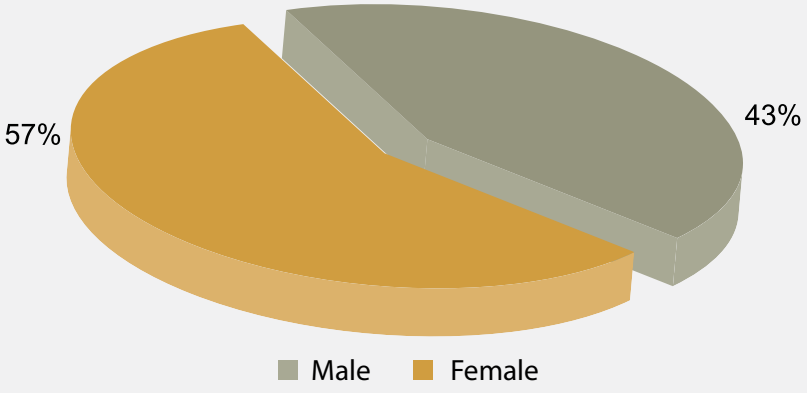


Figure 134 above depicts that females accounted for 57% of the Undergraduate Degree in this CESM, whilst males constituted 43%. African females accounted for 47% of the female enrolments, followed by Whites with 45%, Asians with 5% and Coloureds with 3%.

Eight (8) students enrolled for Honours Degree in this CESM during the 2008 academic year. Of the 8 students enrolled, 4 were White males, 1 was White female and 3 were African females. Thirty nine (39) students enrolled for Masters Degree in Agricultural Science (Science Stream) during the 2008 academic year.

Figure 135: Racial breakdown of Masters in Agricultural Science (Science Stream) enrolments

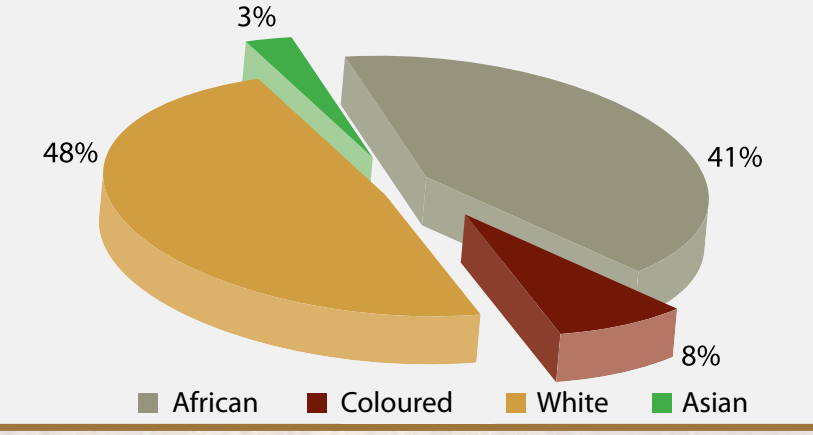
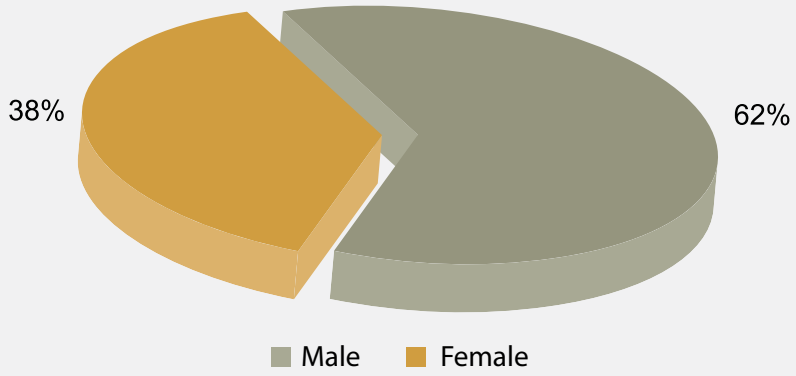


Figure 135 above depicts that Whites and Africans constituted the majority of Masters enrolments in this CESM with 48% and 41% respectively. Coloureds and Asians accounted for 8% and 3% of the Masters enrolments in this CESM respectively.

Figure 136: Gender breakdown of Masters Degree in Agricultural Science (Science Stream) enrolments



As shown in Figure 136 above, males comprised 62% of the Masters Degree enrolments in Agricultural Science (Science Stream), whilst females represented 38%. White and African males constituted 50% and 46% respectively and Asian males accounted for 4% of the male enrolments in this CESM at Masters Degree level.

Nine (9) students registered for PhD in Agricultural Science (Science Stream) during the 2008 academic year at Universities.

4.3.3.7 Agricultural Extension Enrolments at Universities in 2008

Sixty nine (69) students registered for Agricultural Extension CESM during the 2008 academic year at Universities. Programmes in Agricultural Extension are offered by University of North West, University of Pretoria, University of Fort Hare and University of Limpopo. This CESM includes programmes in the following: Extension and Rural Development, Agrarian Extension and Agricultural Extension/Production.

Table 69 below presents a demographic breakdown of Agricultural Extension enrolments during the 2008 academic year by academic level of qualification.

Table 69: Demographic breakdown of Agricultural Extension enrolments at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	10	15	**25**	0	0	**0**	0	0	**0**	0	0	**0**	**25**
Postgraduate Diploma	14	4	**18**	0	0	**0**	0	0	**0**	0	0	**0**	**18**
Masters	9	14	**23**	0	0	**0**	1	0	**1**	0	0	**0**	**24**
PhD	1	1	**2**	0	0	**0**	0	0	**0**	0	0	**0**	**2**
TOTAL	**34**	**34**	**68**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**69**

Student enrolments at Undergraduate and Masters Degree level in Agricultural Extension each accounted for 35% of the overall Universities enrolments in this CESM during the 2008 academic year. Postgraduate Diploma and PhD enrolments constituted 26% and 3% respectively of the total enrolments in this CESM during the 2008 academic year.

Racial breakdown for the Undergraduate Degree in Agricultural Extension shows that all the 25 registered students were African: 15 were females and 10 were males.

Eighteen (18) African students registered for the Postgraduate Diploma in this CESM during the 2008 academic year: 14 were males and 4 were females.

Enrolments at Masters Degree level in this CESM during the 2008 academic year amounted to 24 students: 23 were Africans and 1 was White.

Findings indicates that PhD enrolments comprised 2 African students in this CESM during the 2008 academic year: 1 was male and 1 was female.

4.3.3.8. Agricultural Food Technology Enrolments at Universities in 2008

Ninety five (95) students registered for the Agricultural Food Technology during the 2008 academic year. Programmes in Agricultural Food Technology are offered by University of Free State, University of Stellenbosch, University of Venda and University of Pretoria. This CESM includes programmes in: BSc, BSc (Hons), MSc, and PhD in Food Science and Technology, Food Science and Chemistry, Food Science and Biochemistry, Food Science and Microbiology, Food Security, Food Science Technology and Nutrition, and BSc. Wine Science

Table 70: Demographic breakdown of Agricultural Food Technology enrolments at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	7	13	**20**	4	4	**8**	5	26	**31**	0	1	**1**	**60**
Honours	1	1	**2**	0	0	**0**	2	9	**11**	0	0	**0**	**13**
Masters	2	1	**3**	1	0	**1**	1	10	**11**	0	0	**0**	**15**
PhD	3	2	**5**	0	0	**0**	0	2	**2**	0	0	**0**	**7**
TOTAL	**13**	**17**	**30**	**5**	**4**	**9**	**8**	**47**	**55**	**0**	**1**	**1**	**95**

Undergraduate Degree enrolments in this CESM during the 2008 academic year accounted for 63% followed by Masters with 16%, Honours with 14% and PhD with 7%.

Sixty (60) students enrolled for the Undergraduate Degree in this CESM during the 2008 academic year.

Figure 137: Racial breakdown of Undergraduate Degree in Food Science enrolments

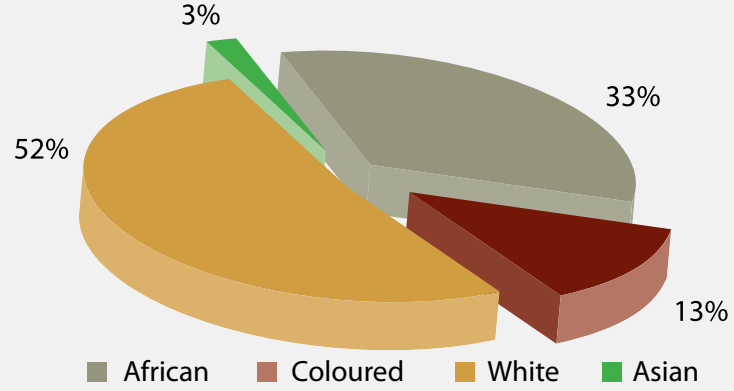
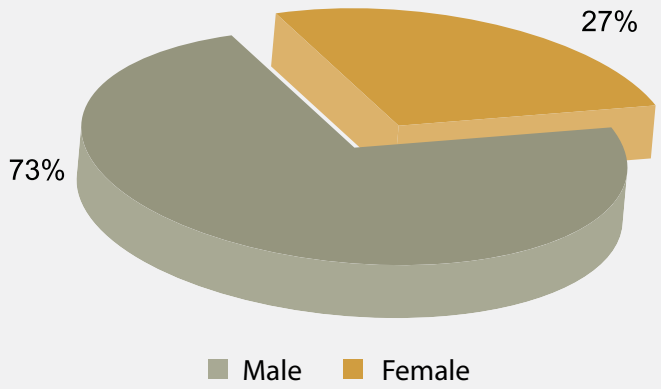


Figure 137 above indicates that White students were the majority with 52% of the Undergraduate Degree enrolments in this CESM followed by Africans with 33%. Coloureds accounted for 13 % and Asians constituted 2% of the Undergraduate Degree enrolments in this CESM.

Figure 138: Gender breakdown of Undergraduate Degree in Food Science enrolments



Gender classification in Figure 138 above shows that females dominated the Agricultural Food Technology Undergraduate Degree enrolments with 73% whilst males constituted 27%. White and African females comprised 59% and 30% of the females in this CESM at Undergraduate Degree enrolments respectively, followed by Coloureds with 9% and Asians with 2%.

Fifteen (15) students were registered at Masters Degree level in this CESM during the 2008 academic year. Eleven (11) were Whites, 3 were Africans and 1 was Coloured. Seven (7) students were registered at PhD level; 5 were African and 2 were White.

4.3.3.9 Animal Science Enrolments at Universities in 2008

Six hundred and eight (608) students enrolled for the Animal Science Degree during the 2008 academic year at Universities. Programmes in Animal Science are offered by University of Fort Hare, University of Limpopo, University of North West, University of South Africa, University of Free State, University of Stellenbosch and University of Pretoria.

Animal Science CESM includes programmes in: Undergraduate, Honours, Masters and PhD level. Animal Production Science, Animal Pasture Science, Animal Production, Animal Health, Animal Production Management, Animal Science and Food Science, Animal Science/Grassland Science, Animal Science with Agronomy, Animal Science with Conservation Ecology, Animal Science with Agricultural Economics, Reproduction Physiology, Animal Physiology, Livestock Industry Management, Assisted Reproduction, Livestock Industry Management: Dairy Science, Livestock Management: Aquaculture, Livestock Industry Management: Pig Production Sciences and Livestock Industry Management: Poultry Science, Animal Science/ Pasture Management, Animal Science and Animal genetics, Animal Science: Meat Science, Animal Science: Animal Production, Animal Science: Animal Breeding, Animal Science: Livestock Nutrition, Animal Science: Production Physiology, Animal Science: Nutrition Science, Animal Science: Production Management and Animal Science: Animal Breeding and Genetics

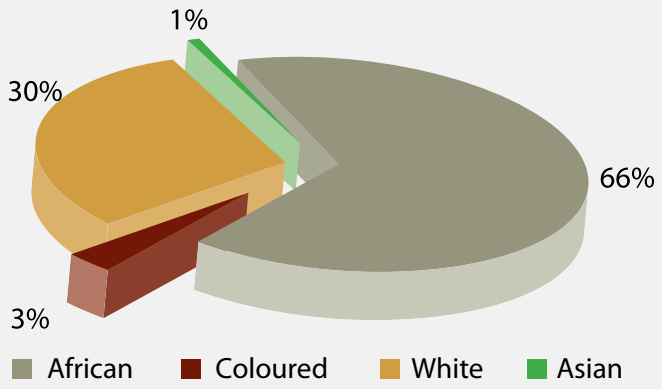
Table 71 below presents a demographic breakdown of Animal Science enrolments during the 2008 academic year by level of qualification.

Table 71: Demographic breakdown of Animal Science enrolments at Universities in 2008													
LEVEL	**African**			**Coloured**			**White**			**Asian**			**Total**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Undergraduate	158	157	**315**	6	6	**12**	67	75	**142**	0	4	**4**	**473**
Honours	9	6	**15**	0	0	**0**	20	18	**38**	2	0	**2**	**55**
Masters	9	7	**16**	0	2	**2**	14	28	**42**	1	0	**1**	**61**
PhD	7	3	**10**	1	0	**1**	4	4	**8**	0	0	**0**	**19**
TOTAL	**183**	**173**	**356**	**7**	**8**	**15**	**105**	**125**	**230**	**3**	**4**	**7**	**608**

Undergraduate Degree enrolments constituted 78% of the overall enrolments in Animal Science during the 2008 academic year. Masters and Honours enrolments accounted for 10% and 9% respectively whilst PhD constituted only 3%.

Four hundred and seventy three (473) students enrolled for Undergraduate Degree in Animal Science during the 2008 academic year.

Figure 139: Racial breakdown of Undergraduate Degree in Animal Science enrolments



As shown in Figure 139 above, Africans dominated the Undergraduate Degree enrolments in this CESM with 66% followed by Whites with 30%. Coloureds and Asians constituted 3% and 1% respectively of the Undergraduate Degree enrolments in Animal Science.

Figure 140: Gender breakdown of Undergraduate Degree in Animal Science enrolments

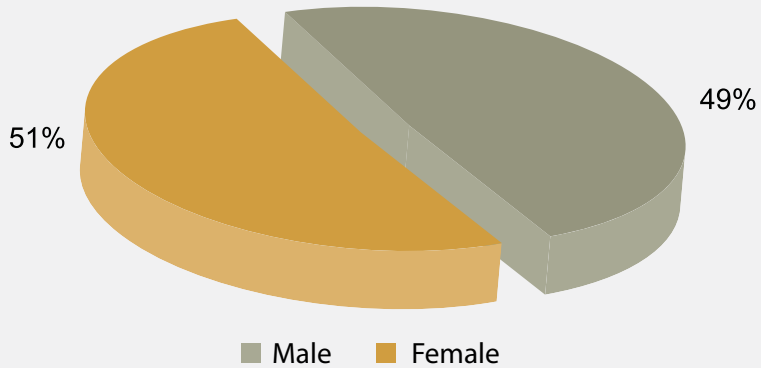


Figure 140 above depicts that females constituted 51% of the Undergraduate Degree enrolments in this CESM whilst males accounted for 49%. African and White females accounted for 65% and 31% of the female enrolments in this CESM. Coloured and Asian females accounted for 2% each.

Fifty five (55) students enrolled at Honours Degree level in this CESM during the 2008 academic year.

Figure 141: Racial breakdown of Honours in Animal Science enrolments

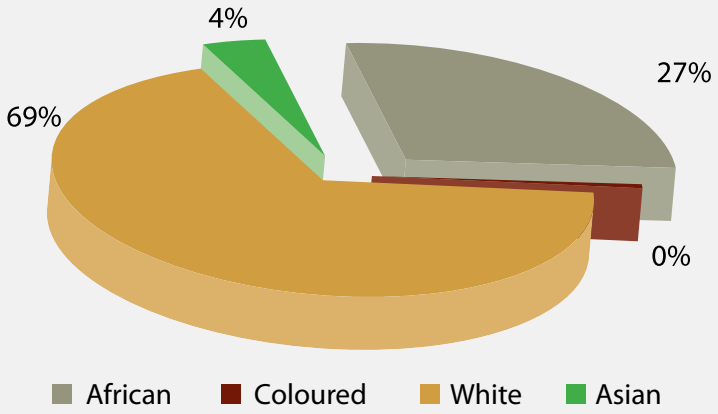
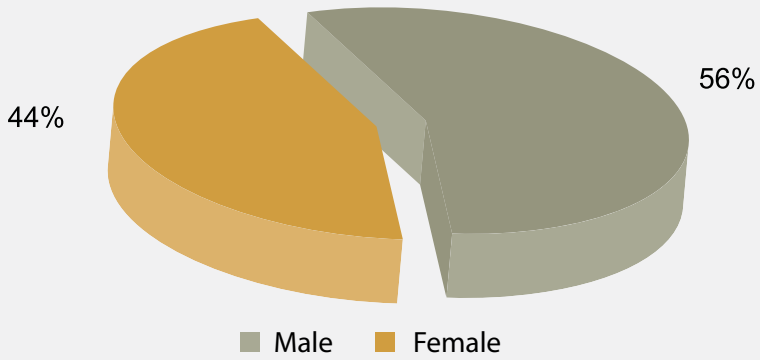


Figure 141 above shows that Whites constituted a majority of Honours Degree enrolments in this CESM with 69% followed by Africans and Asians with 27% and 4% respectively. Coloureds were not represented in this CESM at Honours level during the 2008 academic year.

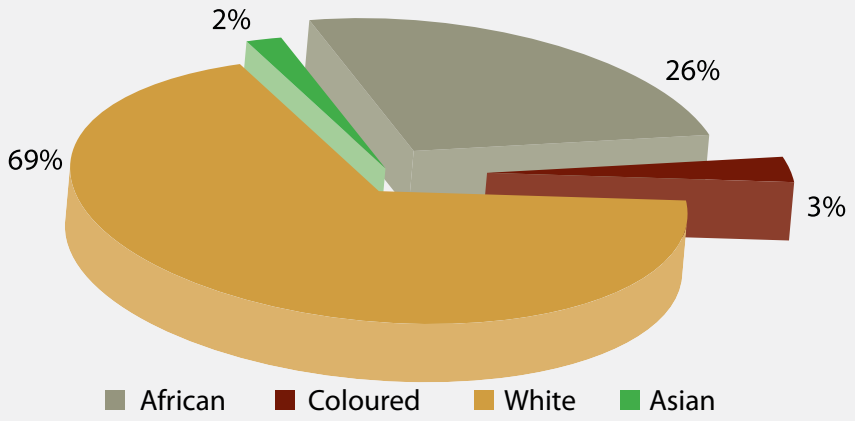
Figure 142: Gender breakdown of Honours in Animal Science enrolments



As depicted in Figure 142 above, males constituted 56% of Honours Degree enrolments in this CESM, whilst females accounted for 44%.

Sixty one (61) students enrolled for Masters Degree in this CESM during the 2008 academic year.

Figure 143: Racial breakdown of Masters in Animal Science enrolments



Racial classification in Figure 143 above indicates that Whites were dominant in this CESM at Masters Degree level with 69%, followed by Africans and Coloureds with 26% and 3% respectively. Asians accounted for 2% in this CESM at Masters Degree level during the 2008 academic year.

Figure 144: Gender breakdown of Masters in Animal Science enrolments

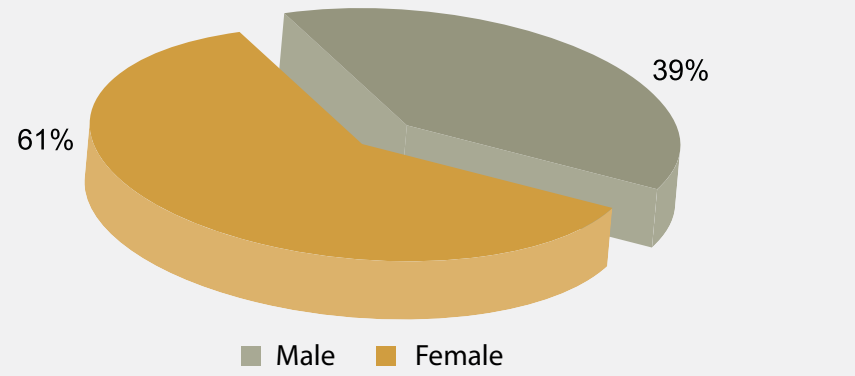


Figure 144 above depicts that females accounted for 61% of Masters Degree enrolments in Animal Science during the 2008 academic year whilst males constituted 39%. White females were the majority with 76% of the female enrolments at Masters Degree level in this CESM followed by Africans and Coloureds with 19% and 5% respectively.

Nineteen (19) students enrolled for PhD in this CESM during the 2008 academic year. Seven (7) were African males, 3 were African females, 4 were White males, 4 were White females and 1 was a Coloured male.

4.3.3.10. Plant Science Enrolments at Universities in 2008

A total number of 137 students enrolled for Plant Science during the 2008 academic year. Programmes in this CESM are offered by University of Fort Hare, University of Free State, University of North West, University of Limpopo, University of Stellenbosch and University of Pretoria.

This CESM includes programmes in the following: Crop Production, Crop Production Management, Plant Pathology, and Entomology, Plant Breeding and Genetics, Plant Production, Plant Protection and Life and soil science, Pasture Science and Crop Protection, Crop Science, Plant Production, Plant Production: Agronomy, Plant production: Pasture Science, Plant Production: Weed Science, Pasture Science, Plant Production: Horticulture, Nematology and Insect Management and Crop Soil Science.

Table 72 below presents a demographic breakdown of Plant Science enrolments by CESM level of qualification.

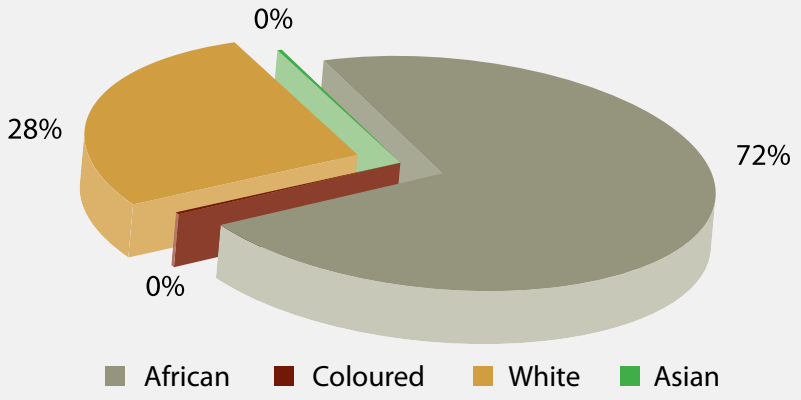
Table 72: Demographic breakdown of Plant Science enrolments at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	22	20	**42**	0	0	**0**	8	8	**16**	0	0	**0**	**58**
Honours	4	9	**13**	0	0	**0**	1	13	**14**	1	1	**2**	**29**
Masters	13	12	**25**	0	0	**0**	8	4	**12**	0	0	**0**	**37**
PhD	4	4	**8**	0	0	**0**	1	4	**5**	0	0	**0**	**13**
TOTAL	**43**	**45**	**88**	**0**	**0**	**0**	**18**	**29**	**47**	**1**	**1**	**2**	**137**

Undergraduate Degree accounted for 43% of enrolments in Plant Science followed Masters with 27%, Honours with 21% and PhD with 9%.

Fifty eight (58) students registered at Undergraduate Degree level in this CESM during the 2008 academic year.

Figure 145: Racial breakdown of Undergraduate Degree in Plant Science enrolments



As portrayed in Figure 145 above, Africans constituted 72% of the Undergraduate Degree enrolments in this CESM followed by Whites with 28%. No Coloureds or Asians were enrolled in this CESM at Undergraduate level.

Figure 146: Gender breakdown of Undergraduate Degree in Plant Science enrolments

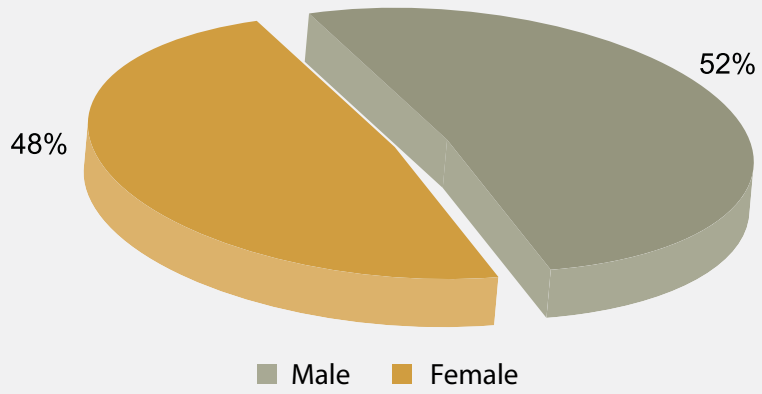
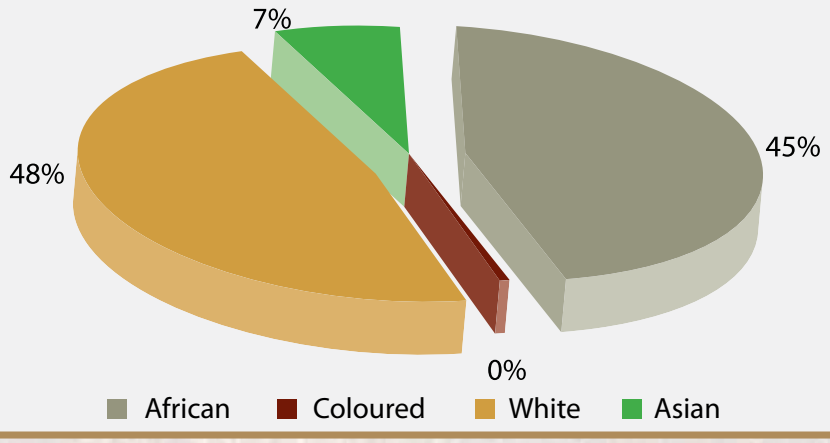


Figure 146 above shows dominance by males with 52% of the Undergraduate Degree enrolments in Plant Science whilst females accounted for 48%.

Twenty nine (29) students enrolled at Honours Degree level in Plant Science during the 2008 academic year.

Figure 147: Racial breakdown of Honours in Plant Science enrolments



As depicted in Figure 147 above, Whites students accounted for 48% of the total Honours enrolments in this CESM, followed by Africans with 45% and Asians with 7%. Coloureds were not represented in this CESM during the 2008 academic year.

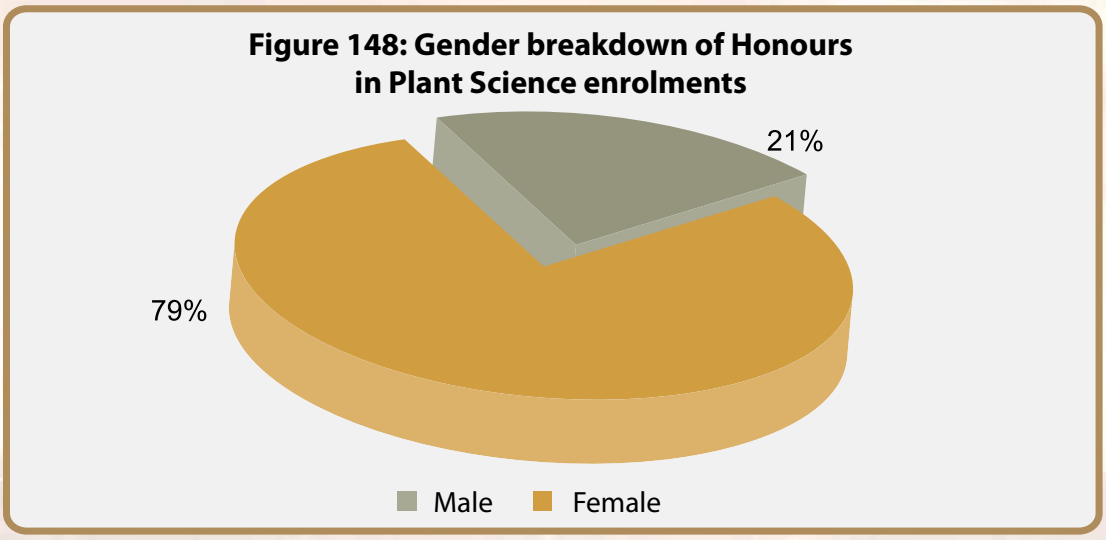


Figure 148 above shows that females were dominant in this CESM at Honours level with 79% whilst males accounted for 21%. White females comprised 57% of the female enrolments in this CESM at Honours level, followed by White females with 39% and Asian females with 4%.

Thirty seven (37) students enrolled for the Masters Degree in this CESM during the 2008 academic year.

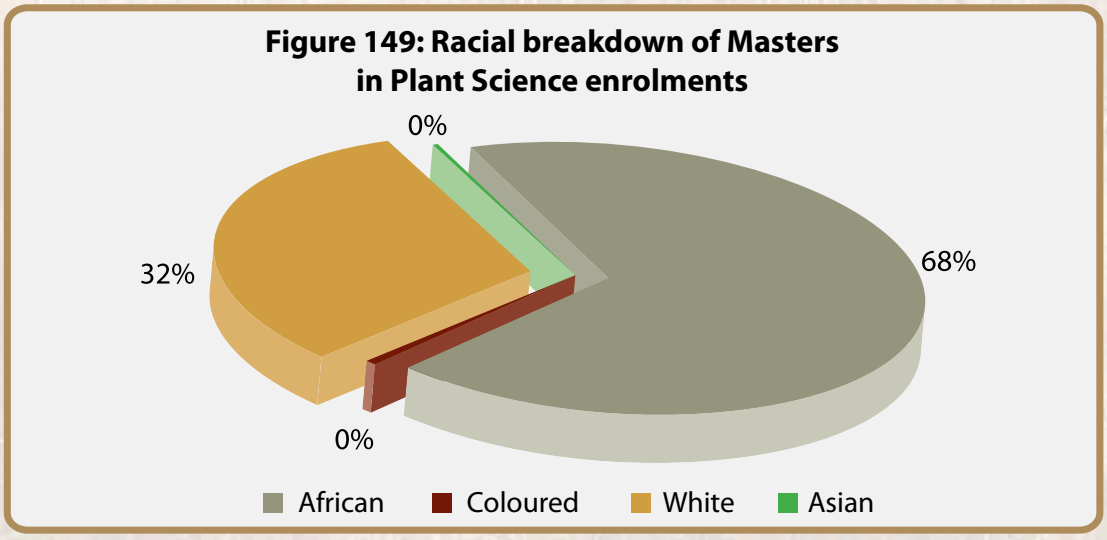


Figure 149 above shows that Africans constituted 68% of the Masters enrolments in this CESM followed by Whites with 32%. Coloureds and Asians were not represented in this Masters level during the 2008 academic year.

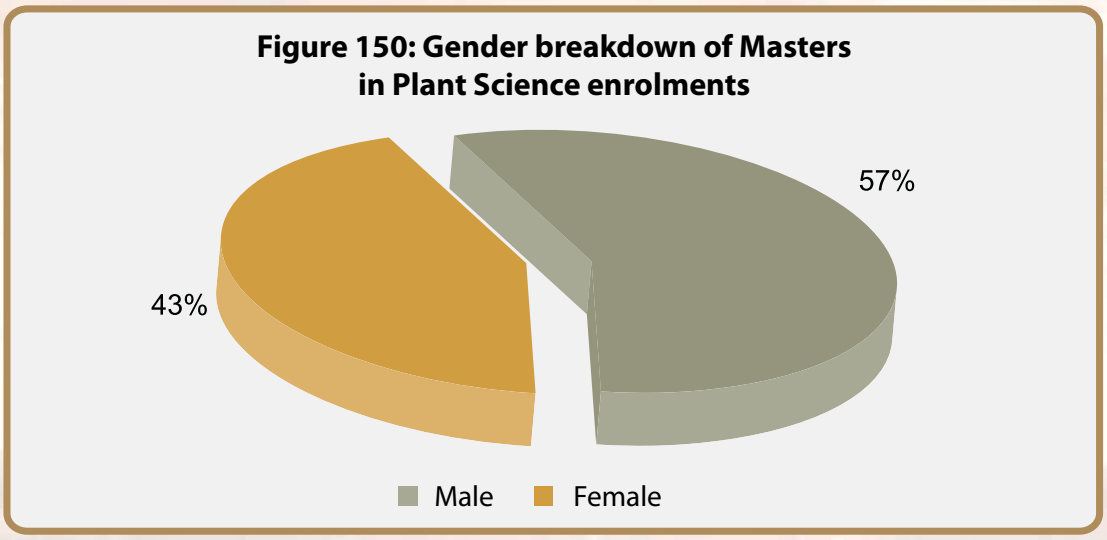


Figure 150 above depicts that males were dominant in the Masters Degree in this CESM with 57% whilst females accounted for 43%.

The findings indicates that PhD enrolments comprised 13 students in this CESM during the 2008 academic year. Racial breakdown for the PhD in Plant Science shows that 8 were Africans and 5 were Whites.

4.3.3.11 Soil Science Enrolments at Universities in 2008

Sixty five (65) students were registered in Soil Science during the 2008 academic year at Universities. Programmes in Soil Science are offered by the University of Fort Hare, University of Free State, University of Stellenbosch, University of Limpopo and University of Pretoria.

Soil Science includes programmes in; Remote Sensing, Soil Science/Plant Pathology, Soil Science/Grassland Science, Soil Science and Plant Nutrition, Soil Science and Agronomy, Irrigation Management, Irrigation Science/Agronomy, Irrigation Science/Soil Science.

Table 73 below presents a demographic breakdown of Soil Science enrolments during the 2008 academic year by level of qualification.

Table 73: Demographic breakdown of Agricultural Food Technology enrolments at Universities in 2010

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	7	13	**20**	4	4	**8**	5	26	**31**	0	1	**1**	**60**
Honours	1	1	**2**	0	0	**0**	2	9	**11**	0	0	**0**	**13**
Masters	2	1	**3**	1	0	**1**	1	10	**11**	0	0	**0**	**15**
PhD	3	2	**5**	0	0	**0**	0	2	**2**	0	0	**0**	**7**
TOTAL	**13**	**17**	**30**	**5**	**4**	**9**	**8**	**47**	**55**	**0**	**1**	**1**	**95**

Table 73 above indicates that Undergraduate Degree enrolments dominated the Soil Science enrolments with 53%, followed by Masters, Honours and PhD with 42%, 3% and 2% respectively.

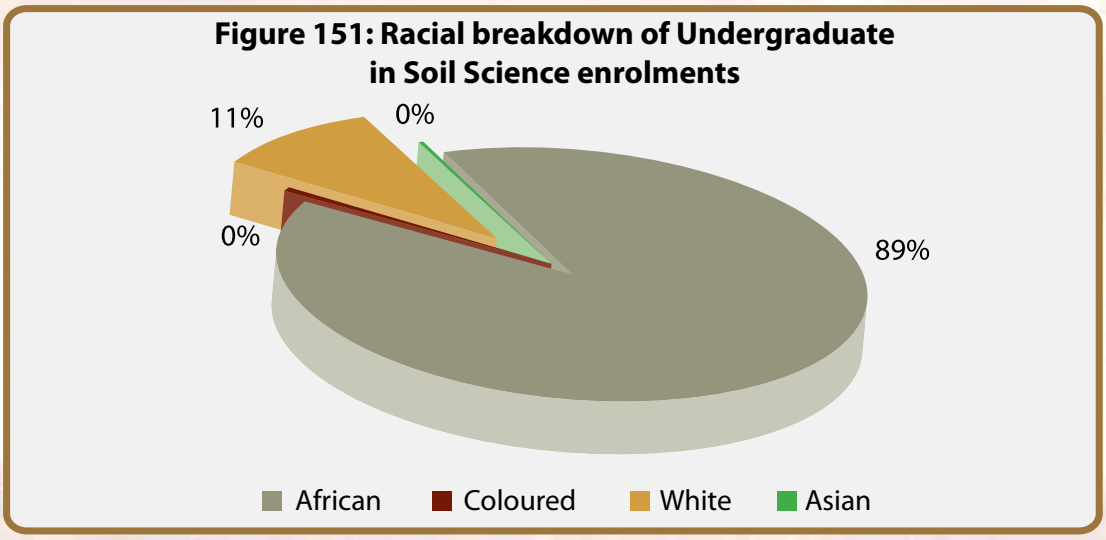


Figure 151 above shows that Africans constituted 89% of the Undergraduate enrolments in this CESM followed by Whites with 11%. Coloureds and Asians were not represented in this CESM at Undergraduate level during the 2008 academic year.

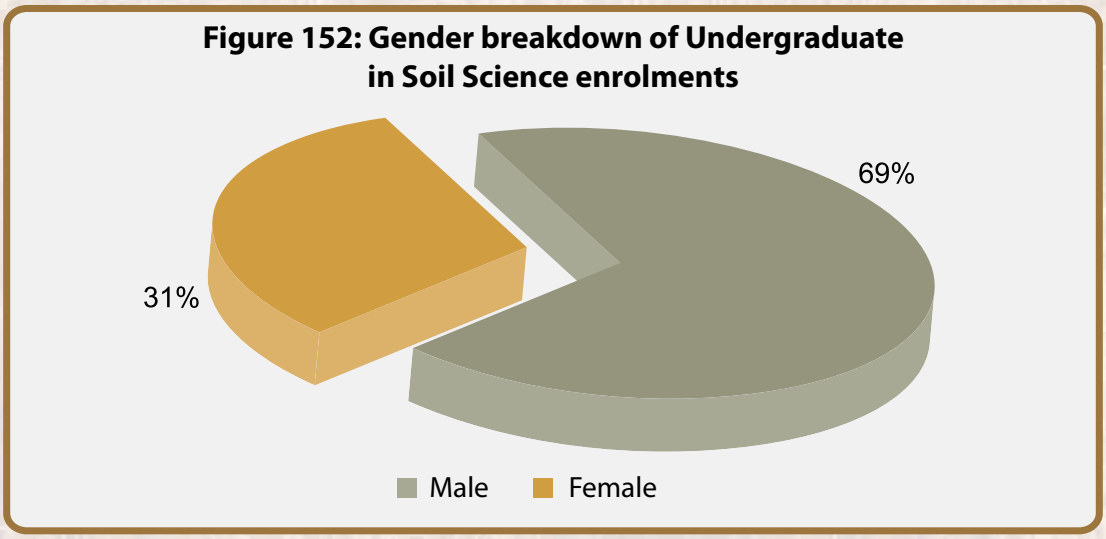
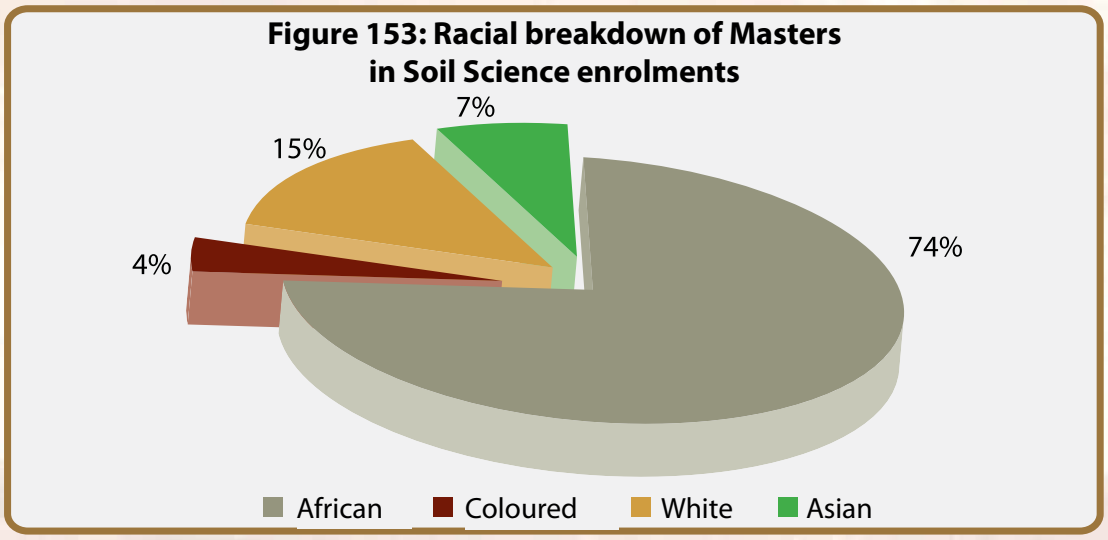


Figure 152 above depicts that males were dominant in the Masters Degree in this CESM with 69%, whilst females accounted for 31%.

Two (2) male students enrolled for Honours Degree in this CESM: 1 was African and 1 was White.



Twenty seven (27) students registered for Masters Degree in Soil Science during the 2008 academic year at Universities. Africans accounted for 74% of the enrolments followed by Whites with 15%, Asians with 7% and Coloureds with 4%.

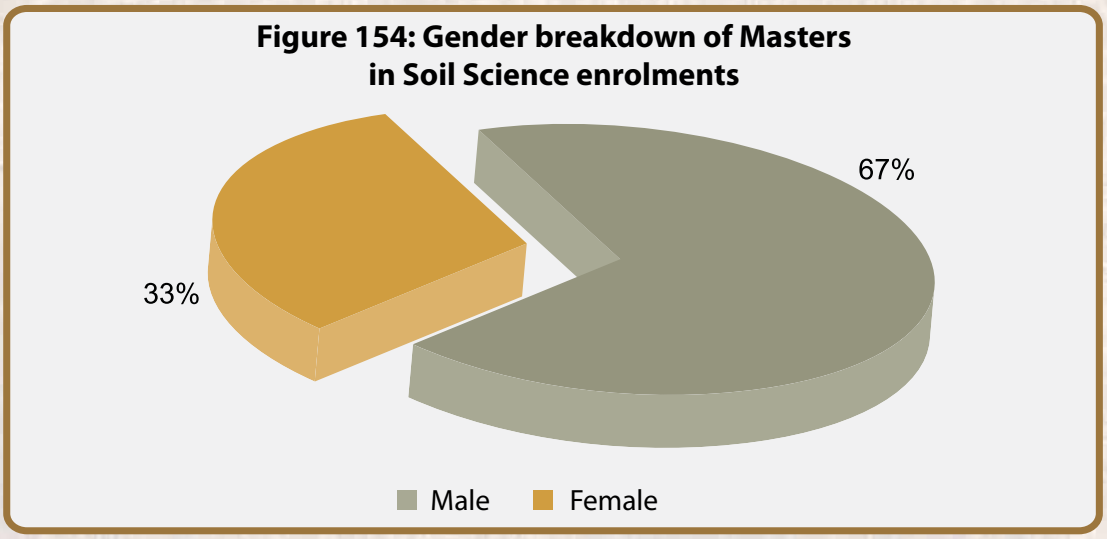


Figure 154 above depicts that males were dominant in the Masters Degree in this CESM with 67%, whilst females accounted for 33%.

At PhD level in this CESM during the 2008 academic year there was 1 African male student registered.

4.3.3.12 Forestry Enrolments at Universities in 2008

One hundred and eighty six (186) students enrolled in this CESM during the 2008 academic year at Universities. Programmes in this CESM are offered by the University of Stellenbosch and University of Venda.

Table 74 below presents a demographic breakdown of Forestry enrolments during the 2008 academic year by level of qualification.

Table 74: Demographic breakdown of Forestry enrolments at Universities in 2008													
LEVEL	**African**			**Coloured**			**White**			**Asian**			**Total**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Undergraduate	84	34	**118**	7	1	**8**	41	5	**46**	0	0	**0**	**172**
Honours	0	0	**0**	0	0	**0**	1	0	**1**	0	0	**0**	**1**
Masters	4	1	**5**	1	1	**2**	2	2	**4**	0	0	**0**	**11**
PhD	1	0	**1**	0	0	**0**	1	0	**1**	0	0	**0**	**2**
TOTAL	**89**	**35**	**124**	**8**	**2**	**10**	**45**	**7**	**52**	**0**	**0**	**0**	**186**

Undergraduate Degree dominated the enrolments in this CESM with 92% followed by Masters with 6%. Honours and PhD enrolments accounted for 2% collectively of the total enrolments in this CESM.

One hundred and seventy two (172) students enrolled at Undergraduate Degree level in this CESM at Universities during the 2008 academic year.

Figure 155: Racial breakdown of Undergraduate Degree in Forestry enrolments

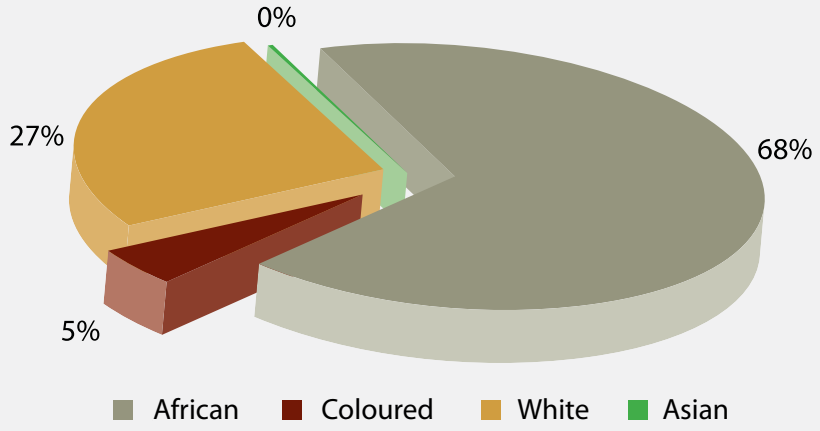
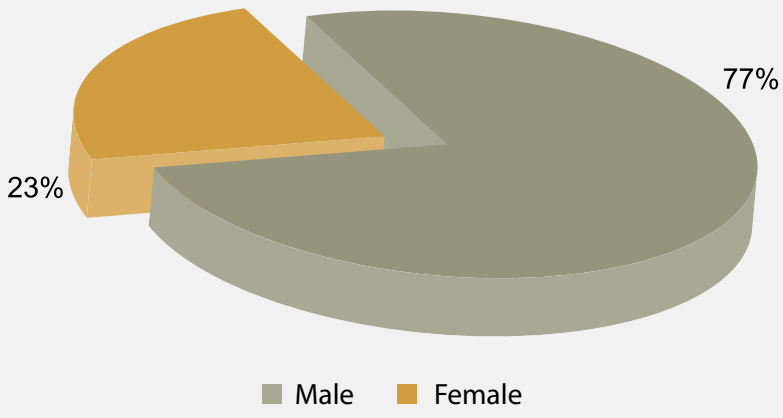


Figure 155 above indicates that Africans dominated the Undergraduate Degree in this CESM with 68%, followed by Whites and Coloureds with 27% and 5% respectively. Asians were not represented in this CESM during the 2008 academic year.

Figure 156: Gender breakdown of Undergraduate Degree in Forestry enrolments



As depicted in Figure 156 above, males dominated the Undergraduate Degree enrolments in Forestry with 77%, whilst females constituted 23%.

One (1) White male student enrolled for the Honours Degree in this CESM during the 2008 academic year.

Of the 11 students registered for Masters Degree in Forestry, 5 were Africans, 2 were Coloureds and 4 were Whites.

At PhD level in this CESM during the 2008 academic year there were 2 male students registered: 1 African and 1 White.

4.3.3.13 Horticulture Enrolments at Universities in 2008

Two hundred and ten (210) students registered in this CESM during the 2008 academic year. Programmes in this CESM are offered by the University of Fort Hare, University of Stellenbosch, University of Limpopo, University of Pretoria and University of South Africa, which include the enrolments in the National Diploma in Horticulture, therefore the increase in the number of enrolments.

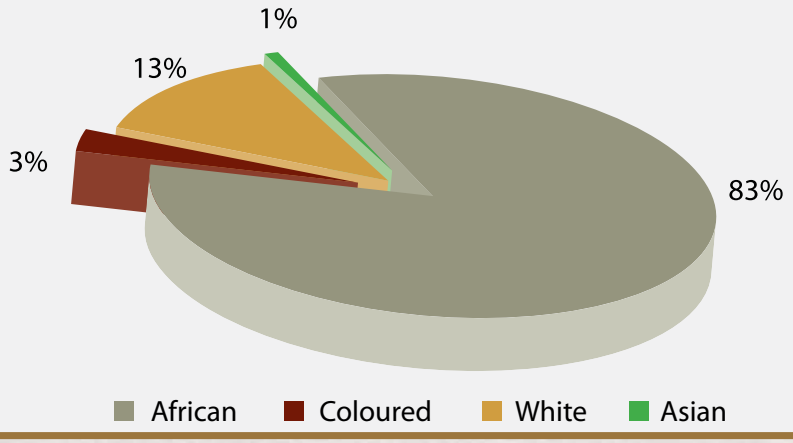
Table 75 below presents a demographic breakdown of Horticulture enrolments during the 2008 academic year by level of qualification.

Table 75: Demographic breakdown of Horticulture enrolments at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	79	78	**157**	5	1	**6**	18	7	**25**	2	0	**2**	**190**
Honours	7	7	**14**	0	0	**0**	0	0	**0**	0	0	**0**	**14**
Masters	4	2	**6**	0	0	**0**	0	0	**0**	0	0	**0**	**6**
TOTAL	**90**	**87**	**177**	**5**	**1**	**6**	**18**	**7**	**25**	**2**	**0**	**2**	**210**

Undergraduate Degree enrolments accounted for 90% of the total enrolments in this CESM during the 2008 academic year at Universities, followed by Honours and Masters with 7% and 3% respectively.

Figure 157: Racial breakdown of Undergraduate Degree in Horticulture enrolments



One hundred and fifty seven (157) students enrolled at Undergraduate Degree level in this CESM during the 2008 academic year. Africans accounted for 83% of the enrolments followed by Whites with 13%, Coloureds with 3% and Asians with 1%.

Figure 158: Gender breakdown of Undergraduate Degree in Horticulture enrolments

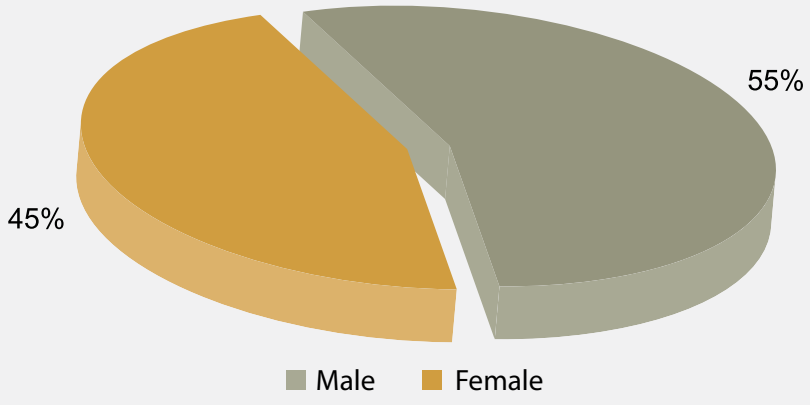


Figure 158 above shows dominance by males with 55% of the Undergraduate Degree enrolments in Horticulture, whilst females accounted for 45%. African males were in the majority with 76% of the male enrolments at Undergraduate Degree level in this CESM, followed by Whites with 17%, Coloureds with 5% and Asians with 2%.

Fourteen (14) African students enrolled for Honours Degree in this CESM during the 2008 academic year, 7 were males and 7 were females.

Of the 6 African students registered for Masters Degree in Horticulture, 4 were male and 2 were female.

4.3.3.14 Renewable Natural Resources Enrolments at Universities in 2008

Thirty (30) students registered in this CESM during the 2008 academic year. Programmes in this CESM are offered by the University of Stellenbosch, University of Fort Hare, University of Free State, University of KwaZulu-Natal and University of Pretoria.

This CESM includes programmes in Rural Resources Management, Natural Resources and Conservation Ecology, Nature conservation and Land Use Planning.

Table 76 below presents a demographic breakdown of Renewable Natural Resources enrolments during the 2008 academic year by level of qualification.

Table 76: Demographic breakdown of Renewable Natural Resources enrolments at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	0	0	**0**	0	0	**0**	15	4	**19**	0	0	**0**	**19**
Masters	3	3	**6**	0	0	**0**	0	0	**0**	0	1	**1**	**7**
PhD	1	3	**4**	0	0	**0**	0	0	**0**	0	0	**0**	**4**
TOTAL	**4**	**6**	**10**	**0**	**0**	**0**	**15**	**4**	**19**	**0**	**1**	**1**	**30**

Undergraduate Degree enrolments constituted 64% of the enrolments in this CESM during the 2008 academic year, followed by Masters and PhD with 23% and 13% respectively.

Nineteen (19) White students enrolled in this CESM at Undergraduate level during the 2008 academic year: 15 were male and 4 were female.

Seven (7) students registered for Masters Degree in Renewable Natural Resource: 3 were African males, 3 were African females and 1 was Asian female.

At PhD level in this CESM there were 4 African students registered in the 2008 academic year: 3 were female and 1 was male.

4.3.3.15 Other Agricultural and Renewable Resources Enrolments at Universities in 2008

Thirty six (36) enrolled for this CESM during the 2008 academic year at Universities. Programmes in this CESM are offered by University of Limpopo, University of Free State and University of Stellenbosch.

This CESM includes programmes in Aquaculture, Sustainable Agriculture, Aquaculture and Animal Science, Aquaculture, Disaster management and Conservation Ecology.

Table 77 below presents a demographic breakdown of Other Agricultural and Renewable Resources enrolments during the 2008 academic year by level of qualification.

Table 77: Demographic breakdown of Other Agricultural and Renewable Resources enrolments at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	0	0	**0**	0	0	**0**	0	1	**1**	0	0	**0**	**1**
Postgraduate Diploma	21	6	**27**	1	0	**1**	1	2	**3**	0	0	**0**	**31**
Masters	3	1	**4**	0	0	**0**	0	0	**0**	0	0	**0**	**4**
TOTAL	**24**	**7**	**31**	**1**	**0**	**1**	**1**	**3**	**4**	**0**	**0**	**0**	**36**

Postgraduate Diploma accounted for 86% of the enrolments in this CESM followed by Masters Degree with 11%. Undergraduate Degree accounted for 3% of the total enrolments in this CESM.

At Undergraduate Degree level in this CESM there was 1 White female student registered during the 2008 academic year.

Thirty one (31) students enrolled in Postgraduate Diploma in this CESM during the 2008 academic year. Racial classification shows that 21 were African males, 6 were African females, 1 was a Coloured male, 1 was a White male and 2 were White females. No Asians enrolled in the Postgraduate Diploma in this CESM.

Four (4) African students enrolled for the Masters Degree in this CESM during the 2008 academic year at Universities: 3 were male and 1 was female.

4.3.3.16 Agricultural Management Enrolments at Universities in 2008

Seven hundred and twenty seven (727) students registered for Agricultural Management in the 2008.

Programmes in this CESM are offered by University of Free State, North West University, University of Limpopo, University of Stellenbosch, University of South Africa and University of KwaZulu-Natal.

This CESM includes programmes in: Agricultural Administration, Mixed Farming Management, and Business Specific Farm Management-Viticulture.

Table 78 below presents a demographic breakdown of Agricultural Management enrolments during the 2008 academic year by level of qualification.

Table 78: Demographic breakdown of Agricultural Management enrolments at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	259	279	**538**	2	1	**3**	81	9	**90**	1	0	**1**	**632**
Honours	1	0	**1**	0	0	**0**	4	0	**4**	0	0	**0**	**5**
Masters	48	41	**89**	0	0	**0**	1	0	**1**	0	0	**0**	**90**
TOTAL	**308**	**320**	**628**	**2**	**1**	**3**	**86**	**9**	**95**	**1**	**0**	**1**	**727**

Undergraduate Degree enrolments constituted 87% of the total enrolments in this CESM, followed by Masters and Honours with 12% and 1% respectively.

Six hundred and thirty two (632) students enrolled at Undergraduate Degree level in this CESM during the 2008 academic year at Universities.

Figure 159: Racial breakdown of Undergraduate Degree in Agricultural Management enrolments

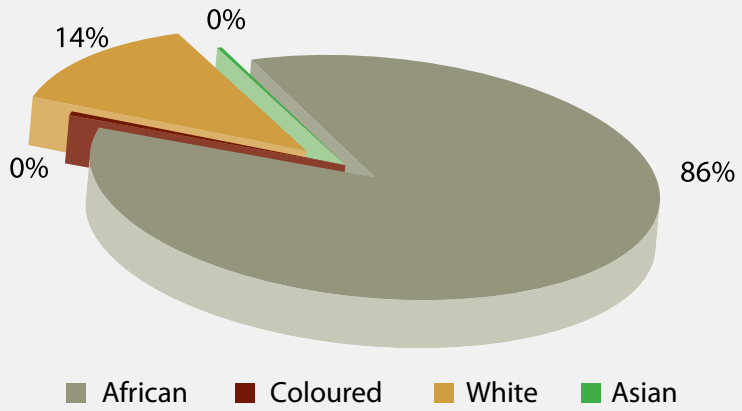


Figure 159 above indicates that Africans constituted 86% of the Undergraduate Degree enrolments in this CESM followed by Whites with 14%. Coloured and Asian students were almost non existent.

Figure 160: Gender breakdown of Undergraduate Degree in Agricultural Management enrolments

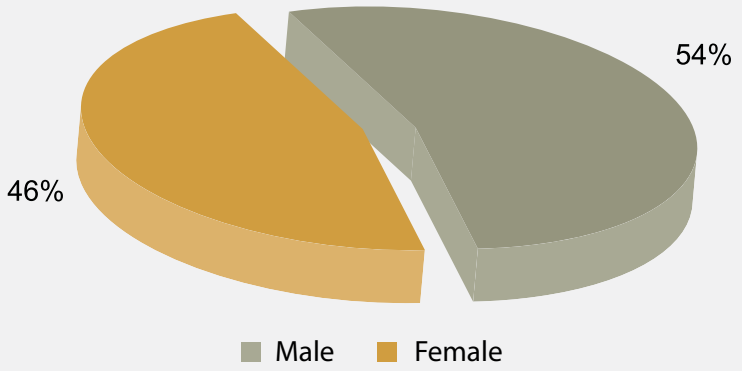


Figure 160 above shows that males were dominant in the Undergraduate Degree enrolments of Agricultural Management with 54% whilst females comprised 46%. African males accounted for 76%, followed by Whites with 24%. Coloureds accounted for less than 1% of the male enrolments, whilst Asian students were almost non-existent.

Five (5) male students enrolled in this CESM at Honours Degree level during the 2008 academic year: 4 were Whites and 1 was African.

Figure 161: Racial breakdown of Masters in Agricultural Management enrolments

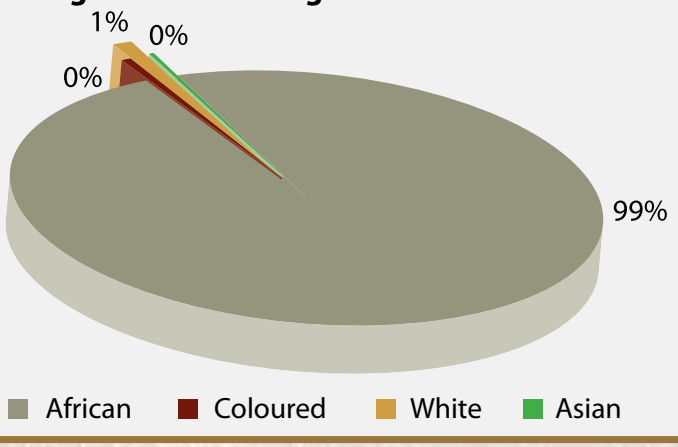


Figure 161 above shows that Africans constituted 99% of the Masters enrolments in this CESM, followed by Whites with 1%. Coloureds and Asians were not represented in this CESM at Masters Degree level during the 2008 academic year.

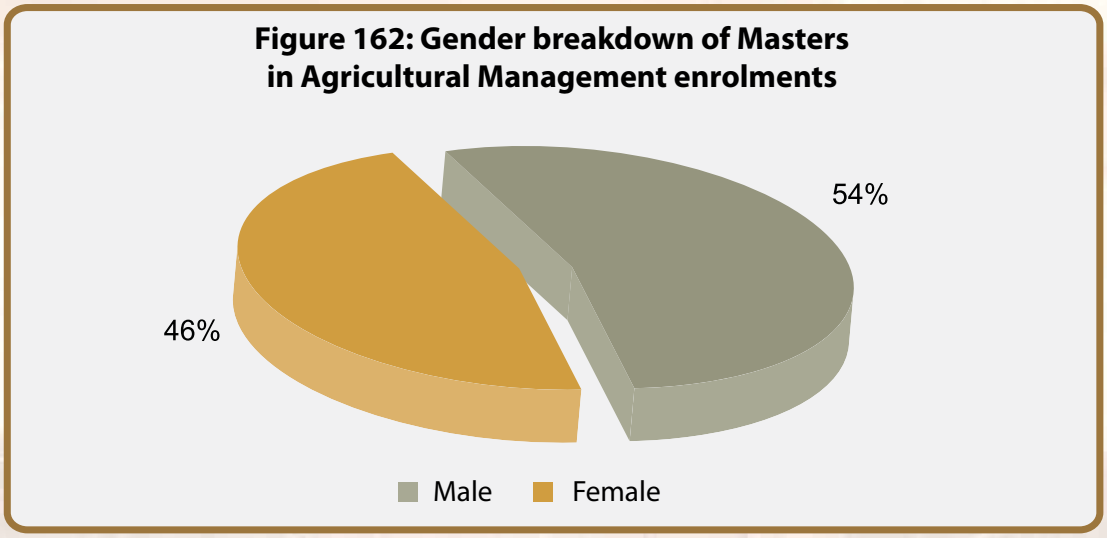


Figure 162 above shows that males were dominant in the Masters Degree enrolments of Agricultural Management with 54%, whilst females comprised 46%.

4.3.3.17 Environmental Management Enrolments at Universities in 2008

Ninety four (94) students enrolled in this CESM during the 2008 academic year at Universities. Programmes in this CESM are offered by University of South Africa, University of Limpopo and University of Fort Hare.

This CESM comprised programmes in Geography, Science and Geography, Environmental Science Studies and Environmental Management.

Table 79 below presents a demographic breakdown of Environmental Management enrolments during the 2008 academic year by level of qualification.

Table 79: Demographic breakdown of Environmental Management enrolments at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	13	24	**37**	0	0	**0**	0	0	**0**	0	0	**0**	**37**
Honours	15	22	**37**	0	0	**0**	2	3	**5**	1	1	**2**	**44**
Masters	3	1	**4**	0	0	**0**	0	0	**0**	0	0	**0**	**4**
PhD	5	2	**7**	1	0	**1**	1	0	**1**	0	0	**0**	**9**
TOTAL	**36**	**49**	**85**	**1**	**0**	**1**	**3**	**3**	**6**	**1**	**1**	**2**	**94**

Table 79 above indicates that Honours Degree enrolments dominated the Environmental Management enrolments with 47% followed by Undergraduate Degree, PhD and Masters with 39%, 10% and 4% respectively.

Thirty seven (37) African students enrolled at Undergraduate Degree level in this CESM during the 2008 academic year: 24 were females and 13 were males.

Figure 163: Racial breakdown of Honours in Environmental Management enrolments

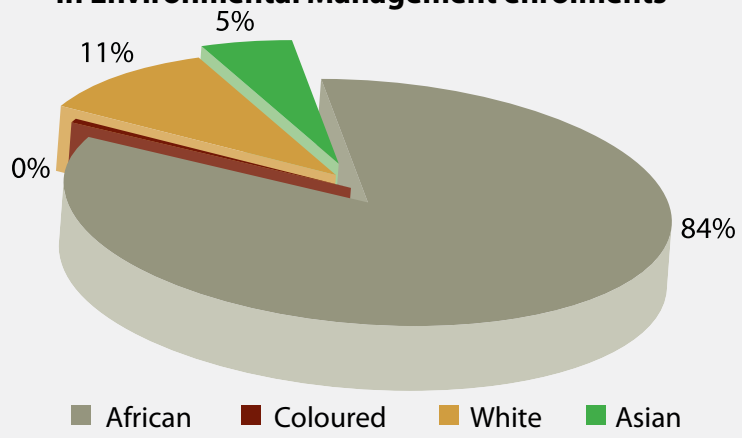
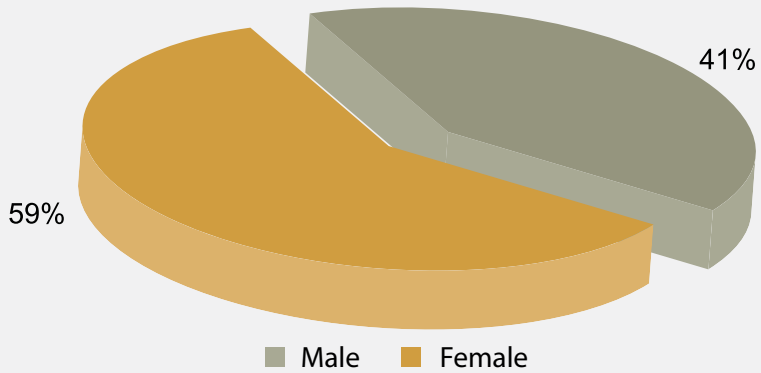


Figure 163 above indicates that Africans dominated the Honours Degree enrolments in this CESM with 84%, followed by Whites and Coloureds with 11% and 5% respectively. Asians were not represented in this CESM during the 2008 academic year.

Figure 164: Gender breakdown of Honours in Environmental Management enrolments



As depicted in Figure 164 above, females dominated the Honours Degree enrolments in Environmental Management with 59%, whilst males constituted 41%.

Four (4) African students enrolled in this CESM at Masters Degree level during the 2008 academic year: 3 were males and 1 was female.

At PhD level in this CESM there were 9 students registered during the 2008 academic year: 7 were Africans, 1 was Coloured male and 1 was a White male.

4.3.3.18 Agronomy Enrolments at Universities in 2008

Thirty three (33) students enrolled for Agronomy at Universities during the 2008 academic year. Programmes in this CESM are offered by the University of Stellenbosch, University of Zululand, University of Limpopo, University of Pretoria and University of Free State.

This CESM includes programmes in Agronomy and Soil Science, Agronomy and Agriculture Economics, Agronomy and Agro-meteorology, Agronomy and Plant Breeding, Agronomy and Plant Pathology, Agronomy and Animal Science, Agronomy and Food Science and Agronomy and Entomology.

Table 80 below presents a demographic breakdown of Agronomy enrolments during the 2008 academic year by level of qualification.

Table 80: Demographic breakdown of Agronomy enrolments at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	8	9	**17**	0	0	**0**	6	1	**7**	0	0	**0**	**24**
Honours	0	3	**3**	0	0	**0**	0	0	**0**	0	0	**0**	**3**
Masters	2	1	**3**	0	0	**0**	1	0	**1**	0	0	**0**	**4**
PhD	1	0	**1**	0	0	**0**	1	0	**1**	0	0	**0**	**2**
TOTAL	**11**	**13**	**24**	**0**	**0**	**0**	**8**	**1**	**9**	**0**	**0**	**0**	**33**

Undergraduate Degree enrolments accounted for 73% of the total enrolments in this CESM, followed by Masters with 12% and Honours with 9%, whilst PhD accounted for 6%.

Figure 165: Racial breakdown of Undergraduate in Agronomy enrolments

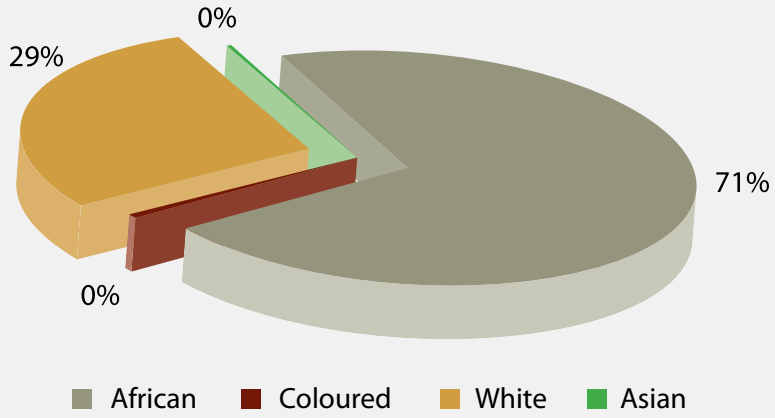


Figure 165 above shows that Africans constituted 71% of the Undergraduate enrolments in this CESM followed by Whites with 29%. Coloureds and Asians were not represented in this CESM at Undergraduate level during the 2008 academic year.

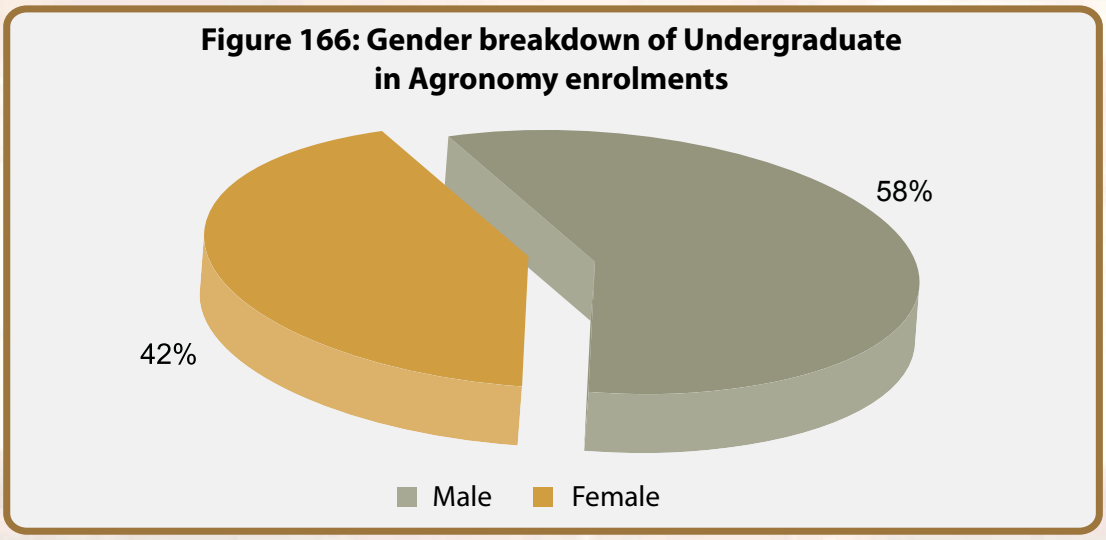


Figure 166 above shows that males were dominant in this CESM at Undergraduate Degree level with 58%, whilst females accounted for 42%.

Three (3) African female students enrolled for Honours Degree level in this CESM during the 2008 academic year at Universities.

Four (4) students enrolled in this CESM at Masters Degree level during the 2008 academic year at Universities. Two (2) were African males, 1 was African female and 1 was a White male.

Two (2) male students registered for the PhD Degree in this CESM: 1 was African and 1 was White.

4.3.3.19 Wildlife Management Enrolments at Universities in 2008

Four hundred and forty four (444) students enrolled in this CESM during the 2008 academic year at Universities. Wildlife Management programmes are offered by the University of Pretoria and University of Free State.

Table 81 below presents a demographic breakdown of Wildlife Management enrolments during the 2008 academic year by level of qualification.

Table 81: Demographic breakdown of Wildlife Management enrolments at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	121	117	**238**	3	5	**8**	103	63	**166**	1	2	**3**	**415**
Honours	0	0	**0**	0	0	**0**	7	5	**12**	0	0	**0**	**12**
Masters	0	1	**1**	0	0	**0**	9	5	**14**	0	0	**0**	**15**
PhD	0	0	**0**	0	0	**0**	0	2	**2**	0	0	**0**	**2**
TOTAL	**121**	**118**	**239**	**3**	**5**	**8**	**119**	**75**	**194**	**1**	**2**	**3**	**444**

Undergraduate Degree constituted 94% of the total enrolments in this CESM, followed by Masters with 3% and Honours with 2%. PhD enrolments constituted less than 1% of the total enrolments in this CESM.

Four hundred and fifteen (415) students were enrolled at Undergraduate Degree level in this CESM during the 2008 academic year.

Figure 167: Racial breakdown of Undergraduate Degree in Wildlife Management enrolments

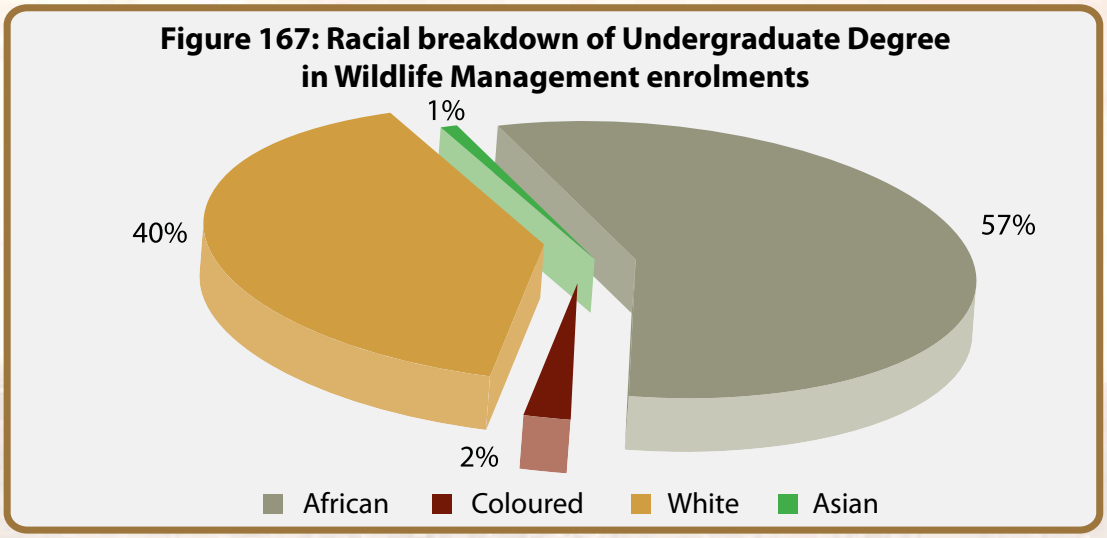


Figure 167 above depicts that Africans were the majority of Undergraduate Degree enrolments in this CESM with 57% followed by Whites and Coloureds with 40% and 2% respectively. Asian students constituted 1% of Undergraduate Degree enrolments in this CESM during the 2008 academic year.

Figure 168: Gender breakdown of Undergraduate Degree in Wildlife Management enrolments

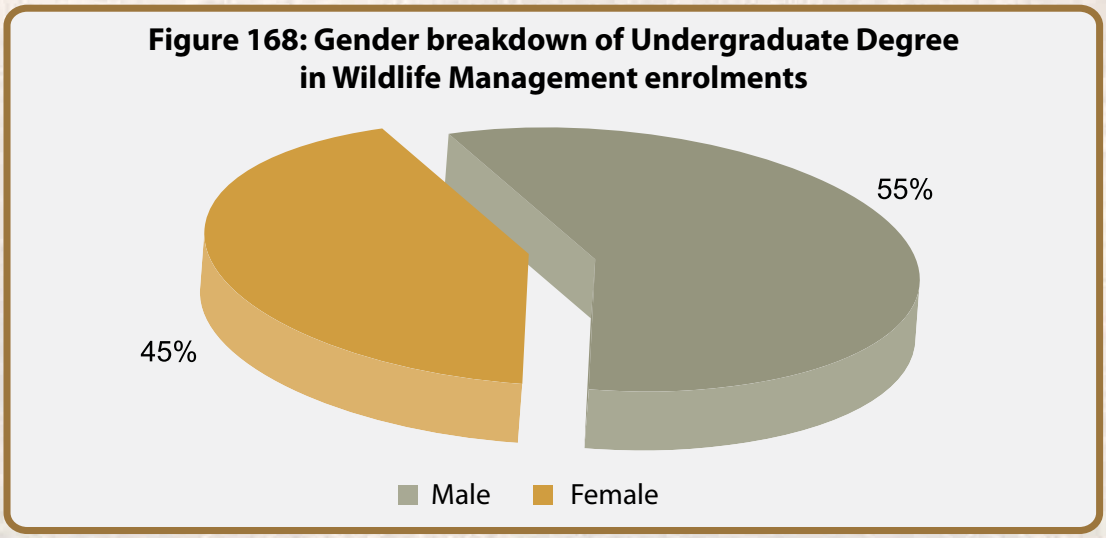


Figure 168 above shows that males were dominant in this CESM at Undergraduate Degree level with 55% whilst females accounted for 45%. African males accounted for 53% of the male enrolments in this CESM at Undergraduate Degree level, followed by Whites with 45%. Coloureds and Asians constituted 2% collectively.

At Honours level in this CESM there were 12 White students registered during the 2008 academic year: 7 were males and 5 were females.

Fifteen (15) students enrolled at Masters Degree level in this CESM: 9 were White males, 5 were White females and 1 was African female.

Two (2) White female students enrolled for PhD level in this CESM during the 2008 academic year.

4.3.3.20. Consumer Science Enrolments at Universities in 2008

Two hundred and sixty four (264) students enrolled for the Consumer Science programme at Universities during the 2008 academic year. Programmes in this CESM are offered by University of South Africa, University of Venda, University of KwaZulu-Natal and University of Pretoria.

This CESM includes programmes in the following: Family Ecology and Consumer Science, Human Ecology (Community Agriculture, Human Ecology (Community Nutrition), Consumer Science Education, Cons Sc: Clothing Retail Management, Cons Sc: Clothing Small Business Management, Cons Sc: Food Management (Retail Management), Cons Sc: Hospitality Management, Cons Sc: Interior Management (Inter. Retail Management), Cons Sc: Interior Management (Small Business. Management, Cons Sc: Development, Ed (Home Economics), Cons Sc: Ed (Hotel-keeping & Catering, Cons Sc: Ed (Consumer Studies), Cons Sc: Ed (Hospitality Studies), Cons Sc: (Interior Merchandise Retail Management, Cons Sc: Food Management, Cons Sc: Merchandise Management, Cons Sc: Clothing Management, Cons Sc: General, and Rural Household Development

Table 82 below presents a demographic breakdown of Consumer Science enrolments in 2008 by level of qualification.

Table 82: Demographic breakdown of Consumer Science enrolments at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	21	61	**82**	4	13	**17**	8	128	**136**	2	13	**15**	**250**
Masters	0	6	**6**	0	0	**0**	0	7	**7**	0	0	**0**	**13**
PhD	0	1	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
TOTAL	**21**	**68**	**89**	**4**	**13**	**17**	**8**	**135**	**143**	**2**	**13**	**15**	**264**

Undergraduate Degree enrolments accounted for 95% of the total enrolments in this CESM, followed by Masters with 5%. PhD accounted for less than 1% of the total enrolments in this CESM during the 2008 academic year.

Two hundred and fifty (250) students enrolled at Undergraduate Degree level in Consumer Science during the 2008 academic year.

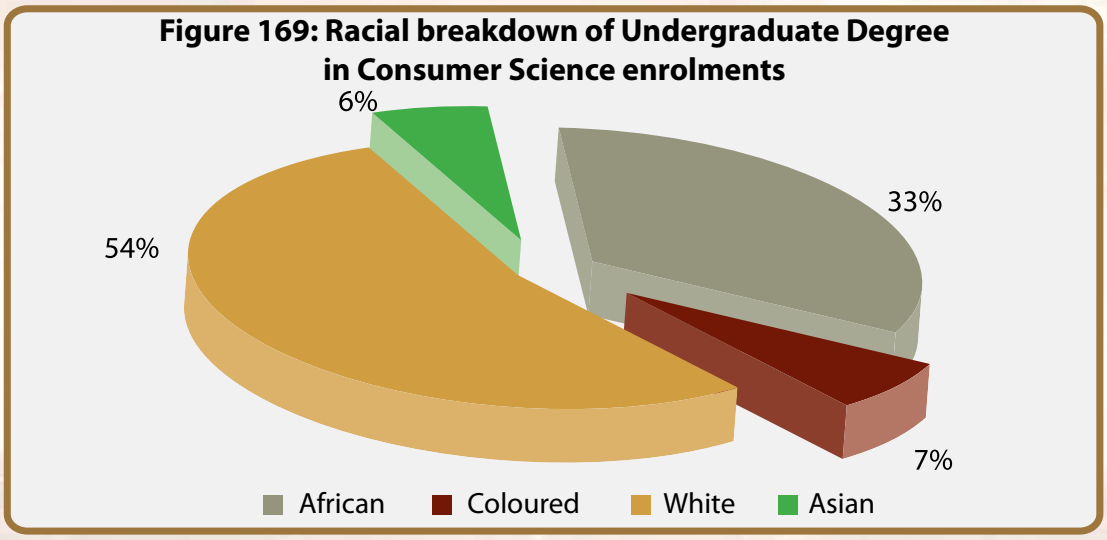


Figure 169 above indicates that Whites were the majority of the Undergraduate Degree enrolments in this CESM with 54%, followed by Africans with 33% whilst Coloureds and Asians constituted 7% and 6% respectively.

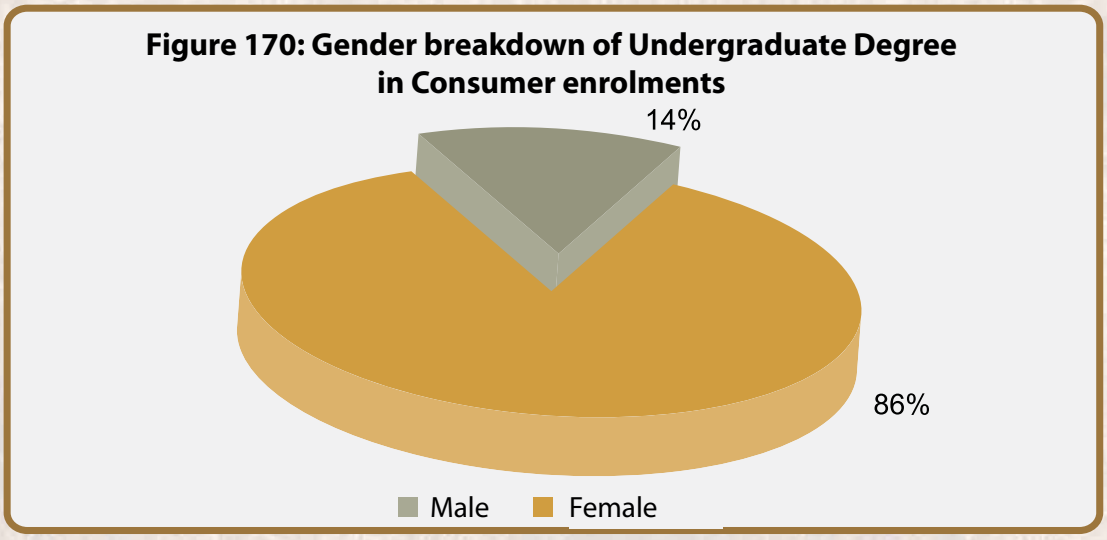


Figure 170 above depicts that female students represented a significant majority of the Undergraduate Degree in this CESM with 86%, whilst males accounted for 14%.

Thirteen (13) female students enrolled at Masters level in this CESM during the 2008 academic year: 7 were White and 6 were Africans.

One (1) African female student enrolled for PhD level in this CESM during the 2008 academic year.

4.3.3.21. BSc Veterinary Biology Enrolments at Universities in 2008

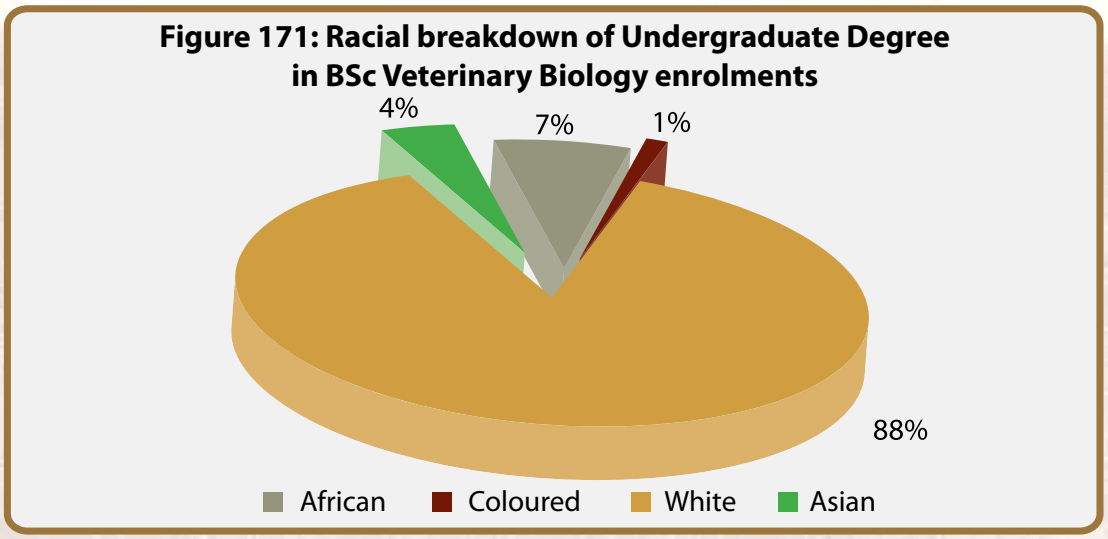
Two hundred and seventy one (271) students enrolled for BSc: Veterinary Biology during the 2008 academic year. This programme is only offered by the University of Pretoria in South Africa.

Table 83 below presents a demographic breakdown of BSc Veterinary Biology enrolments in 2008 by level of qualification.

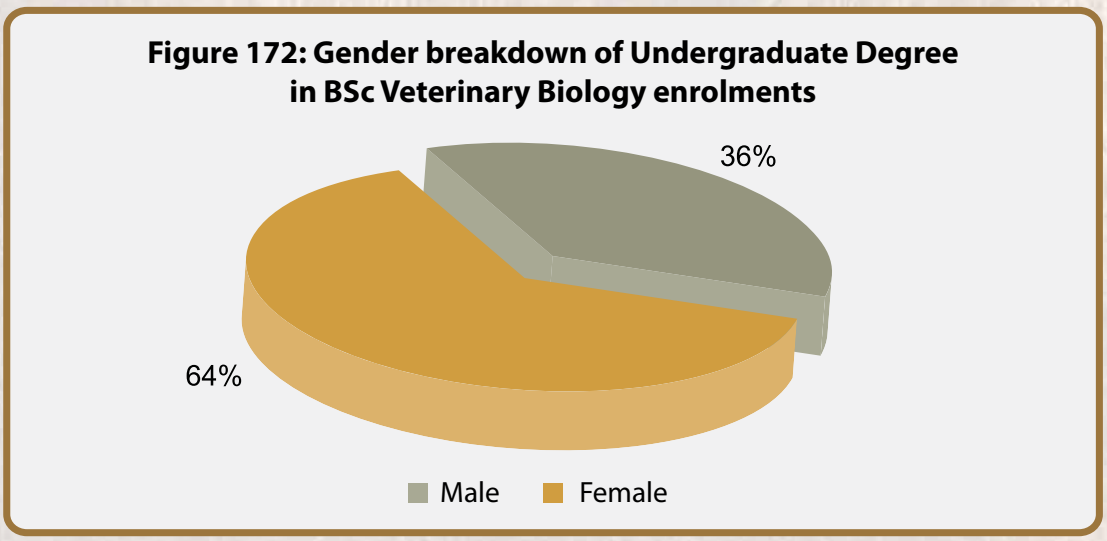
Table 83: Demographic breakdown of BSc Veterinary Biology enrolments at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	10	9	**19**	2	2	**4**	82	155	**237**	3	8	**11**	**271**
TOTAL	**10**	**9**	**19**	**2**	**2**	**4**	**82**	**155**	**237**	**3**	**8**	**11**	**271**

As illustrated in Table 83 above, 271 students registered for BSc: Veterinary Biology at Undergraduate Degree level.



Racial classification in Figure 171 above, illustrates that Whites dominated this CESM with 88% whilst Africans and Asians comprised 7% and 4% respectively. Coloureds represented the least number of enrolments in this CESM with 1%.



Gender breakdown in Figure 172 above, shows that female students were dominant with 64% of the BSc: Veterinary Biology, whilst males accounted for 36%. White females represented the most female enrolments in this CESM with 89% whilst African and Asian females accounted for 5% each respectively.

Coloured females recorded the least enrolments with 1% of the female enrolments in BSc: Veterinary Biology during the 2008 academic year.

4.3.3.22 Biotechnology Enrolments at Universities in 2008

Ninety four (94) students enrolled in this CESM during the 2008 academic year at Universities. These programmes are offered by the University of Pretoria, Free State, Stellenbosch and Western Cape. This CESM includes programmes in Agricultural Biotechnology, Genetics and Plant breeding.

Table 84 below presents a demographic breakdown of Biotechnology enrolments during the 2008 academic year by level of qualification.

Table 84: Demographic breakdown of Biotechnology enrolments at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	14	10	**24**	0	1	**1**	9	10	**19**	0	2	**2**	**46**
Honours	2	3	**5**	0	2	**2**	12	8	**20**	3	2	**5**	**30**
Masters	3	0	**3**	1	0	**1**	3	5	**8**	0	2	**2**	**14**
PhD	5	5	**10**	2	1	**3**	2	7	**9**	1	0	**1**	**22**
TOTAL	**24**	**18**	**42**	**3**	**4**	**7**	**26**	**27**	**53**	**4**	**6**	**10**	**112**

Undergraduate Degree constituted 41% of the total enrolments in this CESM, followed by Honours enrolments with 27%, PhD and Masters with 19% and 13% respectively.

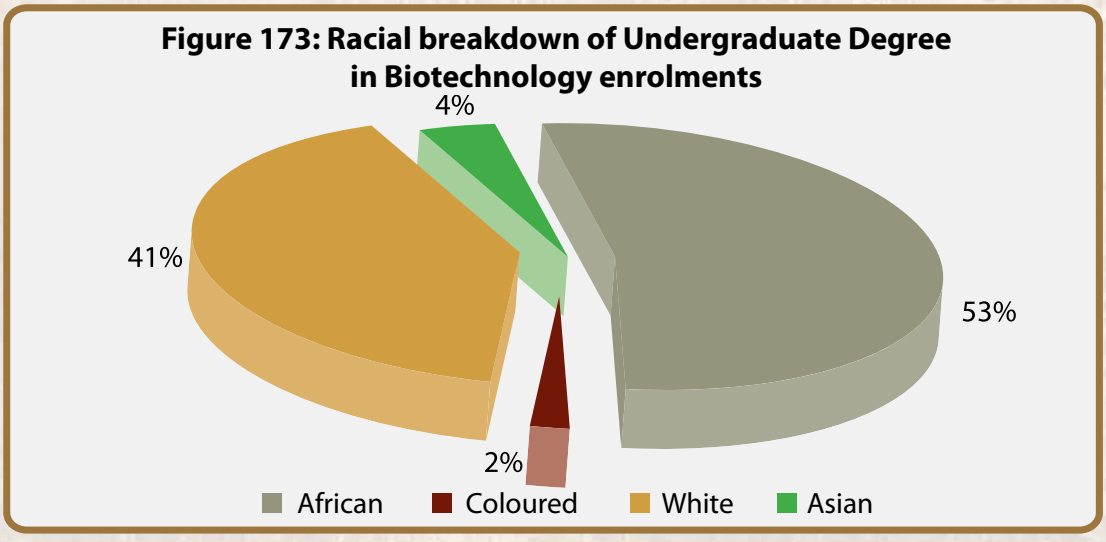


Figure 173 above depicts that Africans were the majority of Undergraduate Degree enrolments in this CESM with 53%, followed by Whites and Asians with 41% and 4% respectively. Coloured students accounted for 2% of the enrolments in this CESM during the 2008 academic year.

Figure 174: Gender breakdown of Undergraduate Degree in Biotechnology enrolments

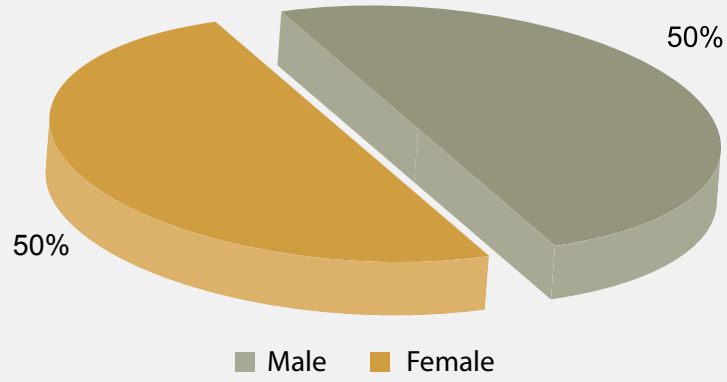


Figure 174 above shows that males and females constituted 50% each of enrolments in this CESM at Undergraduate Degree level during the 2008 academic year.

Figure 175: Racial breakdown of Honours in Biotechnology enrolments

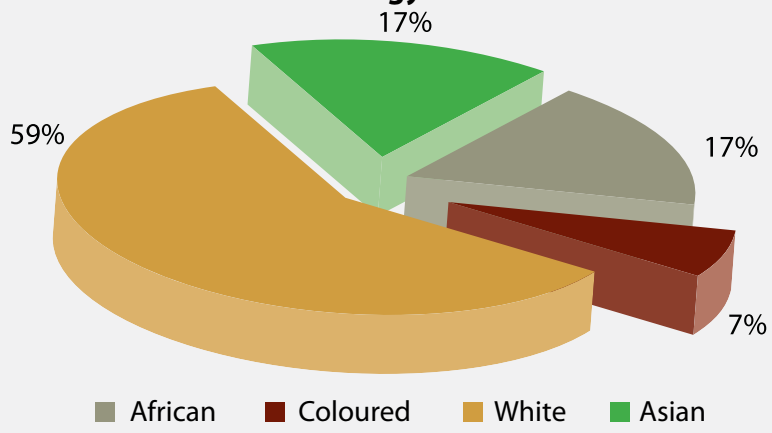


Figure 175 above indicates that White students accounted for 59% of the Honours enrolments in this CESM followed by Africans and Asians with 17% each. Coloureds accounted for 7% of the overall enrolments in this CESM at Honours Degree level during the 2008 academic year.

Figure 176: Gender breakdown of Honours in Biotechnology enrolments

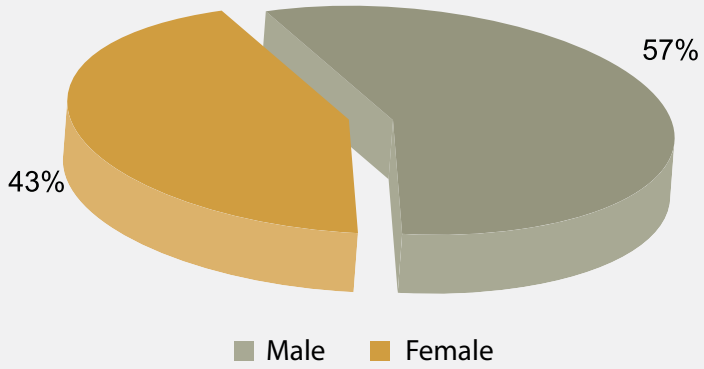


Figure 176 above indicates that males dominated the Biotechnology Honours Degree enrolments with 57% whilst females accounted for 43%.

In total, 14 students registered at Masters level in this CESM during the 2008 academic year. As Table 84 above indicates, White students dominated the enrolments with 49% followed by Africans with 38%. Asians and Coloureds accounted for 9% and 4% respectively at Masters level for this CESM.

Twenty two (22) students registered for PhD in this CESM during the 2008 academic year; 10 were Africans, 8 were Whites, 3 were Coloureds and 1 was Asian.

4.3.3.23 Microbiology Enrolments at Universities in 2008

Seventy one (71) students enrolled for Microbiology during the 2008 academic year at Universities. These programmes are offered by the University of South Africa. This CESM includes Microbiology and Zoology.

Table 85 below presents a demographic breakdown of Microbiology enrolments during the 2008 academic year by level of qualification.

Table 85: Demographic breakdown of Microbiology enrolments at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	2	13	**15**	1	0	**1**	11	10	**21**	0	2	**2**	**39**
Honours	0	1	**1**	0	0	**0**	4	10	**14**	0	0	**0**	**15**
Masters	2	4	**6**	0	0	**0**	2	5	**7**	0	0	**0**	**13**
PhD	1	0	**1**	0	0	**0**	0	3	**3**	0	0	**0**	**4**
TOTAL	**5**	**18**	**23**	**1**	**0**	**1**	**17**	**28**	**45**	**0**	**2**	**2**	**71**

Undergraduate Degree enrolments accounted for 55% of the total enrolments in this CESM during the 2008 academic year, followed by Honours with 21%, Masters with 18% and PhD with 6%.

Figure 177: Racial breakdown of Undergraduate Degree in Microbiology enrolments

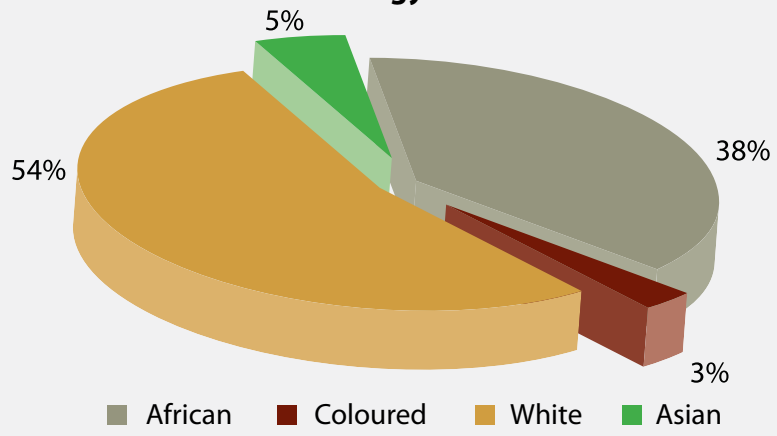


Figure 177 above depicts that Whites were the majority of Undergraduate Degree enrolments in this CESM with 54%, followed by Africans and Asians with 38% and 5% respectively. Coloured students were the lowest with 3% of enrolments in this CESM during the 2008 academic year.

Figure 178: Gender breakdown of Undergraduate Degree in Microbiology enrolments

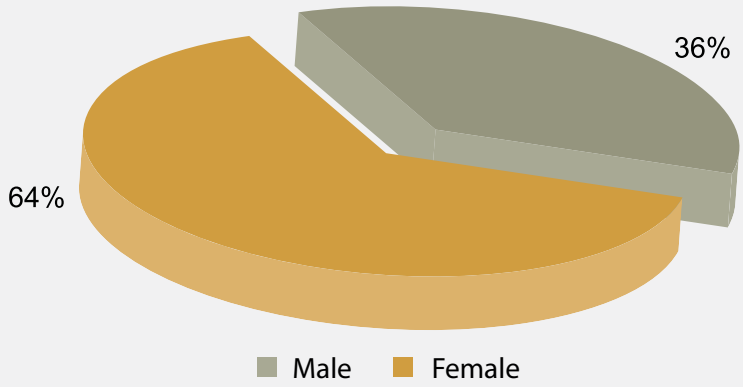


Figure 178 above shows that females were dominant in this CESM at Undergraduate Degree level with 64%, whilst males accounted for 36%.

Fifteen (15) students enrolled for Honours Degree in this CESM during the 2008 academic year. Racial classification shows that 1 was an African female, 4 were White males and 10 were White females.

Thirteen (13) students enrolled at Masters level in this CESM: 7 were Whites and 6 were Africans.

At PhD level in this CESM there were 4 students registered during the 2008 academic year: 1 was an African male and 3 were White females.

4.3.3.24 Rural Development Enrolments at Universities in 2008

Only six (6) students enrolled at Universities for Rural Development during the 2008 academic year compared to 18 students in the 2007 academic year. Rural Development is offered by the University of Venda only.

Table 86 below presents a demographic breakdown of Rural Development enrolments during the 2008 academic year by level of qualification.

Table 86: Demographic breakdown of Rural Development enrolments at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Honours	1	1	**2**	0	0	**0**	0	0	**0**	0	0	**0**	**2**
Masters	4	0	**4**	0	0	**0**	0	0	**0**	0	0	**0**	**4**
TOTAL	**5**	**1**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**

Masters accounted for 67% of the overall enrolments in this CESM during the 2008 academic year at the University of Venda and Honours constituted 33%.

Two (2) African students enrolled for Honours in this CESM during the 2008 academic year. Racial classification shows that 1 was female and 1 was male.

Four (4) African male students enrolled at Masters level in this CESM during the 2008 academic year.

4.3.3.25 Land Reclamation Enrolments at Universities in 2008

One (1) White female student enrolled for Land Reclamation at Honours Degree level during the 2008 academic year at Universities. This CESM includes programmes in Land Development and Land Use Planning.

4.3.4 Inst. Agrar. Stream Programmes

Inst.Agrar. Stream Programmes are offered by the University of Pretoria only. They include, but it is not limited to Plant Science, Agribusiness Management, Animal Science, Horticulture, Food Technology, Animal Production, Horticulture, Land Reclamation, Rural Development, Agricultural Economics, Agronomy and Agricultural Extension. Students enrolled or qualified in these programmes might be allowed to proceed to the PhD level or divert to the Science Stream in a similar field depending on their academic performance.

4.3.4.1 Agricultural Extension (Inst. Agrar. Stream) Enrolments in 2008

Two (2) female students enrolled in this CESM at Honours Degree level during the 2008 academic year at University of Pretoria: 1 was African and 1 was White.

4.3.4.2 Plant Science (Inst. Agrar. Stream) Enrolments in 2008

Twelve (12) students enrolled in this CESM during the 2008 academic year at University of Pretoria. This CESM consisted of programmes in Plant Production, Plant Production: Horticulture, Plant Production: Agronomy and Pasture Science.

Eleven (11) students registered for Honours level in this CESM during the 2008 academic year: 7 were African males, 2 were African females and 2 were White males.

At Masters level, 1 Coloured female student enrolled in this CESM during the 2008 academic year.

4.3.4.3 Agronomy (Inst. Agrar. Stream) Enrolments in 2008

Three (3) African students enrolled in this CESM at Honours Degree level during the 2008 academic year: 2 were males and 1 was female. This CESM includes programmes in Agronomy.

4.3.4.4 Environmental Management (Inst. Agrar. Stream) Enrolments in 2008

Four (4) African students enrolled in this CESM at Honours Degree level during the 2008 academic year, 3 were females and 1 was male.

4.3.4.5 Agricultural Economics (Inst. Agrar. Stream) Enrolments in 2008

Four (4) students enrolled in this CESM during the 2008 academic year. This CESM comprised programmes in Agricultural Economics.

Two (2) African students enrolled for Honours in this CESM: 1 was male and 1 was female.

At Masters Degree level 2 students registered; 1 was African male and 1 was Coloured female.

4.4 AET Graduates at Universities in 2008

A total number of 1 879 graduates were produced at Universities during the 2008 academic year. University of Pretoria constituted the highest percentage of the overall graduates at Universities during the 2008 academic year with 39%, followed by University of Stellenbosch with 18%. University of Free State and Nelson Mandela Metropolitan University accounted for 11% and 10% of the overall graduates at Universities respectively during the 2008 academic year. The other Universities contributed less than 10% of the overall graduates produced at Universities during the 2008 academic year.

Table 87: AET graduates figures at Universities in 2008

Name of the University	Number of AET graduates	%
University of Fort Hare	64	3
North West University	100	5
Nelson Mandela Metropolitan University	190	10
University of Johannesburg*	0	0
University of Free State	207	11
University of KwaZulu-Natal*	0	0
University of Limpopo	118	6
University of Pretoria	729	39
University of South Africa	75	4
University of Stellenbosch	329	18
University of Venda	67	4
University of Western Cape	0	0
University of Zululand*	0	0
TOTAL	**1879**	**100**

*Information not available

Figure 179: Graduates at Univeristies in 2008

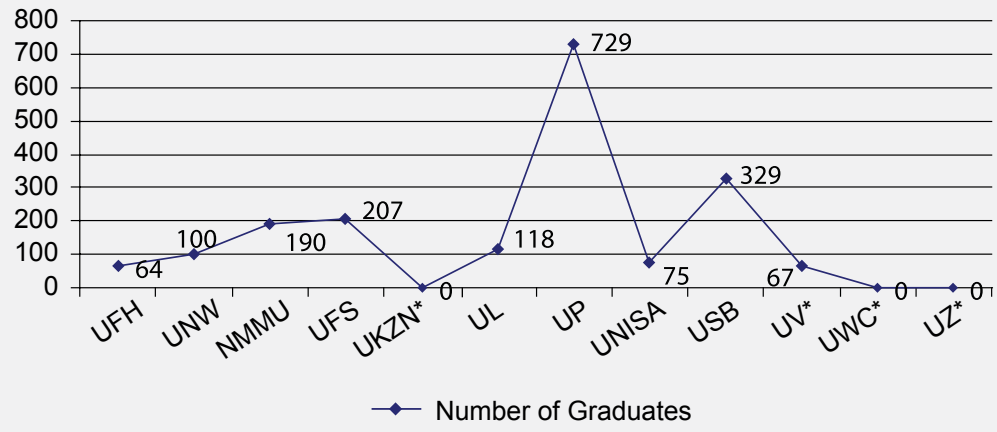


Table 87 and Figure 179 above shows that the Universities of Pretoria, Stellenbosch, Free State and NMMU produced more graduates during the 2008 academic year. Graduates produced by these Universities constituted 78% of the total AET graduates at Universities in 2008.

4.4.1 Demographic Breakdown of AET Graduates at Universities in 2008

Table 88 below presents a demographic breakdown of graduate figures in AET programmes during the 2008 academic year at Universities.

Table 88: Demographic breakdown of AET graduates at Universities in 2008

Name of the University	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Fort Hare University	39	25	**64**	0	0	**0**	0	0	**0**	0	0	**0**	**64**
North West University	46	54	**100**	0	0	**0**	0	0	**0**	0	0	**0**	**100**
Nelson Mandela Metropolitan University	50	21	**71**	3	0	**3**	86	29	**115**	1	0	**1**	**190**
University of Johannesburg*	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**
University of Free State	30	60	**90**	3	1	**4**	19	93	**112**	1	0	**1**	**207**
University of KwaZulu-Natal	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**
University of Limpopo	72	46	**118**	0	0	**0**	0	0	**0**	0	0	**0**	**118**
University of Pretoria	55	61	**116**	2	7	**9**	181	397	**578**	8	18	**26**	**729**
University of South Africa	33	26	**59**	0	0	**0**	5	6	**11**	1	4	**5**	**75**
University of Stellenbosch	29	12	**41**	8	6	**14**	152	122	**274**	0	0	**0**	**329**
University of Venda	32	35	**67**	0	0	**0**	0	0	**0**	0	0	**0**	**67**
University of Western Cape	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**
University of Zululand	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	**0**
TOTAL	**386**	**340**	**726**	**16**	**14**	**30**	**443**	**647**	**1090**	**11**	**22**	**33**	**1879**

*No information available

Figure 180: Racial breakdown of AET graduates at Universities

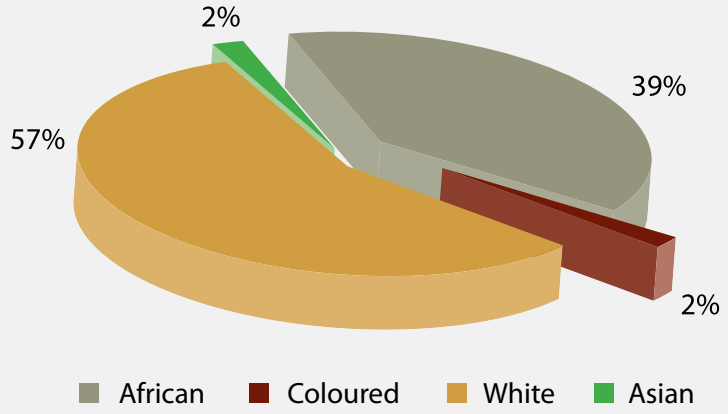


Figure 180 and Table 88 above shows that Whites dominated graduates at Universities during the 2008 academic year with 57% followed by Africans with 39% whilst Coloureds and Asians collectively constituted 4%.

Figure 181: Gender breakdown of AET graduates at Universities

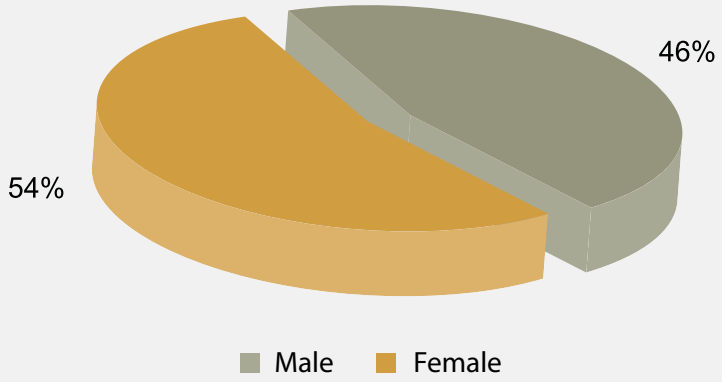


Figure 181 above indicates that females were the majority with 54% of the total number of graduates at Universities, whilst males accounted for 46%.

Figure 182: Racial breakdown of female AET graduates at Universities

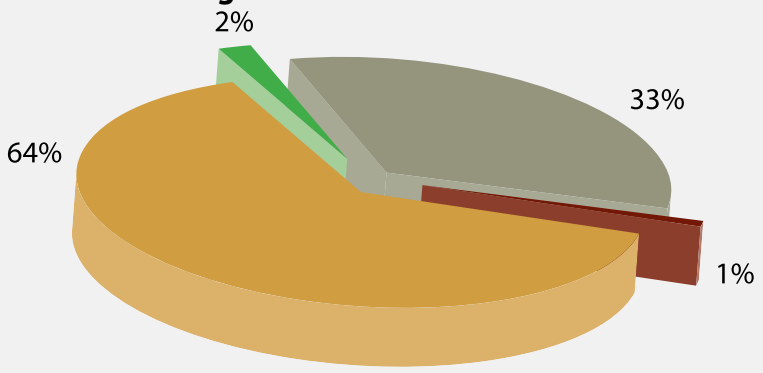
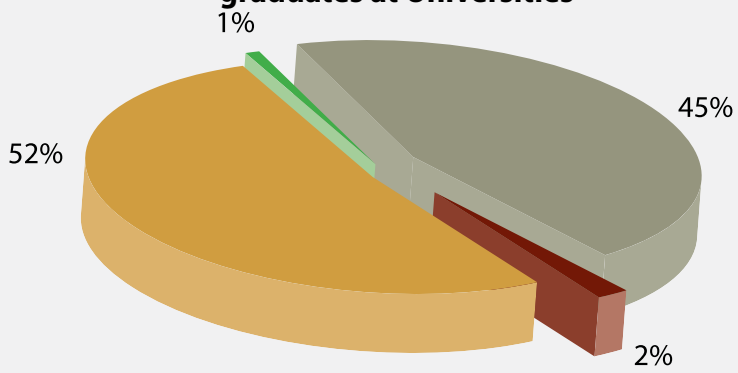


Figure 182 above indicates that Whites dominated the total number of female graduates during the 2008 academic year with 64% followed by Africans with 33%. Coloured and Asian female graduates collectively accounted for 3% of the total female graduates.

Figure 183: Racial breakdown of male AET graduates at Universities



According to racial breakdown of male graduates at Universities during the 2008 academic year in Figure 183 above, Whites represented 52% followed by Africans with 45% whilst Coloured and Asian males constituted 3% collectively.

4.4.2 AET Graduates at Universities by CESM in 2008

Table 89 below presents AET graduates at Universities by level of qualification per CESM.

Figure 89: Agricultural graduates in Universities in 2008 by CESM and academic level

CESM	Under-graduate	Post-graduate Diploma	Hon-ours	Masters	PhD	Total	%
Agricultural Economics (Science Stream)	42	0	17	8	0	**67**	**4**
Agricultural Economics (Art Stream)	12	0	5	0	2	**19**	**1**
Agricultural Economics (BCom Stream	0	0	3	0	0	**3**	**0**
Agricultural Economics (AgriBusiness)	13	0	0	0	0	**13**	**1**
Agricultural Science (Art Stream)	140	0	1	34	10	**185**	**10**
Agricultural Science (Science Stream)	84	0	14	51	6	**155**	**8**
Agric. Extension	6	4	0	4	0	**14**	**1**
Agric. Food Science	52	0	13	18	4	**87**	**5**
Agric. Food Science (Inst. Agrar. Stream)	5	0	0	0	0	**5**	**0**
Animal Science	232	0	53	29	5	**319**	**17**
Horticulture	3	0	5	3	0	**11**	**1**
Horticulture (Inst. Agrar. Stream)	0	0	0	1	0	**1**	**0**
Plant Science	26	0	30	18	5	**79**	**4**
Plant Science (Inst.Agrar Stream)	2	0	6	3	0	**11**	**1**
Soil Science	23	0	3	6	2	**34**	**2**
Forestry	64	0	11	4	1	**80**	**4**
Renewable Natural Resources	39	0	0	0	0	**39**	**2**
Agric. Management	142	0	3	16	0	**161**	**9**
Other Agric. and Renewable Resources	0	18	0	2	0	**20**	**1**
Rural Development	0	0	2	3	1	**6**	**0**
Agric Econ (Inst. Agrar. Stream)	0	0	1	1	0	**2**	**0**
Environmental Management	26	0	17	6	1	**50**	**3**
Environmental Management (Inst. Agrar. Stream)	0	0	0	1	0	**1**	**0**
Agribusiness (Inst.Agrar Stream	0	0	1	0	0	**1**	**0**
Land Reclamation (Land Use) (Land Use Inst. Agrar. Stream)	0	0	0	2	0	**2**	**0**
Agronomy	10	0	5	4	3	**22**	**1**
Agronomy (Inst.Agrar. Stream)	0	0	0	2	0	**2**	**0**
Wildlife	95	0	1	14	0	**110**	**6**
BSc Veterinary Biology	113	0	0	0	0	**113**	**6**
Microbiology	31	0	18	14	6	**69**	**4**
Consumer Science	109	0	2	5	1	**117**	**6**
Biotechnology	44	0	25	7	5	**81**	**4**
TOTAL	**1313**	**22**	**236**	**256**	**52**	**1879**	
Percentage	**70**	**1**	**13**	**14**	**3**		**100**

Table 89 above indicates that Animal Science and Agricultural Science (Art Stream) and Agricultural Management produced 17% and 10% respectively. Other CESM constitute less than 10% of the total AET graduates produced at Universities during the 2008 academic year.

4.4.3 Demographic breakdown of AET Graduates at Universities by CESM in 2008

Graduates at Undergraduate Degree Programmes by CESM at Universities in 2008

A total of 1 313 graduates were produced at Undergraduate Degree level during the 2008 academic year.

Table 90 below outlines the demographic breakdown of graduates for the Undergraduate Degree at Universities in 2008.

Figure 90: Demographic breakdown of graduates in Undergraduate Degree programmes by CESM at Universities in 2008

CESM Category (Undergraduate)	African			Coloured			White			Asian			Total
	Total	F	T	M	F	T	M	F	T	M	F	T	
Agricultural Economics (Science Stream)	23	13	**36**	0	0	**0**	6	0	**6**	0	0	**0**	**42**
Agricultural Economics (Art Stream)	6	6	**12**	0	0	**0**	0	0	**0**	0	0	**0**	**12**
Agricultural Eco. (AgriBusiness)	0	3	**3**	0	0	**0**	6	4	**10**	0	0	**0**	**13**
Agricultural Science (Art Stream)	24	19	**43**	4	2	**6**	66	25	**91**	0	0	**0**	**140**
Agricultural Science (Science Stream)	**5**	10	**15**	0	0	**0**	37	32	**69**	0	0	**0**	**84**
Agricultural Extension	**6**	0	**6**	0	0	**0**	0	0	**0**	0	0	**0**	**6**
Agricultural Food Science	**4**	2	**6**	2	1	**3**	6	37	**43**	0	0	**0**	**52**
Animal Science	**33**	61	**94**	0	2	**2**	54	80	**134**	0	2	**2**	**232**
Plant Science	**4**	5	**9**	0	0	**0**	9	8	**17**	0	0	**0**	**26**
Soil Science	**11**	3	**14**	0	0	**0**	7	2	**9**	0	0	**0**	**23**
Forestry	**19**	14	**33**	3	1	**4**	24	2	**26**	1	0	**1**	**64**
Horticulture	**1**	1	**2**	0	0	**0**	0	1	**1**	0	0	**0**	**3**
Renewable Natural Resources	**0**	1	**1**	0	2	**2**	24	12	**36**	0	0	**0**	**39**
Agric. Management	**83**	37	**120**	0	0	**0**	20	2	**22**	0	0	**0**	**142**
Environmental Management	**15**	11	**26**	0	0	**0**	0	0	**0**	0	0	**0**	**26**
Agronomy	**3**	0	**3**	0	0	**0**	6	1	**7**	0	0	**0**	**10**
Wildlife	**11**	3	**14**	0	0	**0**	53	28	**81**	0	0	**0**	**95**
Consumer Science	**1**	16	**17**	0	0	**0**	1	91	**92**	0	0	**0**	**109**
Plant Science (Inst.Agrar Stream)	**1**	1	**2**	0	0	**0**	0	0	**0**	0	0	**0**	**2**
Agric. Food Science (Inst.Agrar Stream)	**2**	3	**5**	0	0	**0**	0	0	**0**	0	0	**0**	**5**
BSc Veterinary Biology	**1**	0	**1**	1	2	**3**	37	62	**99**	1	9	**10**	**113**
Biotechnology	**3**	8	**11**	0	1	**1**	12	18	**30**	1	1	**2**	**44**
Microbiology	**4**	4	**8**	0	0	**0**	7	16	**23**	0	0	**0**	**31**
TOTAL	**260**	**221**	**481**	**10**	**11**	**21**	**375**	**421**	**796**	**3**	**12**	**15**	**1313**

Table 90 above shows that Animal Science, Agricultural Science (Art Stream) and BSc Veterinary Biology accounted for 17%, 12% and 10% of the Undergraduate Degree graduates respectively. Consumer Science and Agricultural Science (Science Stream) constituted 9% and 7% respectively of the total Undergraduate Degree graduates at Universities during the 2008 academic year. Other categories each produced less than 7% of the total AET graduates during the 2008 academic year.

White and African graduates constituted 62% and 35% of the total number of graduates respectively at Undergraduate Degree level. Coloured and Asian graduates collectively accounted for 3% of the graduates at Undergraduate Degree level.

Postgraduate Diploma Graduates by CESM at Universities in 2008

A total of 22 graduates were produced at Postgraduate Diploma level during the 2008 academic year.

Table 91: Demographic breakdown of Postgraduate Diploma graduates by CESM at Universities in 2008

CESM Category (Postgraduate Diploma)	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Other Agricultural and Renewable Resources	11	4	**15**	1	0	**1**	0	2	**2**	0	0	**0**	**18**
Agricultural Extension	3	1	**4**	0	0	**0**	0	0	**0**	0	0	**0**	**4**
TOTAL	**14**	**5**	**19**	**1**	**0**	**1**	**0**	**2**	**2**	**0**	**0**	**0**	**22**

Table 91 below outlines the demographic breakdown of Postgraduate Diploma graduates at Universities in 2008.

Other Agricultural and Renewable Resources constituted 82% of the total number of Postgraduate Diploma graduates during the 2008 academic year and Agricultural Extension accounted for the remaining 18%.

Honours Graduates by CESM at Universities in 2008

A total number of 236 graduates were produced at Honours Degree level during the 2008 academic year.

Table 92 below outlines the demographic breakdown of Honours graduates at Universities in 2008 per CESM.

Table 92: Demographic breakdown of graduates in Honours Degree by CESM at Universities in 2008

CESM Category (Honours)	African			Coloured			White			Asian			Total
	Total	F	T	M	F	T	M	F	T	M	F	T	
Agricultural Economics (Science Stream)	**10**	2	**12**	0	0	**0**	4	1	**5**	0	0	**0**	**17**
Agricultural Economics (Art Stream)	**2**	3	**5**	0	0	**0**	0	0	**0**	0	0	**0**	**5**
Agricultural Economics (BCom Stream)	**0**	0	**0**	0	0	**0**	3	0	**3**	0	0	**0**	**3**
Agricultural Science (Art Stream)	**1**	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Agricultural Science (Science Stream)	**0**	5	**5**	1	0	**1**	4	4	**8**	0	0	**0**	**14**
Horticulture	**0**	0	**0**	0	0	**0**	3	2	**5**	0	0	**0**	**5**
Agric. Food Technology	**2**	1	**3**	0	0	**0**	3	7	**10**	0	0	**0**	**13**
Animal Science	**14**	5	**19**	0	0	**0**	12	20	**32**	0	2	**2**	**53**
Plant Science	**6**	5	**11**	0	0	**0**	3	13	**16**	2	1	**3**	**30**
Soil Science	**2**	0	**2**	0	0	**0**	1	0	**1**	0	0	**0**	**3**
Rural Development	**0**	2	**2**	0	0	**0**	0	0	**0**	0	0	**0**	**2**
Environmental Management	**2**	6	**8**	0	0	**0**	2	2	**4**	1	4	**5**	**17**

Table 92: Demographic breakdown of graduates in Honours Degree by CESM at Universities in 2008													
CESM Category (Honours)	**African**			**Coloured**			**White**			**Asian**			**Total**
	Total	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Agricultural Management	**0**	0	**0**	0	0	**0**	3	0	**3**	0	0	**0**	**3**
Agronomy	**1**	3	**4**	0	0	**0**	1	0	**1**	0	0	**0**	**5**
Microbiology	**1**	2	**3**	0	0	**0**	5	10	**15**	0	0	**0**	**18**
Biotechnology	**0**	3	**3**	0	0	**0**	11	6	**17**	3	2	**5**	**25**
Wildlife	**0**	0	**0**	0	0	**0**	1	0	**1**	0	0	**0**	**1**
Consumer Science	**0**	1	**1**	0	0	**0**	0	1	**1**	0	0	**0**	**2**
Forestry	**1**	0	**1**	0	0	**0**	7	3	**10**	0	0	**0**	**11**
Agribusiness (Inst. Agrar. Stream	**0**	1	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Plant Science (Inst.Agrar. Stream	**4**	2	**6**	0	0	**0**	0	0	**0**	0	0	**0**	**6**
Agricultural Economics (Inst. Agrar. Stream)	**1**	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
TOTAL	**47**	**41**	**88**	**1**	**0**	**1**	**63**	**69**	**132**	**6**	**9**	**15**	**236**

Table 92 above depicts that Animal Science accounted for 22% of the total number of graduates at Honours Degree level followed by Plant Science and Biotechnology with 13% and 11% respectively. Other CESM recorded the lowest number of graduates with less than 10% of the total number of Honours graduates.

White graduates dominated Honours with 57% and African graduates accounted for 37%. Asians constituted 6% of the Honours graduates during the 2008 academic year at Universities whilst Coloureds constituted less than a percent.

Masters Graduates by CESM at Universities in 2008

A total of 256 graduates were produced at Masters level during the 2008 academic year.

Table 93 below outlines the demographic breakdown of graduates for the Masters programmes at Universities during the 2008 academic year.

Table 93: Demographic breakdown of graduates in Masters Degree by CESM at Universities in 2008													
CESM Category (Masters)	**African**			**Coloured**			**White**			**Asian**			**Total**
	Total	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Agricultural Economics (Science Stream)	**6**	0	**6**	0	0	**0**	2	0	**2**	0	0	**0**	**8**
Agricultural Science (Art Stream)	**18**	5	**23**	1	0	**1**	8	2	**10**	0	0	**0**	**34**
Agricultural Science (Science Stream)	**11**	7	**18**	1	0	**1**	20	12	**32**	0	0	**0**	**51**
Agric. Extension	**1**	2	**3**	0	0	**0**	0	1	**1**	0	0	**0**	**4**
Agric. Food Technology	**5**	1	**6**	1	0	**1**	3	8	**11**	0	0	**0**	**18**
Animal Science	**4**	2	**6**	0	0	**0**	9	14	**23**	0	0	**0**	**29**
Horticulture	**1**	1	**2**	0	0	**0**	0	1	**1**	0	0	**0**	**3**
Plant Science	**3**	7	**10**	1	0	**1**	2	5	**7**	0	0	**0**	**18**
Soil Science	**4**	0	**4**	0	0	**0**	1	1	**2**	0	0	**0**	**6**
Forestry	**3**	0	**3**	0	0	**0**	1	0	**1**	0	0	**0**	**4**
Rural Development	**2**	1	**3**	0	0	**0**	0	0	**0**	0	0	**0**	**3**

Table 93: Demographic breakdown of graduates in Masters Degree by CESM at Universities in 2008													
CESM Category (Masters)	**African**			**Coloured**			**White**			**Asian**			**Total**
	Total	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Agric. Management	**8**	1	**9**	0	0	**0**	1	6	**7**	0	0	**0**	**16**
Other Agric. and Renewable Resources	**0**	0	**0**	0	1	**1**	0	1	**1**	0	0	**0**	**2**
Environmental Management	**2**	3	**5**	0	0	**0**	0	1	**1**	0	0	**0**	**6**
Agronomy	**2**	0	**2**	0	0	**0**	2	0	**2**	0	0	**0**	**4**
Biotechnology	**0**	0	**0**	0	0	**0**	4	3	**7**	0	0	**0**	**7**
Microbiology	**1**	2	**3**	0	0	**0**	2	8	**10**	1	0	**1**	**14**
Wildlife	**0**	0	**0**	0	0	**0**	8	6	**14**	0	0	**0**	**14**
Consumer Science	**2**	3	**5**	0	0	**0**	0	0	**0**	0	0	**0**	**5**
Plant Science (Inst. Agrar Stream)	**1**	1	**2**	0	0	**0**	1	0	**1**	0	0	**0**	**3**
Horticulture (Inst. Agrar. Stream)	**1**	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Land Reclamation (Land Use Inst.Agrar. Stream)	**1**	0	**1**	0	0	**0**	1	0	**1**	0	0	**0**	**2**
Agric. Economics (Inst. Agrar. Stream)	**0**	0	**0**	0	1	**1**	0	0	**0**	0	0	**0**	**1**
Agronomy (Inst.Agrar Stream)	**1**	0	**1**	0	0	**0**	0	1	**1**	0	0	**0**	**2**
Environmental Management (Inst. Agrar. Stream)	**0**	1	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
TOTAL	**77**	**37**	**114**	**4**	**2**	**6**	**65**	**70**	**135**	**1**	**0**	**1**	**256**

Table 93 above indicates that Agricultural Science (Science Stream) dominated Masters graduates with 20%, followed by Agricultural Science (Art Stream) with 13% and Animal Science with 11%. All other CESM represented less than 10% of the total Masters graduates each. Whites constituted the highest number of Masters graduates with 53% followed by Africans with 45%, whilst Coloureds represented the least number of graduates with 2% only. Asians were non existent at Masters Degree level during the 2008 academic year.

PhD Graduates by CESM at Universities in 2008

A total of 52 graduates were produced at PhD level during the 2008 academic year.

Table 94 below presents a demographic breakdown of PhD graduates at Universities during the 2008 academic year.

Table 94: Demographic breakdown of graduates in PhD Degree by CESM at Universities in 2008													
CESM Category (PhD)	**African**			**Coloured**			**White**			**Asian**			**Total**
	Total	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Agricultural Economics (Art Stream)	**0**	2	**2**	0	0	**0**	0	0	**0**	0	0	**0**	**2**
Agricultural Science (Science Stream)	**2**	0	**2**	0	0	**0**	1	3	**4**	0	0	**0**	**6**
Agricultural Science (Art Stream)	**0**	6	**6**	1	0	**1**	2	1	**3**	0	0	**0**	**10**
Agronomy	**2**	0	**2**	0	0	**0**	0	0	**0**	1	0	**1**	**3**
Animal Science	**3**	0	**3**	0	0	**0**	2	0	**2**	0	0	**0**	**5**
Biotechnology	**1**	0	**1**	0	0	**0**	2	1	**3**	0	1	**1**	**5**
Consumer Science	**0**	1	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Environmental Management	**1**	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Forestry	**0**	0	**0**	0	0	**0**	1	0	**1**	0		**0**	**1**
Rural Development	**1**	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**

Table 94: Demographic breakdown of graduates in PhD Degree by CESM at Universities in 2008													
CESM Category (PhD)	**African**			**Coloured**			**White**			**Asian**			**Total**
	Total	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Agric. Food Science	**1**	1	**2**	0	0	**0**	1	1	**2**	0	0	**0**	**4**
Microbiology	**0**	0	**0**	0	0	**0**	2	4	**6**	0	0	**0**	**6**
Plant Science	**2**	1	**3**	0	0	**0**	1	1	**2**	0	0	**0**	**5**
Soil Science	**2**	0	**2**	0	0	**0**	0	0	**0**	0	0	**0**	**2**
TOTAL	**15**	**11**	**26**	**1**	**0**	**1**	**12**	**11**	**23**	**1**	**1**	**2**	**52**

The data in Table 94 above illustrates that Agricultural Science (Art Stream) dominated the PhD graduates with 19%, followed by Agricultural Science (Science Stream) and Microbiology with 12% each. Other CESM constituted less than 12% of the total PhD graduates each.

African, White and Asian graduates accounted for 50%, 44% and 4% respectively of the total number of PhD graduates during the 2008 academic year. Coloureds accounted for 2% of PhD graduates during the 2008 academic year.

4.4.3.1 Agricultural Economics (Science Stream) Graduates at Universities in 2008

Sixty seven (67) graduates were produced in this CESM at Universities during the 2008 academic year.

Table 95 below presents a demographic breakdown of Agricultural Economics (Science Stream) graduates during the 2008 academic year by level of qualification.

Table 95: Demographic breakdown of Agricultural Economics (Science Stream) graduates at Universities in 2008													
LEVEL	**African**			**Coloured**			**White**			**Asian**			**Total**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Undergraduate	23	13	**36**	0	0	**0**	6	0	**6**	0	0	**0**	**42**
Honours	10	2	**12**	0	0	**0**	4	1	**5**	0	0	**0**	**17**
Masters	6	0	**6**	0	0	**0**	2	0	**2**	0	0	**0**	**8**
TOTAL	**39**	**15**	**54**	**0**	**0**	**0**	**12**	**1**	**13**	**0**	**0**	**0**	**67**

The Undergraduate Degree comprised 63% of the total number of graduates in this CESM followed by Honours with 25% and Masters with 12%. Forty two (42) graduates were produced at Undergraduate Degree level at Universities during the 2008 academic year.

Figure 184: Racial breakdown of Undergraduate Degree in Agricultural Economics (Science Stream) graduates

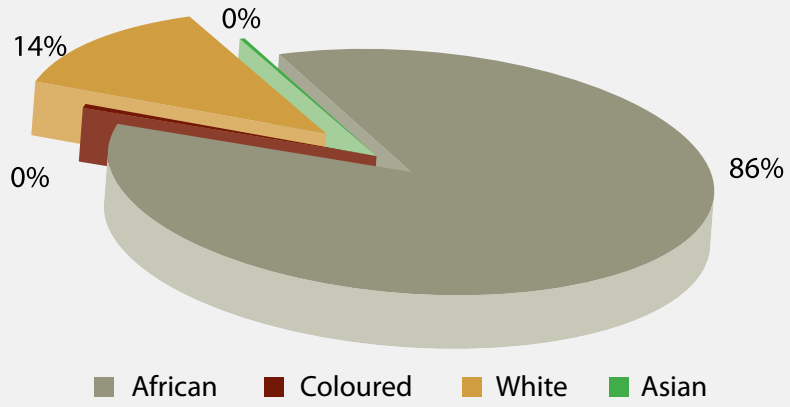
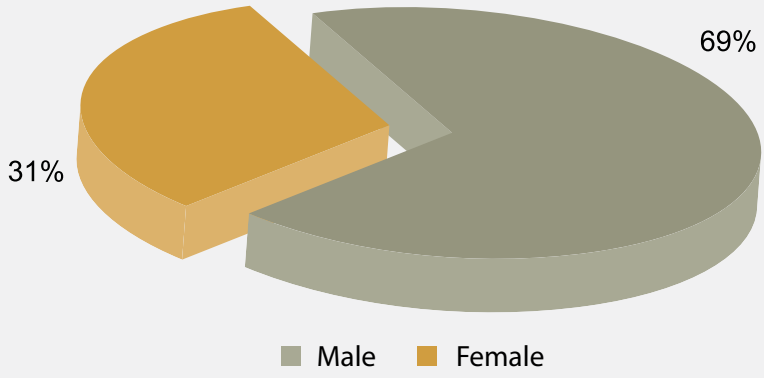


Figure 184 above indicates that Africans were the majority of the Undergraduate Degree graduates in this CESM with 86%, followed by Whites with 14%. Coloureds and Asians were not represented in this CESM at Undergraduate Degree level during the 2008 academic year.

Figure 185: Gender breakdown of Undergraduate Degree in Agricultural Economics (Science Stream) graduates



As illustrated in Figure 185 above, males constituted the majority of Undergraduate Degree graduates in this CESM with 69%, whilst females accounted for 31%.

Seventeen (17) graduates were produced at Honours Degree level during the 2008 academic year at Universities.

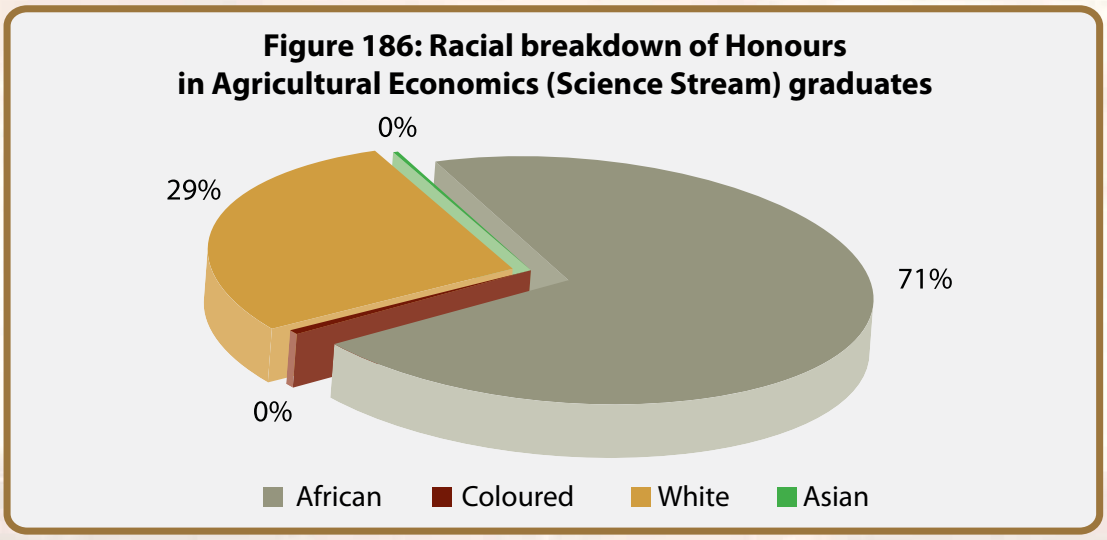
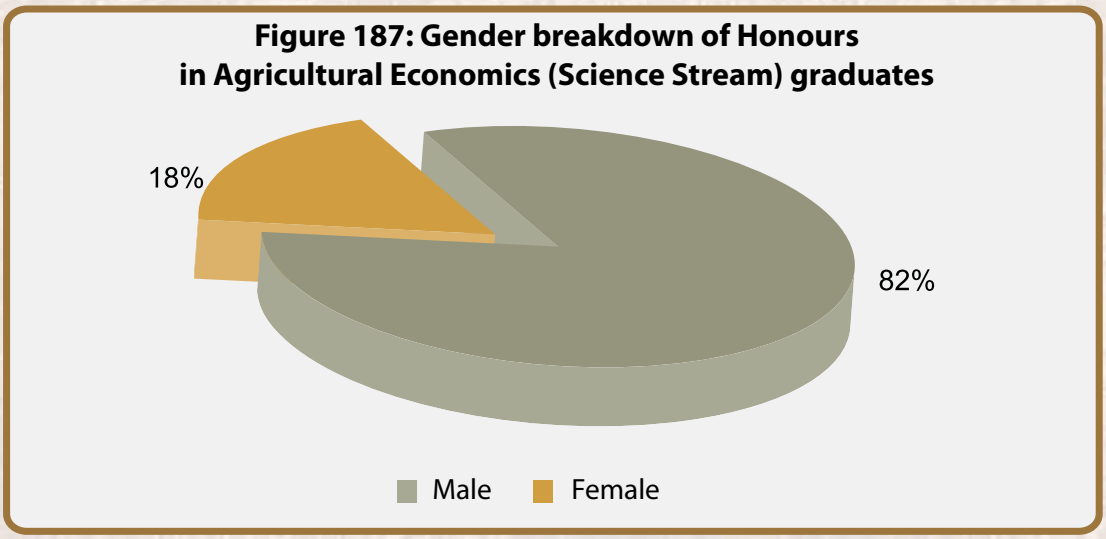


Figure 186 above indicated that Africans dominated the Honours Degree graduates in this CESM during the 2008 academic year with 71%, followed by Whites with 29%. No Asian or Coloured graduates were produced in this CESM at Honours Degree level.



As illustrated in Figure 187 above, males constituted the majority of Honours graduates in this CESM with 82%, whilst females accounted for 18%.

Eight (8) male graduates were produced at Masters level in this CESM during the 2008 academic year at Universities: 6 were African and 2 were White.

4.4.3.2 Agricultural Economics (Art Stream) Graduates at Universities in 2008

Nineteen (19) African graduates were produced in Agricultural Economics (Art Stream) at Universities during the 2008 academic year.

Table 96 below presents a demographic breakdown of Agricultural Economics (Art Stream) during the 2008 academic year by level of qualification.

Table 96: Demographic breakdown of Agricultural Economics (Art Stream) graduates at Universities in 2008													
LEVEL	**African**			**Coloured**			**White**			**Asian**			**Total**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Undergraduate	6	6	**12**	0	0	**0**	0	0	**0**	0	0	**0**	**12**
Honours	2	3	**5**	0	0	**0**	0	0	**0**	0	0	**0**	**5**
PhD	0	2	**2**	0	0	**0**	0	0	**0**	0	0	**0**	**2**
TOTAL	**8**	**9**	**19**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**19**

Undergraduate Degree graduates accounted for 63% of the total number of graduates in this CESM, followed by Masters with 26% and PhD with 11%.

Twelve (12) students graduated at Undergraduate Degree level in this CESM during the 2008 academic year: 6 were males and 6 were females.

Table 97: Demographic breakdown of Agricultural Economics (Agribusiness) graduates at Universities in 2008													
LEVEL	**African**			**Coloured**			**White**			**Asian**			**Total**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Undergraduate	0	3	**3**	0	0	**0**	6	4	**10**	0	0	**0**	**13**
TOTAL	**0**	**3**	**3**	**0**	**0**	**0**	**6**	**4**	**10**	**0**	**0**	**0**	**13**

Five (5) graduates were produced at Honours Degree level in this CESM: 3 were females and 2 were males.

Two (2) female graduates were produced at PhD Degree level in this CESM during the 2008 academic year.

4.4.3.3 Agricultural Economics (BCom Stream) Graduates at Universities in 2008

Three (3) White male graduates were awarded Honours Degree in Agricultural Economics (BCom Stream) at Universities during the 2008 academic year.

4.4.3.4 Agricultural Economics (Agribusiness) Graduates at Universities in 2008

Thirteen (13) graduates were awarded with Undergraduate Degree in Agricultural Economics (Agribusiness) at Universities during the 2008 academic year.

Table 97 below presents a demographic breakdown of Agricultural Economics (Agribusiness) graduates during the 2008 academic year.

Of the 13 graduates awarded with Undergraduate Degree in Agricultural Economics (Agribusiness) at Universities, 3 were African females, 6 were White males and 4 were White females.

4.4.3.5 Agricultural Science (Art Stream) Graduates at Universities in 2008

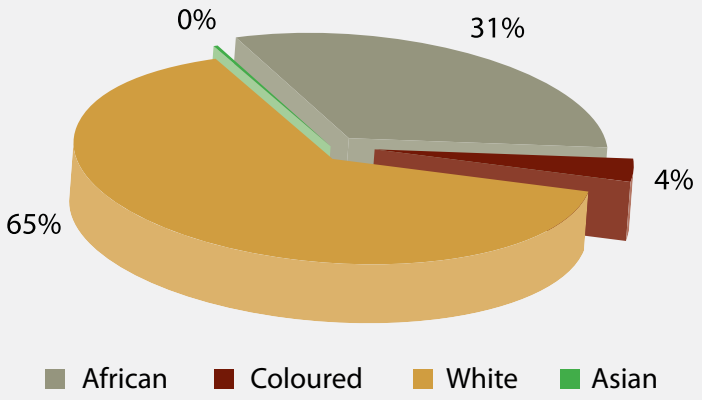
One hundred and eighty five (185) graduates were produced in this CESM during the 2008 academic year.

Table 98 below presents a demographic breakdown of Agricultural Science (Art Stream) graduates during the 2008 academic year by level of qualification.

Table 98: Demographic breakdown of Agricultural Science (Art Stream) graduates at Universities in 2008													
LEVEL	**African**			**Coloured**			**White**			**Asian**			**Total**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Undergraduate	24	19	**43**	4	2	**6**	66	25	**91**	0	0	**0**	**140**
Honours	1	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
Masters	18	5	**23**	1	0	**1**	8	2	**10**	0	0	**0**	**34**
PhD	0	6	**6**	1	0	**1**	2	1	**3**	0	0	**0**	**10**
TOTAL	**43**	**30**	**73**	**6**	**2**	**8**	**76**	**28**	**104**	**0**	**0**	**0**	**185**

Undergraduate Degree accounted for the most graduates in this CESM with 76% followed by Masters and PhD with 18% and 5% respectively. Honours graduates constituted the least number of graduates in this CESM with 1%.

Figure 188: Racial breakdown of Undergraduates Degree in Agricultural Science (Art Stream) graduates



One hundred and forty (140) graduates were produced at Undergraduate Degree level in this CESM during the 2008 academic year.

Figure 189: Gender breakdown of Undergraduates Degree in Agricultural Science (Art Stream) graduates

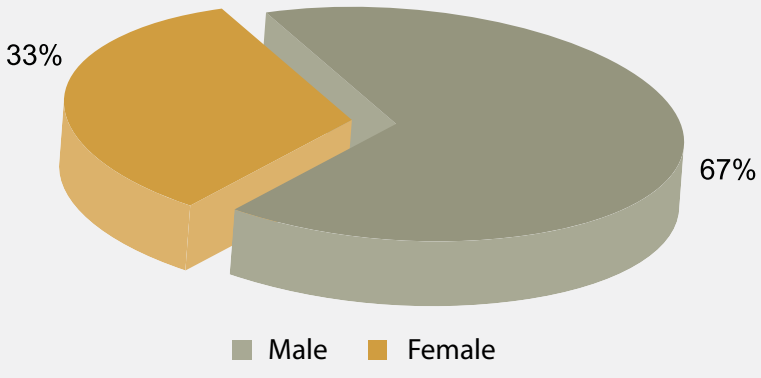


Figure 188 above depicts that Whites were dominant in this CESM at Undergraduate Degree level with 65%, followed by Africans with 31% and Coloureds with 4%. Asians were non existent in this CESM.

As shown in Figure 189 above, males were the majority in this CESM at Undergraduate Degree level with 67%, whilst females accounted for 33%. Whites accounted for 70% of the male graduates at Undergraduate Degree level in this CESM followed by Africans with 26% and Coloureds with 4%.

One (1) African male graduated at Honours Degree level in this CESM during the 2008 academic year.

Figure 190: Racial breakdown of Masters in Agricultural Science (Art Stream) graduates

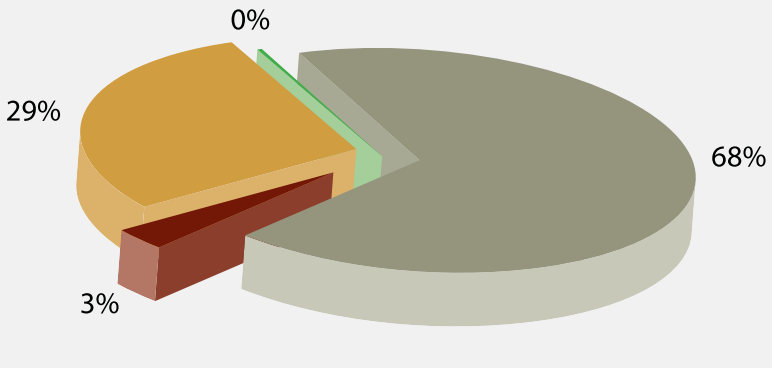
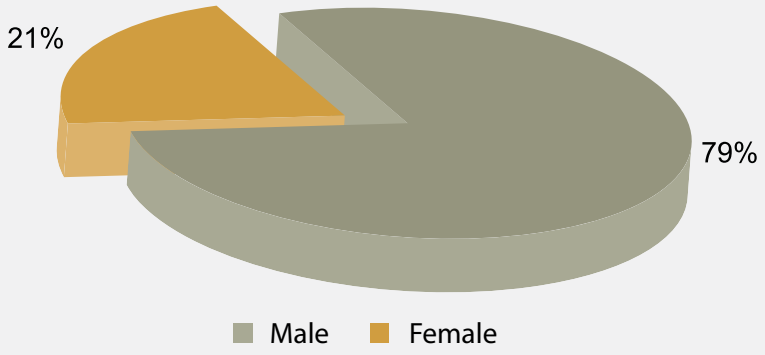


Figure 190 above depicts that Africans were dominant in this CESM at Masters Degree level with 68%, followed by Whites with 29% and Coloureds with 3%.

Figure 191: Gender breakdown of Masters in Agricultural Science (Art Stream) graduates



As shown in Figure 191 above, males were the majority in this CESM at Masters Degree level with 79%, whilst females accounted for 21%.

Ten (10) graduates were produced at PhD level in this CESM during the 2008 academic year: 6 were African females, 2 were White males, 1 was Coloured male and 1 was White female.

4.4.3.6 Agricultural Science (Science Stream) Graduates at Universities in 2008

One hundred and fifty five (155) graduates were produced in this CESM at Universities during the 2008 academic year.

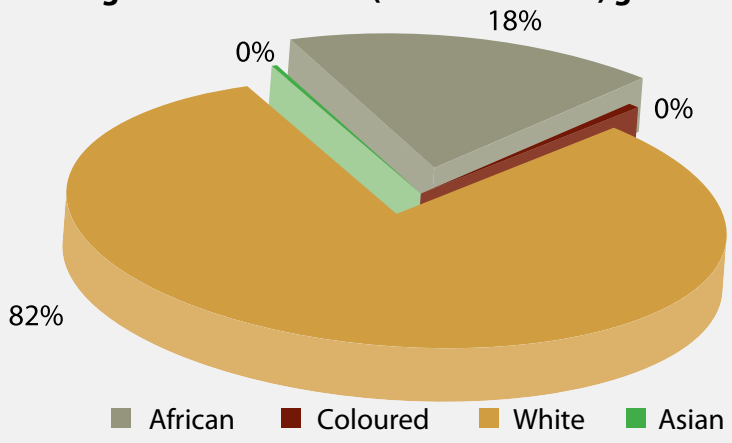
Table 99 below presents a demographic breakdown of Agricultural Science (Science Stream) graduates during the 2008 academic year by level of qualification.

Table 99: Demographic breakdown of Agricultural Science (Science Stream) graduates at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	5	10	**15**	0	0	**0**	37	32	**69**	0	0	**0**	**84**
Honours	0	5	**5**	1	0	**1**	4	4	**8**	0	0	**0**	**14**
Masters	11	7	**18**	1	0	**1**	20	12	**32**	0	0	**0**	**51**
PhD	2	0	**2**	0	0	**0**	1	3	**4**	0	0	**0**	**6**
TOTAL	**18**	**22**	**40**	**2**	**0**	**2**	**62**	**51**	**113**	**0**	**0**	**0**	**155**

Undergraduate Degree produced 54% of the total number of graduates in this CESM followed by Masters with 33% and Honours with 9%. PhD graduates constituted the least graduates with 4% of the total number of graduates in this CESM during the 2008 academic year.

Figure 192: Racial breakdown of Undergraduate Degree in Agricultural Science (Science Stream) graduates



As portrayed in Figure 192 above, Whites were the majority in this CESM at Undergraduate Degree level with 82%, followed by Africans with 18% whilst Coloureds and Asians were not represented.

Figure 193: Gender breakdown of Undergraduate Degree in Agricultural Science (Science Stream) graduates

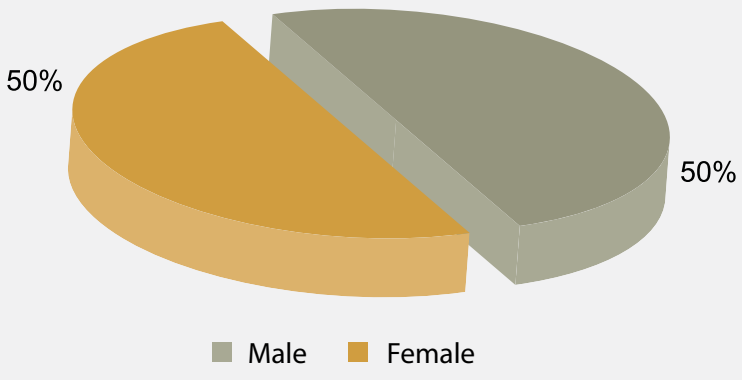


Figure 193 above depicts that males and females accounted for 50% each of total number of graduates in Undergraduate Degree.

Figure 194: Racial breakdown of Masters in Agricultural Science (Science Stream) graduates

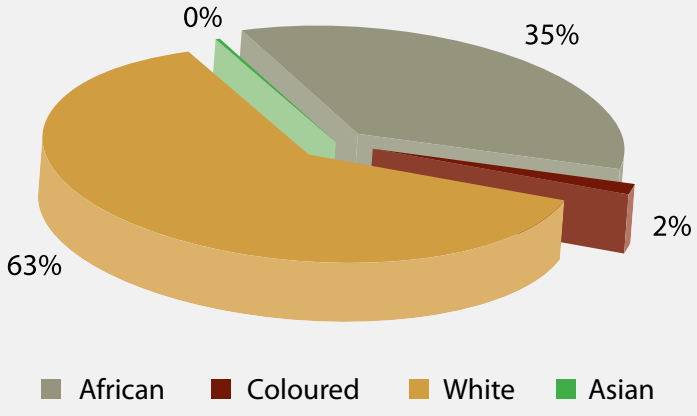
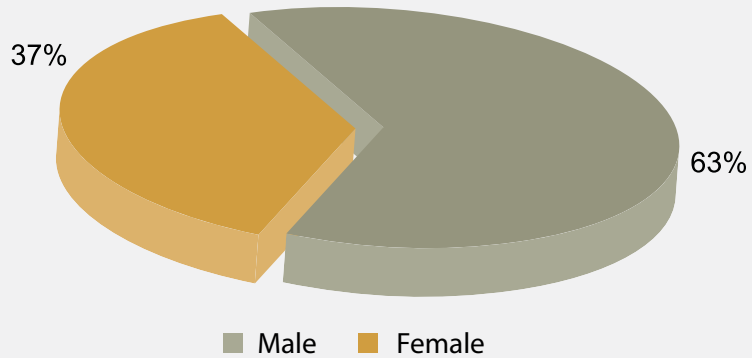


Figure 194 above depicts that Whites were dominant in this CESM at Masters Degree level with 63%, followed by Africans with 35% and Coloureds with 2%.

Figure 195: Gender breakdown of Masters In Agricultural Science (Science Stream) graduates



As shown in Figure 195 above, males were the majority in this CESM at Masters Degree level with 63%, whilst females accounted for 37%.

4.4.3.7 Agricultural Extension Graduates at Universities in 2008

Fourteen (14) graduates were produced in this CESM during the 2008 academic year.

Undergraduate Degree accounted for 64% of the Agricultural Extension graduates at Universities during the 2008 academic year, whilst Masters and Postgraduate Diploma each accounted for 18%.

Six (6) African male graduates were awarded with Undergraduate Degree in this CESM.

At Postgraduate Diploma level, 4 African graduates were produced in this CESM: 3 were males and 1 was female.

Four (4) graduates were awarded with Masters Degree during the 2008 academic year: 2 were African females, 1 was African male and 1 was White male.

4.4.3.8 Agricultural Food Technology Graduates at Universities in 2008

Eighty seven (87) graduates were produced in this CESM during the 2008 academic year.

Table 100 below presents a demographic breakdown of Agricultural Food Technology graduates during the 2008 academic year by level of qualification.

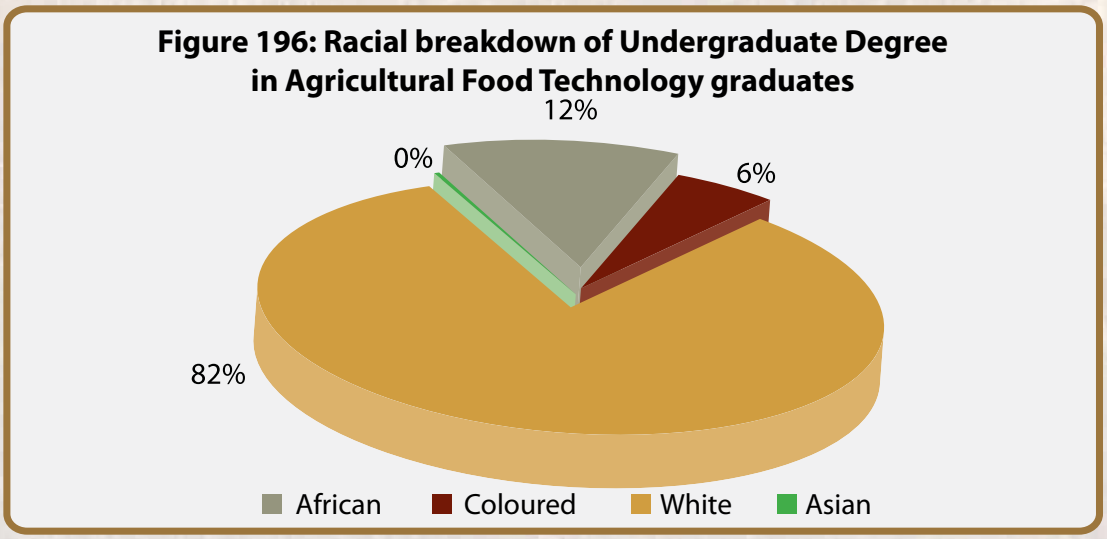
Table 100: Demographic breakdown of Agricultural Food Technology graduates at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	4	2	**6**	2	1	**3**	6	37	**43**	0	0	**0**	**52**
Honours	2	1	**3**	0	0	**0**	3	7	**10**	0	0	**0**	**13**
Masters	5	1	**6**	1	0	**1**	3	8	**11**	0	0	**0**	**18**
PhD	1	1	**2**	0	0	**0**	1	1	**2**	0	0	**0**	**4**
TOTAL	**12**	**5**	**17**	**3**	**1**	**4**	**13**	**53**	**66**	**0**	**0**	**0**	**87**

As illustrated in Table 100 above, 59% of the graduates in this CESM were produced at Undergraduate Degree level, followed by 21% at Masters level whilst Honours and PhD accounted for 15% and 5% respectively.

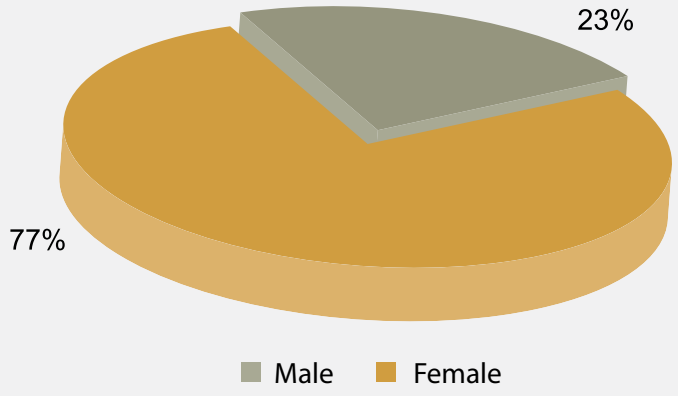
Fifty two (52) graduates were produced at Undergraduate Degree level in Agricultural Food Technology during the 2008 academic year.

Figure 196: Racial breakdown of Undergraduate Degree in Agricultural Food Technology graduates



The illustration in Figure 196 above shows that White dominated the Undergraduate Degree in this CESM with 82%, followed by Africans with 12% and Coloureds with 6%. Asians were not represented in this CESM at Undergraduate Degree level.

Figure 197: Gender breakdown of Undergraduate Degree in Agricultural Food Technology graduates



Gender breakdown in Figure 197 above depicts that females dominated this CESM at Undergraduate Degree level with 77%, whilst males accounted for 23%. White females represented 92% of the female graduates at Undergraduate Degree in this CESM, followed by Africans with 5% and Coloureds with 3%.

Thirteen (13) graduates were produced at Honours Degree level in this CESM during the 2008 academic year. Three (3) were awarded to Africans and 10 to Whites.

Of the 18 graduates awarded with Masters Degree in this CESM, 8 were White females, 5 were African males, 3 were White males, 1 was African female and 1 was Coloured male.

Four (4) graduates were awarded PhD Degree: 2 were Africans and 2 were Whites.

4.4.3.9 Animal Science Graduates at Universities in 2008

Three hundred and nineteen (319) graduates were produced in this CESM during the 2008 academic year.

Table 101 below presents a demographic breakdown of Animal Science graduates during the 2008 academic year by level of qualification.

Table 101: Demographic breakdown of Animal Science graduates at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	33	61	**94**	0	2	**2**	54	80	**134**	0	2	**2**	**232**
Honours	14	5	**19**	0	0	**0**	12	20	**32**	0	2	**2**	**53**
Masters	4	2	**6**	0	0	**0**	9	14	**23**	0	0	**0**	**29**
PhD	3	0	**3**	0	0	**0**	2	0	**2**	0	0	**0**	**5**
TOTAL	**54**	**68**	**122**	**0**	**2**	**2**	**77**	**114**	**191**	**0**	**4**	**4**	**319**

Undergraduate Degree graduates accounted for 72% of the total number of graduates produced in this CESM, followed by Honours with 17%. Masters constituted 9% of the Animal Science graduates whilst PhD comprised 2%.

Figure 198: Racial breakdown of Undergraduate Degree in Animal Science graduates

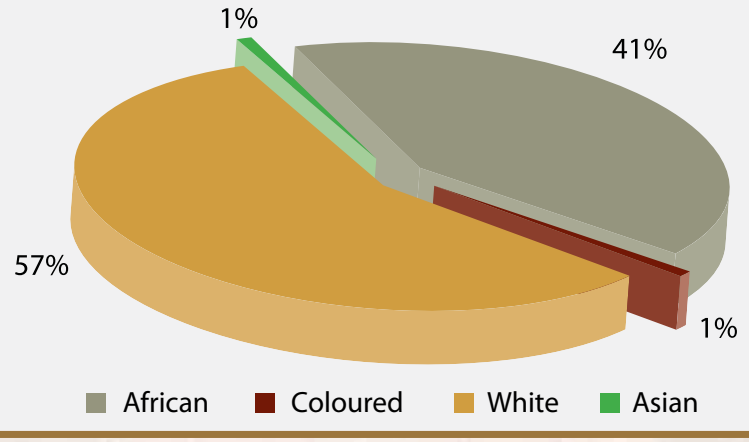


Figure 198 above illustrates that Whites dominated in this CESM at Undergraduate Degree level with 57%, followed by Africans with 41%. Coloureds and Asians accounted for 1% each.

Figure 199: Gender breakdown of Undergraduate Degree in Animal Science graduates

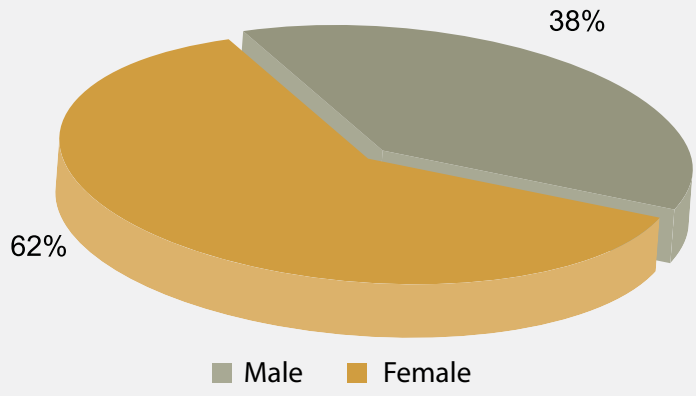
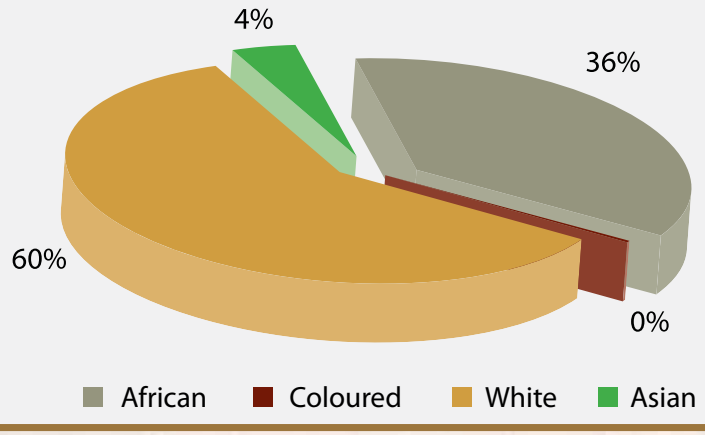


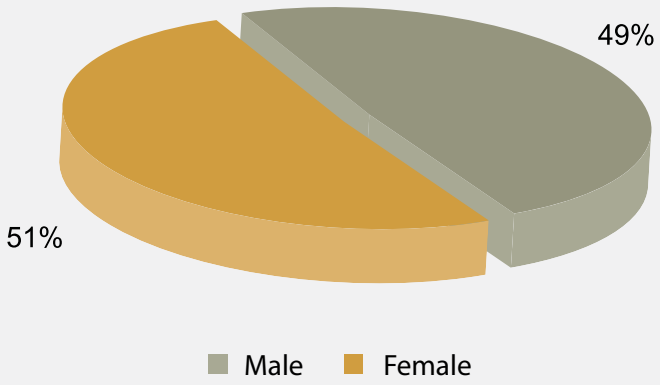
Figure 199 above indicates that female graduates dominated the Undergraduate Degree graduates in Animal Science with 62% and males accounted for 38%.

Figure 200: Racial breakdown of Honours in Animal Science graduates



As portrayed in Figure 200 above, Whites were the majority in this CESM at Honours Degree level with 60% followed by Africans with 36% and Asians with 4%. Coloureds were not represented in this CESM at Honours Degree level during the 2008 academic year.

Figure 201: Gender breakdown of Honours in Animal Science graduates



Gender breakdown in Figure 201 above depicts that females accounted for 51% of the Honours Degree graduates in this CESM and males accounted for 49%.

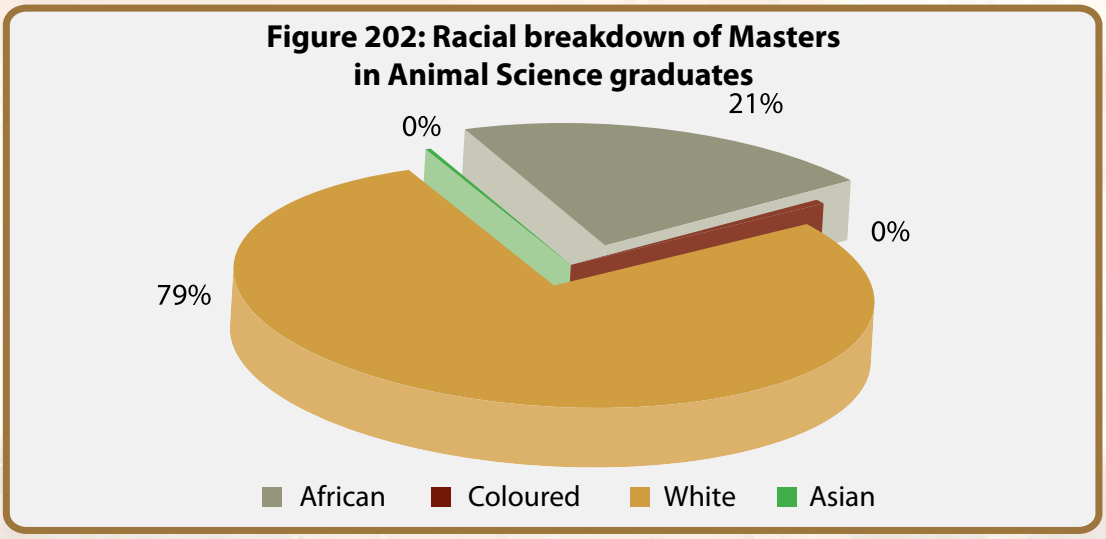
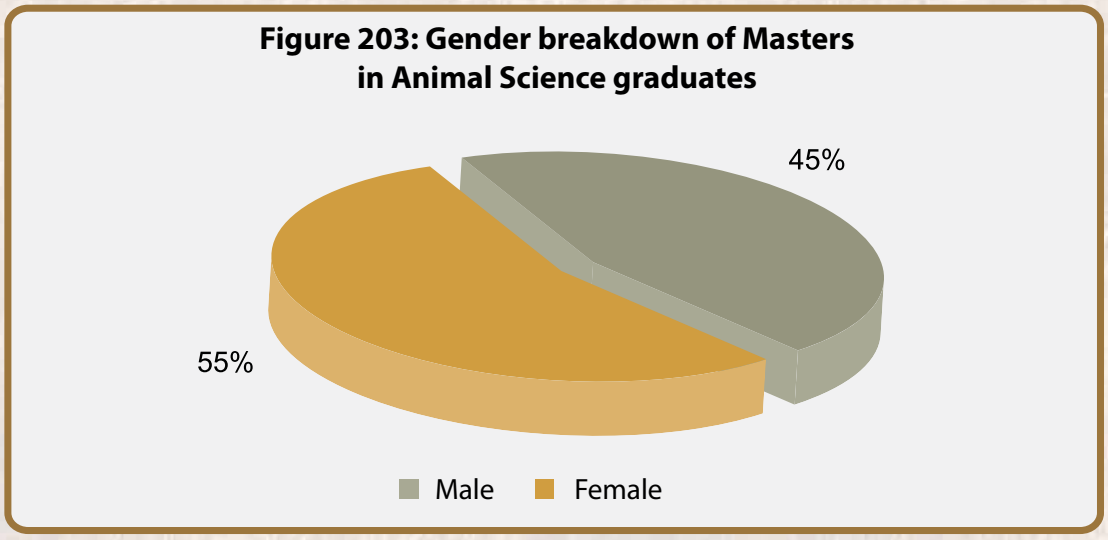


Figure 202 above illustrates that Whites dominated the graduates in this CESM at Masters Degree level with 79%, followed by Africans with 21%. Coloureds and Asians were not represented.



Gender breakdown in Figure 203 above depicts that females dominated this CESM at Masters Degree level with 55%, whilst males amounted for 45%.

Five (5) male graduates were awarded PhD in this CESM during the 2008 academic year: 3 African and 2 White.

4.4.3.10 Plant Science Graduates at Universities in 2008

Seventy nine (79) graduates were produced in this CESM during the 2008 academic year.

Table 102 below presents a demographic breakdown of Plant Science graduates during the 2008 academic year by level of qualification.

Table 102: Demographic breakdown of Plant Science graduates at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	4	5	**9**	0	0	**0**	9	8	**17**	0	0	**0**	**26**
Honours	6	5	**11**	0	0	**0**	3	13	**16**	2	1	**3**	**30**
Masters	3	7	**10**	1	0	**1**	2	5	**7**	0	0	**0**	**18**
PhD	2	1	**3**	0	0	**0**	1	1	**2**	0	0	**0**	**5**
TOTAL	**15**	**18**	**33**	**1**	**0**	**1**	**15**	**27**	**42**	**2**	**1**	**3**	**79**

Honours, Undergraduate Degree and Masters respectively constituted 38%, 33% and 23% of graduates in this CESM whilst PhD comprised 6%.

Twenty six (26) graduates were produced in this CESM at Undergraduate Degree during the 2008 academic year.

Figure 204: Racial breakdown of Undergraduate Degree in Plant Science graduates

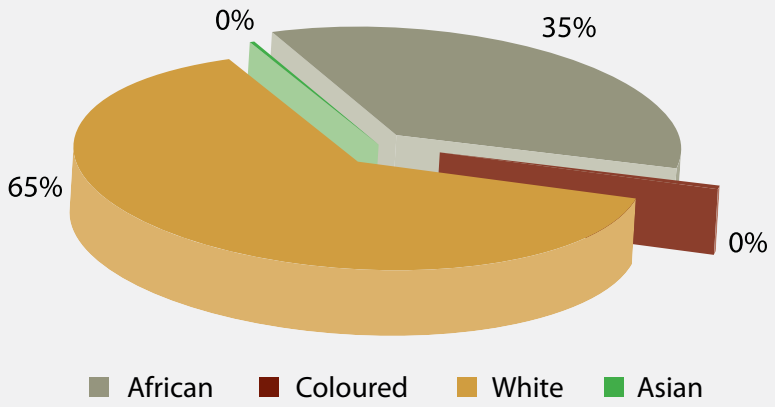
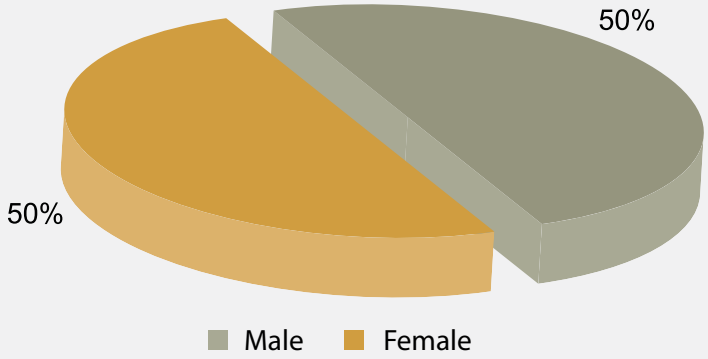


Figure 204 above illustrates that Whites dominated the Plant Science graduates at Undergraduate Degree level with 65%, followed by Africans with 35%. Coloureds and Asians were not represented.

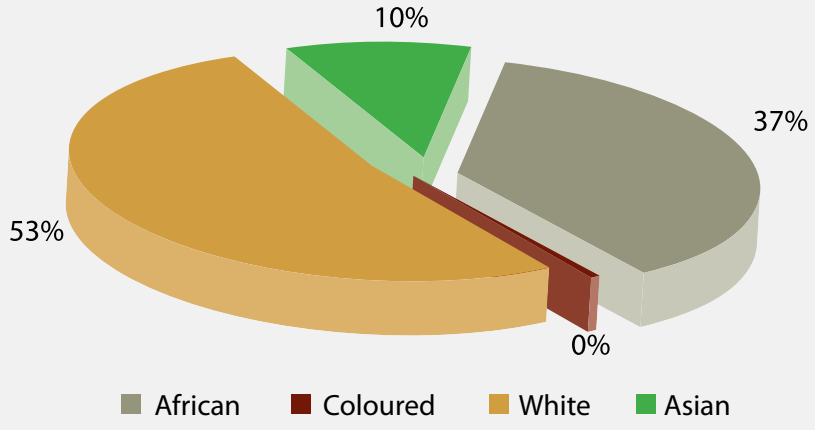
Figure 205: Gender breakdown of Undergraduate Degree in Plant Science graduates



Gender classification in Figure 205 above depicts that males and females each accounted for 50% of the total number of graduates in this CESM at Undergraduate Degree level.

Thirty (30) graduates were produced in this CESM at Honours Degree level during the 2008 academic year.

Figure 206: Racial breakdown of Honours in Plant Science graduates



As illustrated in Figure 206 above Whites were the majority with 53% followed by Africans with 37% and Asians with 10%. No Coloured graduates were produced in this CESM at Honours Degree level during the 2008 academic year.

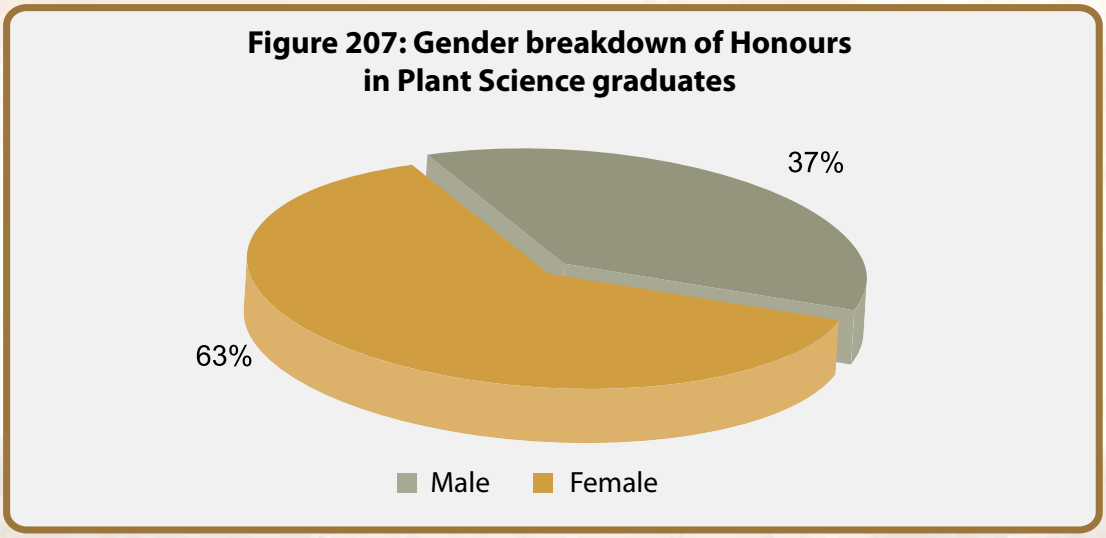


Figure 206 above indicates a female domination of graduates between the genders in this CESM at Honours Degree level during the 2008 academic year. Female graduates consisted of 13 Whites, 5 Africans and 1 Asian. Males comprised of 6 Africans, 3 Whites and 2 Asians.

Eighteen (18) graduates were produced in this CESM at Masters Degree level: 3 were African males, 7 were African females, 2 were White males, 5 were White females and 1 was Coloured male.

Five (5) graduates were produced in this CESM at PhD level: 2 were African males, 1 was African female, 1 was White male and 1 was White female.

4.4.3.11 Soil Science Graduates at Universities in 2008

Thirty four (34) graduates were produced in this CESM at Universities during the 2008 academic year.

Table 103 below presents a demographic breakdown of Soil Science graduates during the 2008 academic year by level of qualification.

Table 103: Demographic breakdown of Soil Science graduates at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	11	3	**14**	0	0	**0**	7	2	**9**	0	0	**0**	**23**
Honours	2	0	**2**	0	0	**0**	1	0	**1**	0	0	**0**	**3**
Masters	4	0	**4**	0	0	**0**	1	1	**2**	0	0	**0**	**6**
PhD	2	0	**2**	0	0	**0**	0	0	**0**	0	0	**0**	**2**
TOTAL	**19**	**3**	**22**	**0**	**0**	**0**	**9**	**3**	**12**	**0**	**0**	**0**	**34**

Undergraduate Degree graduates accounted for 67% of the total number of graduates in this CESM, followed by Masters with 18%, Honours with 9% and PhD with 6%.

Figure 208: Racial breakdown of Undergraduate in Soil Science graduates

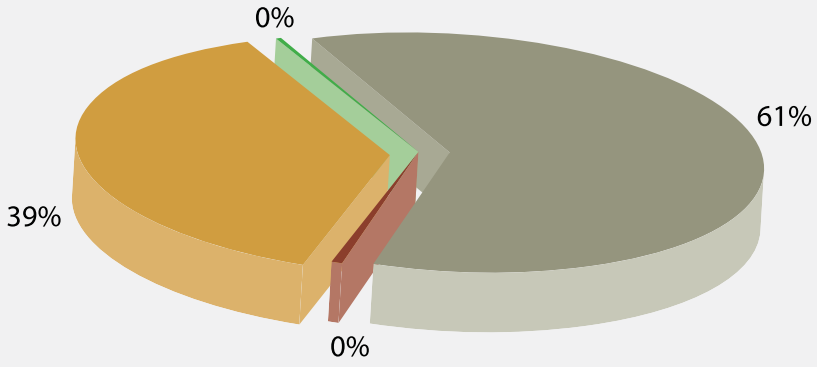
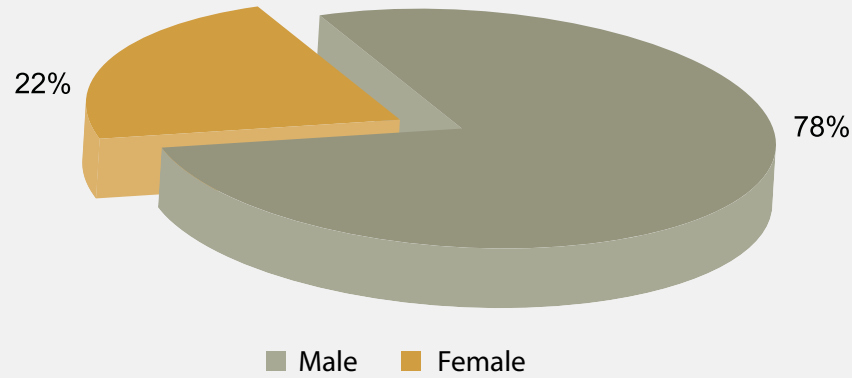


Figure 208 above illustrates that Africans dominated the Soil Science Undergraduate Degree graduates with 61% followed by Whites with 39%. Coloureds and Asians were not represented.

Figure 209: Gender breakdown of Undergraduate in Soil Science graduates



Gender breakdown in Figure 209 above depicts that males dominated this CESM at Undergraduate Degree with 78%, whilst females accounted for 22%.

Three (3) male graduates were awarded with Honours Degree in this CESM during the 2008 academic year: 2 were Africans and 1 was White.

Six (6) graduates were awarded with Masters Degree during the 2008 academic year; 4 were African males, 1 was White male and 1 was White female.

Two (2) African male graduates were awarded with PhD in this CESM during the 2008 academic year.

4.4.3.12 Forestry Graduates at Universities in 2008

Eighty (80) graduates were produced at Universities in this CESM during the 2008 academic year.

Table 104 below presents a demographic breakdown of Forestry graduates during the 2008 academic year by level of qualification.

Table 104: Demographic breakdown of Forestry graduates at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	19	14	**33**	3	1	**4**	24	2	**26**	1	0	**1**	**64**
Honours	1	0	**1**	0	0	**0**	7	3	**10**	0	0	**0**	**11**
Masters	3	0	**3**	0	0	**0**	1	0	**1**	0	0	**0**	**4**
PhD	0	0	**0**	0	0	**0**	1	0	**1**	0	0	**0**	**1**
TOTAL	**23**	**14**	**37**	**3**	**1**	**4**	**33**	**5**	**38**	**1**	**0**	**1**	**80**

Undergraduate Degree constituted 80% of the total number of graduates in this CESM, followed by Honours with 14%, Masters with 5% and PhD with 1%.

Figure 210: Racial breakdown of Undergraduate Degree in Forestry graduates

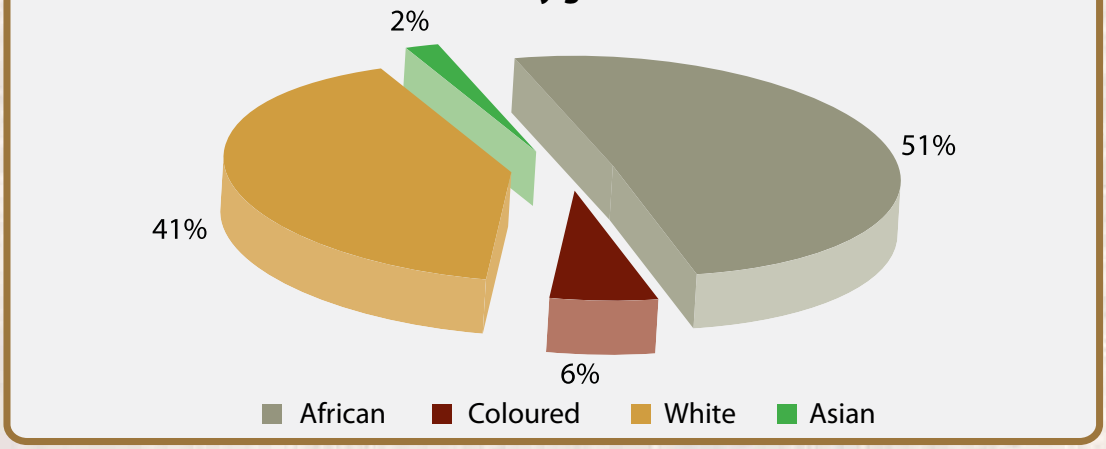
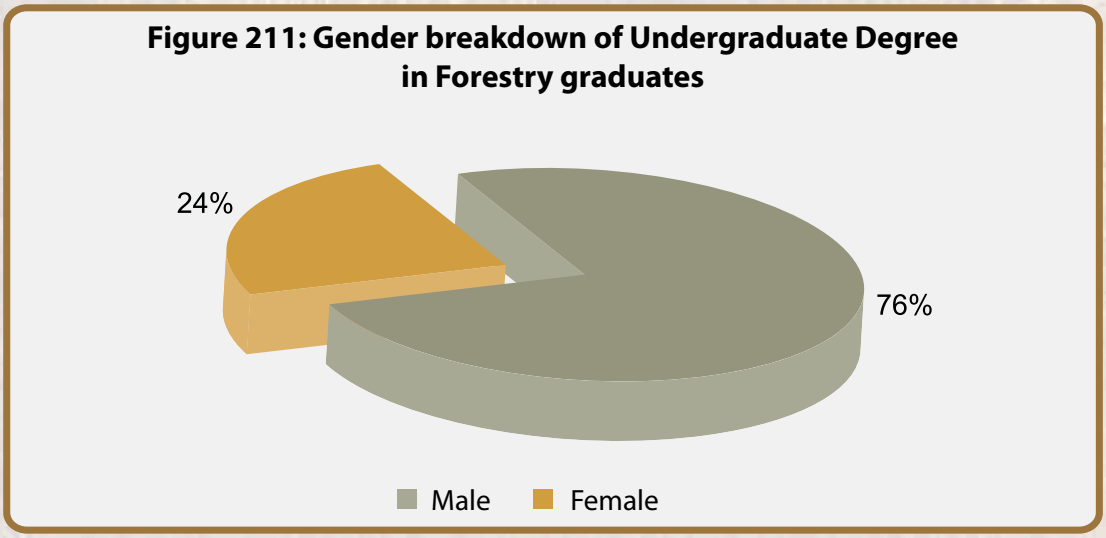


Figure 210 above illustrates that Africans dominated in this CESM at Undergraduate Degree level with 51% followed by Whites with 41%, Coloureds with 6% and Asians with 2%.

Figure 211: Gender breakdown of Undergraduate Degree in Forestry graduates



Gender breakdown in Figure 211 above depicts that males dominated this CESM at Undergraduate Degree levels with 76%, whilst females accounted for 24%.

4.4.3.13. Horticulture Graduates at Universities in 2008

Eleven (11) graduates were produced in this CESM during the 2008 academic year.

Table 105 below presents a demographic breakdown of Horticulture graduates during the 2008 academic year academic year by level of qualification.

Table 105: Demographic breakdown of Horticulture graduates at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	1	1	**2**	0	0	**0**	0	1	**1**	0	0	**0**	**3**
Honours	0	0	**0**	0	0	**0**	3	2	**5**	0	0	**0**	**5**
Masters	1	1	**2**	0	0	**0**	0	1	**1**	0	0	**0**	**3**
TOTAL	**2**	**2**	**4**	**0**	**0**	**0**	**3**	**4**	**7**	**0**	**0**	**0**	**11**

Honours Degree graduates accounted for 46% of the total number of graduates in this CESM, followed by Undergraduate and Masters with 27% each.

At Undergraduate Degree level, 3 graduates were produced: 1 was African male, 1 was African female and 1 was White female.

Five (5) White graduates were awarded with Honours Degree during the 2008 academic year: 3 were males and 2 were females.

One (1) African male, 1 African female and 1 White female graduates were awarded with PhD in this CESM during the 2008 academic year.

4.4.3.14. Renewable Natural Resources Graduates at Universities in 2008

Thirty nine (39) graduates were produced in this CESM at Universities during the 2008 academic year.

Table 106 below presents a demographic breakdown of Renewable Natural Resources by level of qualification at Universities in 2008.

Table 106: Demographic breakdown of Renewable Natural Resources graduates at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	0	1	**1**	0	2	**2**	24	12	**36**	0	0	**0**	**39**
TOTAL	**0**	**1**	**1**	**0**	**2**	**2**	**24**	**12**	**36**	**0**	**0**	**0**	**39**

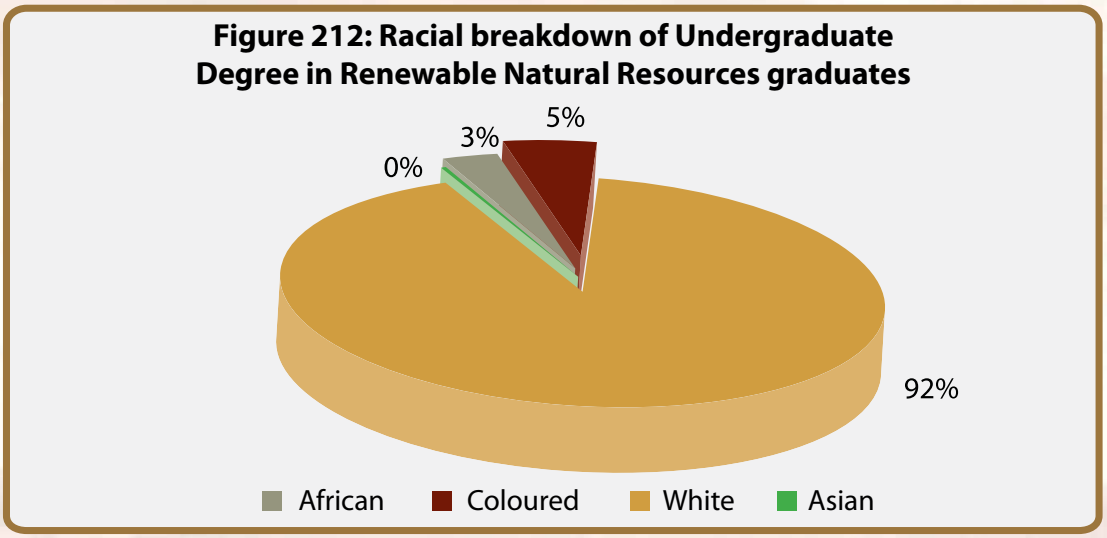


Figure 212 above illustrates that Whites were dominant in this CESM at Undergraduate Degree level with 92%, followed by Coloureds with 5% and Africans with 3%. Asians were not represented.

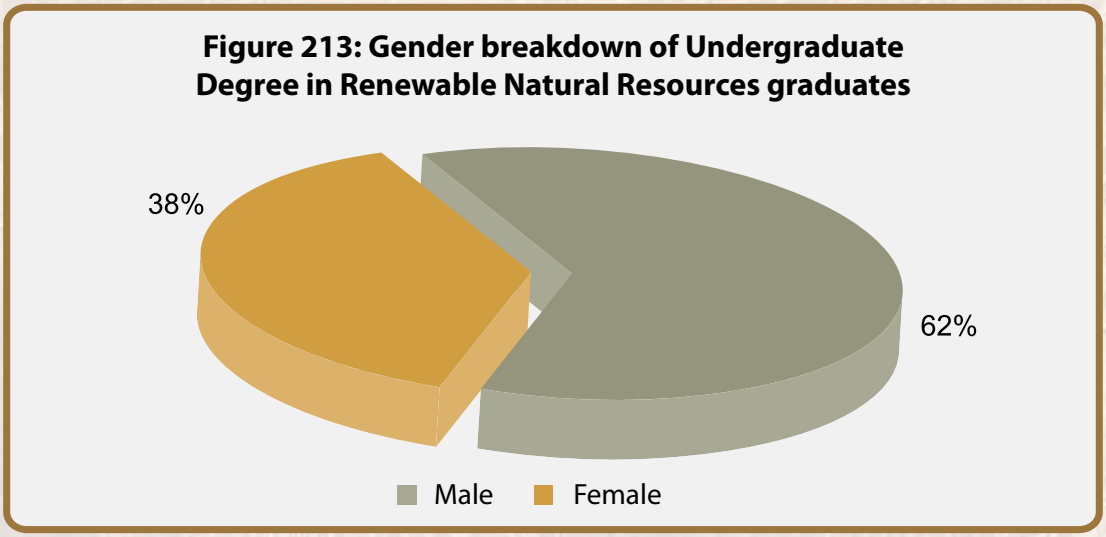


Figure 213 above indicates a male domination of graduates in this CESM at Undergraduate Degree level with 62%, whilst females accounted for 38%.

4.4.3.15. Other Agricultural and Renewable Resources Graduates at Universities in 2008

Twenty (20) graduates were produced in this CESM at Postgraduate Diploma and Masters Degree levels during the 2008 academic year.

Table 107 below presents a demographic breakdown of Other Agricultural and Renewable Natural Resources graduates in 2008 by level of qualification.

Table 107: Demographic breakdown of Other Agricultural Renewable Resources graduates at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Postgraduate Diploma	11	4	**15**	1	0	**1**	1	1	**2**	0	0	**0**	**18**
Masters	0	0	**0**	0	1	**1**	0	1	**1**	0	0	**0**	**2**
TOTAL	**11**	**4**	**15**	**1**	**1**	**2**	**1**	**2**	**3**	**0**	**0**	**0**	**20**

Eighteen (18) graduates were produced at Postgraduate Diploma level: 11 were African males, 4 were African females, 1 was Coloured male, 1 was White male and 1 was White female.

At Masters Degree level 2 female graduates were produced: 1 was Coloured and 1 was White.

4.4.3.16 Agricultural Management Graduates at Universities in 2008

One hundred and sixty one (161) graduates were produced during the 2008 academic year in this CESM.

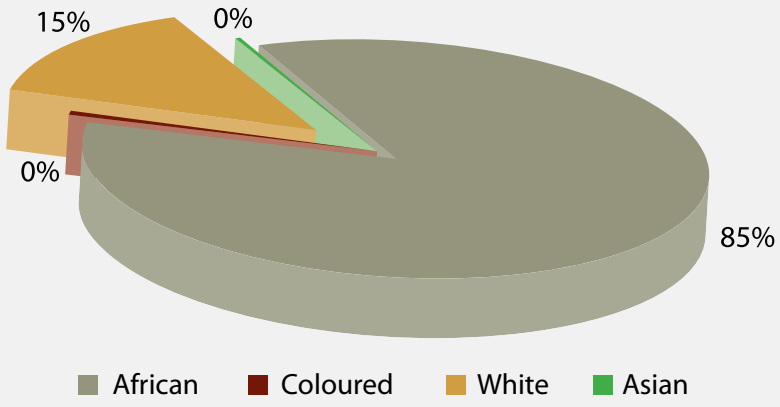
Table 108 below presents a demographic breakdown of Agricultural Management graduates during the 2008 academic year by level of qualification.

Table 108: Demographic breakdown of Agricultural Management graduates at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	83	37	**120**	0	0	**0**	20	2	**22**	0	0	**0**	**142**
Honours	0	0	**0**	0	0	**0**	3	0	**3**	0	0	**0**	**3**
Masters	8	1	**9**	0	0	**0**	1	6	**7**	0	0	**0**	**16**
TOTAL	**91**	**38**	**129**	**0**	**0**	**0**	**24**	**8**	**32**	**0**	**0**	**0**	**161**

Undergraduate Degree represented 88% of the total number of graduates in this CESM followed by Masters with 10%. The least graduates were at Honours Degree level with 2% of the total number of graduates in this CESM.

Figure 214: Racial breakdown of Undergraduate Degree in Agricultural Management graduates



As illustrated in Figure 214 above Africans were the majority of the Agricultural Management Undergraduate Degree graduates with 85%, followed by Whites with 15%. Coloureds and Asians were non existent in this CESM.

Figure 215: Gender breakdown of Undergraduate Degree in Agricultural Management graduates

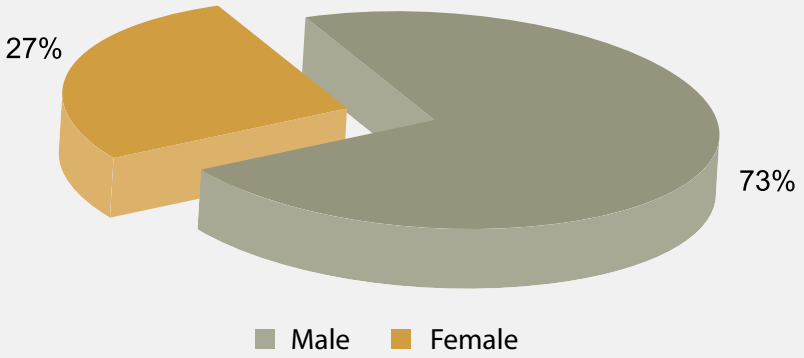


Figure 215 above depicts that males dominated the Undergraduate Degree in this CESM with 73%, whilst females accounted for 27%.

Three (3) White males were awarded with Honours Degree in this CESM during the 2008 academic year.

Sixteen (16) graduates were awarded with Masters Degree in this CESM during the 2008 academic year: 8 were African males, 1 was African female, 1 was White male and 6 were White females.

4.4.3.17 Environmental Management Graduates at Universities in 2008

Environmental Management graduates decreased during the 2008 academic year to 50 as compared to 79 graduates produced during the 2007 academic year.

Table 109 below presents a demographic breakdown of Environmental Management graduates at Universities in 2008.

Table 109: Demographic breakdown of Environmental Management graduates at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	15	11	**26**	0	0	**0**	0	0	**0**	0	0	**0**	**26**
Honours	2	6	**8**	0	0	**0**	2	2	**4**	1	4	**5**	**17**
Masters	2	3	**5**	0	0	**0**	0	1	**1**	0	0	**0**	**6**
PhD	1	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
TOTAL	**20**	**20**	**40**	**0**	**0**	**0**	**2**	**3**	**5**	**1**	**4**	**5**	**50**

Undergraduate Degree graduates constituted 52% of the total number of graduates in this CESM, followed by Honours with 34%, Masters with 12% and PhD with 2%.

Twenty six (26) African graduates were awarded with Undergraduate Degree in this CESM during the 2008

academic year. Table 109 above reflects that Undergraduate Degree graduates consisted of 15 males and 11 females.

Seventeen (17) Honours Degree were awarded to 2 African males, 6 African females, 2 White males, 2 White females, 1 Asian male and 4 Asian females.

Six (6) Masters Degree were awarded to 2 African males, 3 African females and 1 White female.

One (1) African male graduate was awarded a PhD in this CESM during the 2008 academic year.

4.4.3.18 Agronomy Graduates at Universities in 2008

Twenty two (22) graduates were produced in Agronomy at Universities during the 2008 academic year.

Table 110 below presents a demographic breakdown of Agronomy graduates at Universities during the 2008 academic year.

Table 110: Demographic breakdown of Agronomy graduates at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	3	0	**3**	0	0	**0**	6	1	**7**	0	0	**0**	**10**
Honours	1	3	**4**	0	0	**0**	1	0	**1**	0	0	**0**	**5**
Masters	2	0	**2**	0	0	**0**	2	0	**2**	0	0	**0**	**4**
PhD	2	0	**2**	0	0	**0**	0	0	**0**	1	0	**1**	**3**
TOTAL	**8**	**3**	**11**	**0**	**0**	**0**	**9**	**1**	**10**	**1**	**0**	**1**	**22**

Undergraduate Degree graduates constituted 45% of the total number of graduates in this CESM, followed by Honours with 23%, Masters with 18% and PhD with 14%.

Of the 10 graduates awarded with Undergraduate Degree in Agronomy, 3 were African males, 6 were White males and 1 was White female. Neither Coloured nor Asian graduates were awarded with Undergraduate Degree in this CESM during the 2008 academic year.

Five (5) Honours Degree were awarded to 1 African male, 3 African females and 1 White male.

At Masters Degree level there were 4 male graduates produced in this CESM during the 2008 academic year: 2 were Africans and 2 were Whites.

Three (3) male graduates were awarded with PhD during the 2008 academic year: 2 were Africans and 1 was Asian.

4.4.3.19 Wildlife Graduates at Universities in 2008

One hundred and ten (110) graduates were produced in this CESM during the 2008 academic year at Universities.

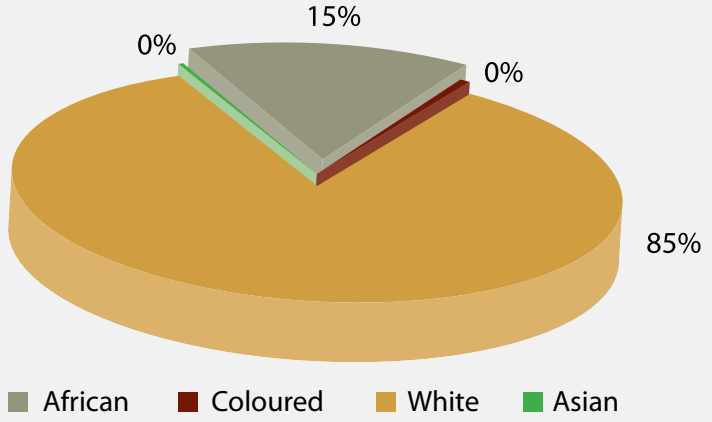
Table 111 below presents a demographic breakdown of Wildlife graduates in 2008 at Universities.

Table 111: Demographic breakdown of Wildlife Management graduates at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	11	3	**14**	0	0	**0**	53	28	**81**	0	0	**0**	**95**
Honours	0	0	**0**	0	0	**0**	1	0	**1**	0	0	**0**	**1**
Masters	0	0	**0**	0	0	**0**	8	6	**14**	0	0	**0**	**14**
TOTAL	**11**	**3**	**14**	**0**	**0**	**0**	**62**	**34**	**96**	**0**	**0**	**0**	**110**

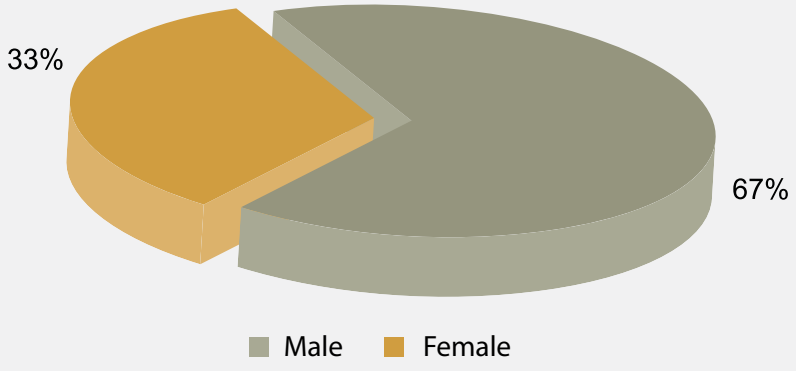
Undergraduate Degree graduates accounted for 86% of the total number of graduates in Wildlife Management followed by Masters with 13% and Honours with 1%.

Figure 216: Racial breakdown of Undergraduate in Wildlife Management graduates



As illustrated in Figure 216 above Whites were the majority of the Wildlife Management Undergraduate Degree graduates with 85%, followed by Africans with 15%. Coloureds and Asians were non existent in this CESM.

Figure 217: Gender breakdown of Undergraduate in Wildlife Management graduates



Gender breakdown in Figure 217 above depicts that males dominated this CESM at Undergraduate Degree level with 67%, whilst females accounted for 33%.

One (1) White graduate was awarded with Honours Degree in this CESM during the 2008 academic year.

At Masters Degree level there were 14 White graduates produced: 8 were males and 6 were females.

4.4.3.20 Consumer Science Graduates at Universities in 2008

One hundred and seventeen (117) graduates were produced in this CESM during the 2008 academic year.

Table 112 below presents a demographic breakdown of Consumer Science graduates during the 2008 academic year by level of CESM.

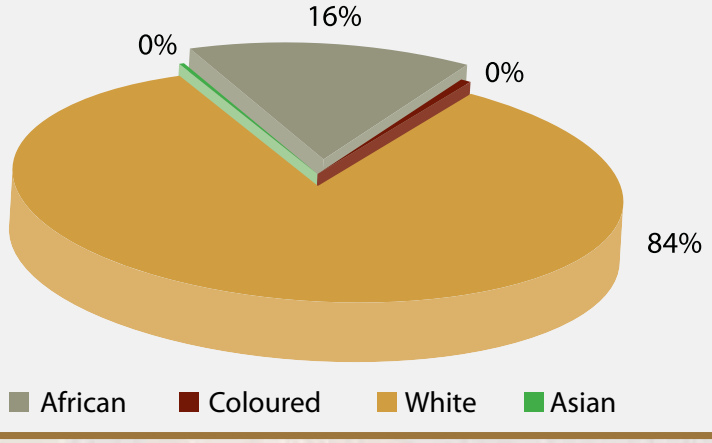
Table 112: Demographic breakdown of Consumer Science graduates at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	1	16	**17**	0	0	**0**	1	91	**92**	0	0	**0**	**109**
Honours	0	1	**1**	0	0	**0**	0	1	**1**	0	0	**0**	**2**
Masters	2	3	**5**	0	0	**0**	0	0	**0**	0	0	**0**	**5**
PhD	0	1	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
TOTAL	**3**	**21**	**24**	**0**	**0**	**0**	**1**	**92**	**93**	**0**	**0**	**0**	**117**

Undergraduate Degree graduates constituted 94% of the total number of graduates in this CESM followed by Masters with 4%, Honours and PhD with 1% each.

One hundred and nine (109) graduates were produced in the Consumer Science Undergraduate Degree during the 2008 academic year.

Figure 218: Racial breakdown of Undergraduate Degree in Consumer Science graduates



As portrayed in Figure 218 above, Whites were the majority in this CESM at Undergraduate Degree level with 84% followed by Africans with 16%. Coloureds and Asians were not represented in this CESM.

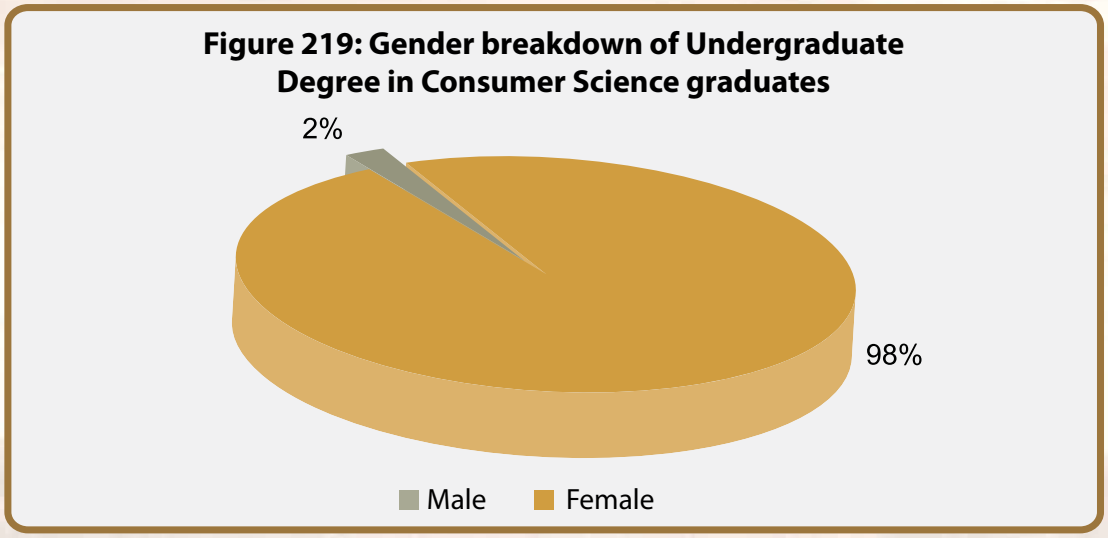


Figure 219 above depicts that females were the majority with 98% of the total number of graduates in this CESM at Undergraduate Degree level, whilst males constituted only 2%.

At Honours Degree level 2 female graduates were produced in this CESM: 1 was African and 1 was White.

Of the 5 graduates produced at Masters Degree level in this CESM, 2 were African males and 3 were African females.

One (1) African male graduated with a PhD in this CESM during the 2008 academic year.

4.4.3.21 BSc Veterinary Biology Graduates at Universities in 2008

One Hundred and thirteen (113) graduates were produced at BSc Veterinary Biology during the 2008 academic year.

Table 113 below presents a demographic breakdown of Veterinary Biology graduates in 2008 by level of qualification.

Table 113: Demographic breakdown of BSc Veterinary Biology graduates at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	1	0	**1**	1	2	**3**	37	62	**99**	1	9	**10**	**113**
TOTAL	**1**	**0**	**1**	**1**	**2**	**3**	**37**	**62**	**99**	**1**	**9**	**10**	**113**

As illustrated in Table 113 above, all the 113 graduates in this CESM were produced at Undergraduate level.

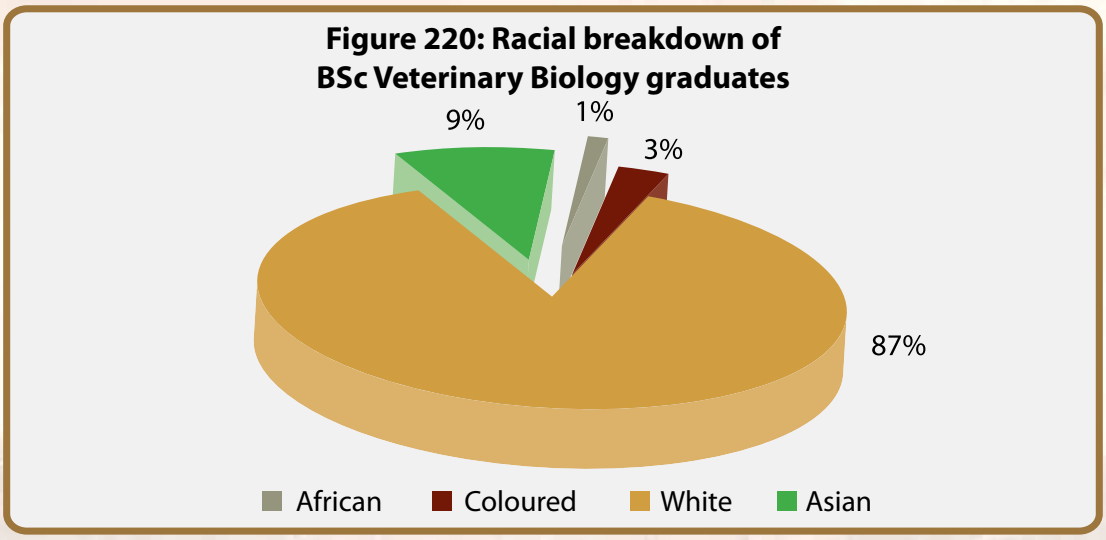


Figure 220 above shows that out of 113 graduates produced in this CESM at Undergraduate Degree, 87% were Whites, 9% were Africans and 3% were Coloureds. Asians contributed only 1% of the graduates in this CESM.

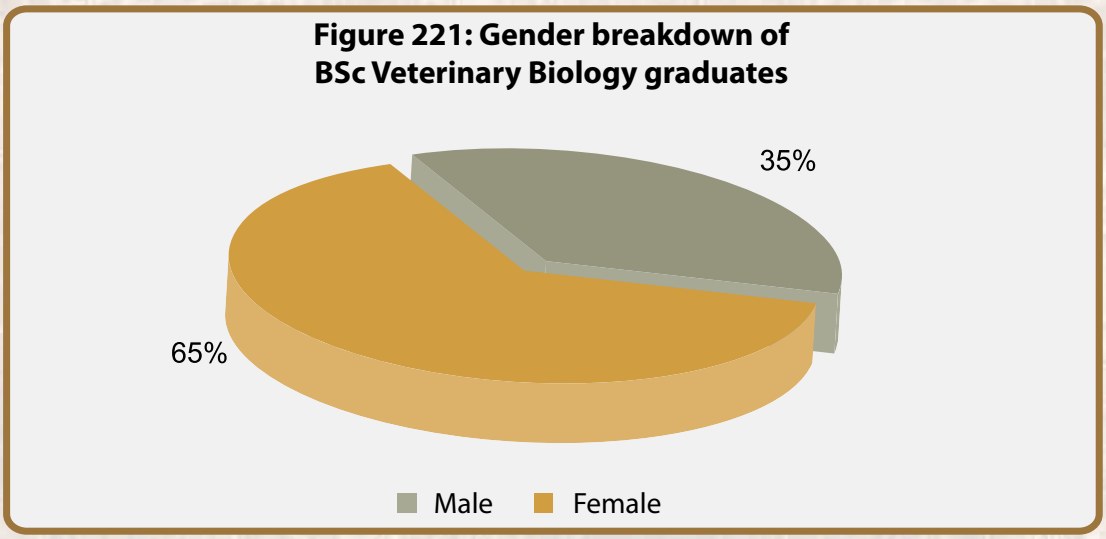


Figure 221 above depicts that females represented 65% of the graduates in this CESM, whilst males constituted 35%.

4.4.3.22 Biotechnology Graduates at Universities in 2008

Eighty one (81) graduates were awarded with Biotechnology Degree during the 2008 academic year.

Table 114 below presents a demographic breakdown of Biotechnology graduates in 2008 by level of quali fication.

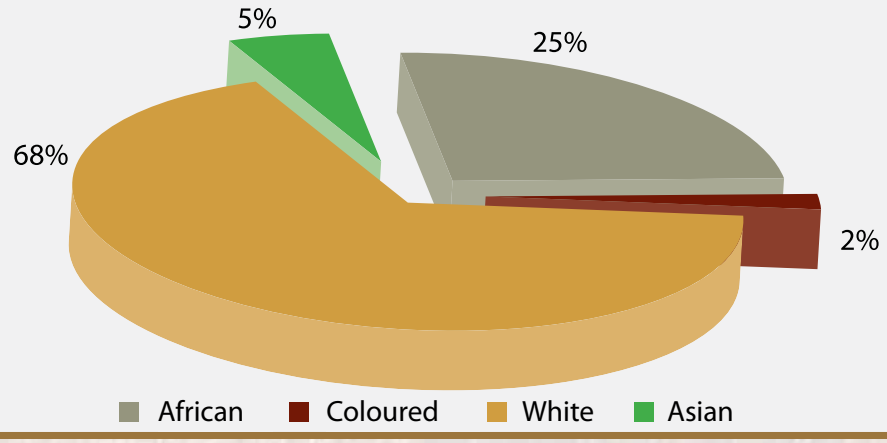
Table 114: Demographic breakdown of Biotechnology graduates at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	3	8	**11**	0	1	**1**	12	18	**30**	1	1	**2**	**44**
Honours	0	3	**3**	0	0	**0**	11	6	**17**	3	2	**5**	**25**
Masters	0	0	**0**	0	0	**0**	4	3	**7**	0	0	**0**	**7**
PhD	1	0	**1**	0	0	**0**	2	1	**3**	0	1	**1**	**5**
TOTAL	**4**	**11**	**15**	**0**	**1**	**1**	**29**	**28**	**57**	**4**	**4**	**8**	**81**

Undergraduate Degree graduates constituted 54% of the total number of graduates in this CESM, followed by Honours with 31%, Masters with 9% and PhD with 6%.

Forty four (44) graduates were produced in Biotechnology Undergraduate Degree at Universities during the 2008 academic year.

Figure 222: Racial breakdown of Undergraduate Degree in Biotechnology graduates



In Figure 222 above, White graduates accounted for 68% of the Undergraduate Degree graduates in this CESM, whilst Africans constituted 25%. Asian and Coloured graduates accounted for 5% and 2% of the Undergraduate Degree graduates in this CESM respectively.

Figure 223: Gender breakdown of Undergraduate Degree in Biotechnology graduates

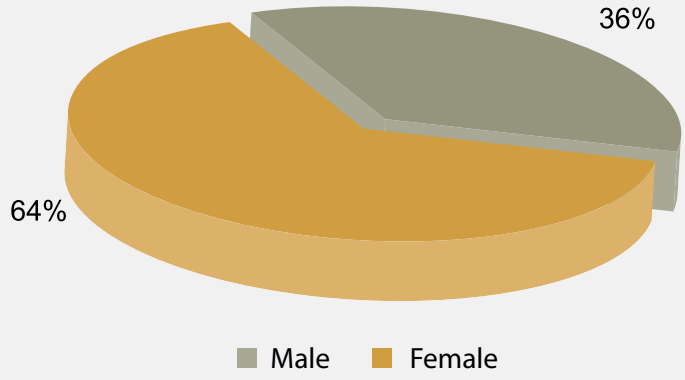
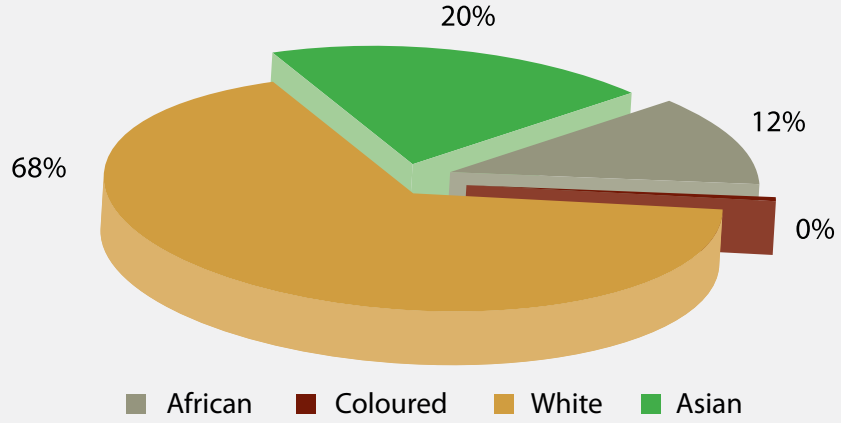


Figure 223 above indicates that females dominated Biotechnology graduates at Undergraduate level with 64%, whilst males accounted for 36%.

Figure 224: Racial breakdown of Honours in Biotechnology graduates



As illustrated in Figure 224 above, Whites were the majority of the Biotechnology Honours Degree graduates with 68%, followed by Asians with 20% and Africans with 12%. Coloured were non existent in this CESM at Honours Degree level.

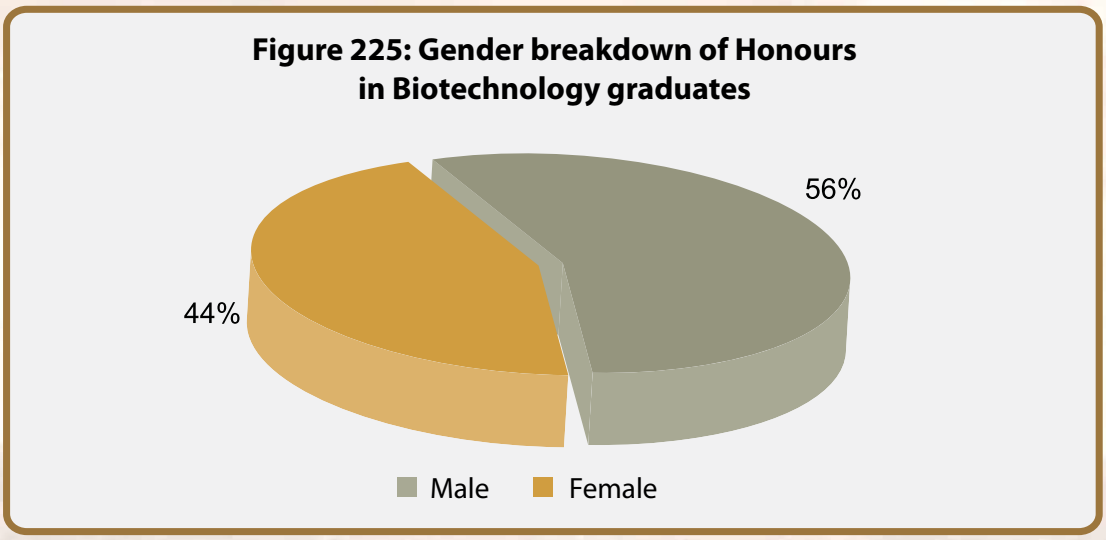


Figure 225 above depicts that males dominated the Honours Degree in this CESM with 56%, whilst females accounted for 44%.

Seven (7) White graduates were produced at Masters Degree level in this CESM: 4 were males and 3 were females.

Five (5) graduates were awarded with PhD in this CESM during the 2008 academic year: 3 were Whites, 1 was African and 1 was Asian.

4.4.3.23 Microbiology Graduates at Universities in 2008

Sixty nine (69) graduates were awarded with Microbiology Degree during the 2008 academic year.

Table 115 below presents a demographic breakdown of Microbiology graduates in 2008 by level of qualification.

Table 115: Demographic breakdown of Microbiology graduates at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	4	4	**8**	0	0	**0**	7	16	**23**	0	0	**0**	**31**
Honours	1	2	**3**	0	0	**0**	5	10	**15**	0	0	**0**	**18**
Masters	1	2	**3**	0	0	**0**	2	8	**10**	1	0	**1**	**14**
PhD	0	0	**0**	0	0	**0**	2	4	**6**	0	0	**0**	**6**
TOTAL	**6**	**8**	**14**	**0**	**0**	**0**	**16**	**38**	**54**	**1**	**0**	**1**	**69**

Undergraduate Degree graduates constituted 44% of the total number of graduates in this CESM, followed by Honours with 27%, Masters with 21% and PhD with 8%.

Thirty one (31) graduates were awarded with Undergraduate Degree in Microbiology during the 2008 academic year.

Figure 226: Racial breakdown of Undergraduate Degree in Microbiology graduates

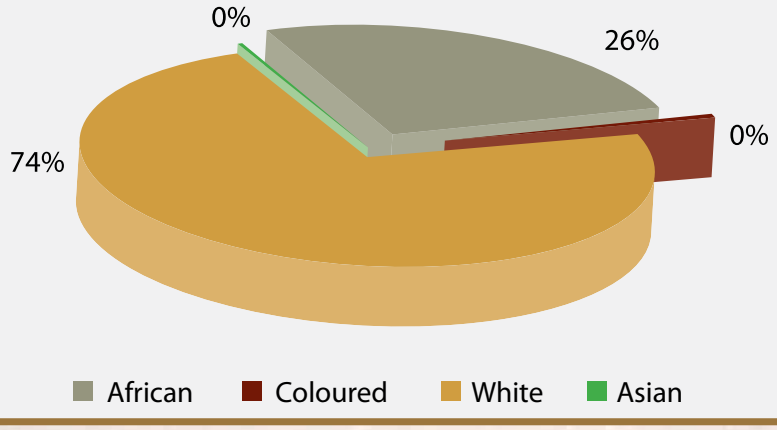


Figure 226 above indicates that White graduates accounted for 74% of the Undergraduate Degree graduates in this CESM, whilst Africans constituted 26%. No Asian and Coloured graduates were produced in this CESM at Undergraduate level during the 2008 academic year.

Figure 227: Gender breakdown of Undergraduate Degree in Microbiology graduates

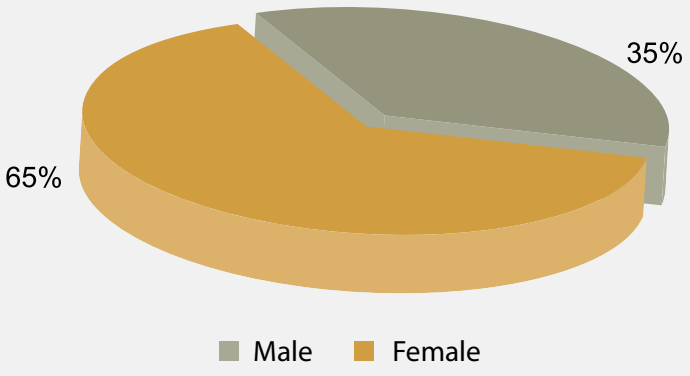


Figure 227 above depicts that females represented 65% of the Undergraduate Degree graduates in this CESM, whilst males constituted 35%.

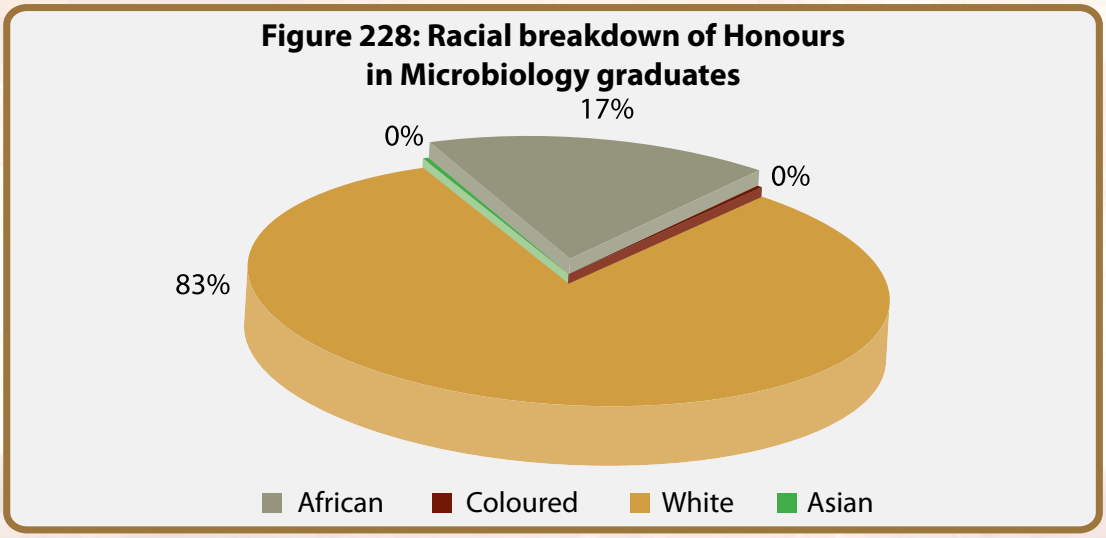


Figure 228 above indicates that White graduates accounted for 83% of the Honours Degree graduates in this CESM whilst Africans constituted 17%. No Asian and Coloured graduates were produced in this CESM at Honours Degree level during the 2008 academic year.

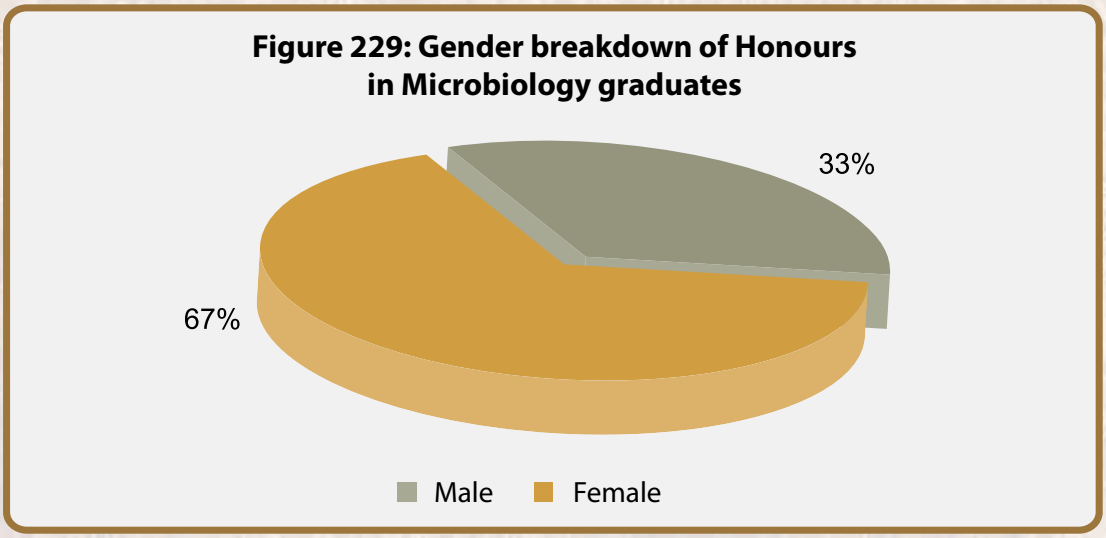
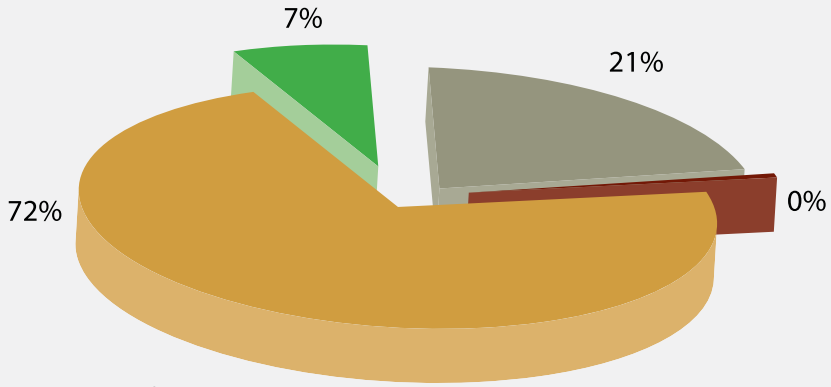


Figure 229 above depicts that females represented 67% of the Honours Degree graduates in this CESM, whilst males constituted 33%.

Figure 230: Racial breakdown of Masters in Microbiology graduates



As illustrated in Figure 230 above Whites were the majority of the Microbiology Masters Degree graduates with 72%, followed by Africans with 21% and Asians with 7%. Coloured were non existent in this CESM at Masters level.

Figure 231: Gender breakdown of Masters in Microbiology graduates

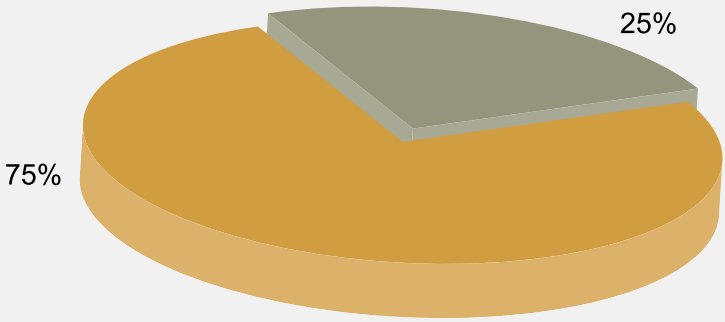


Figure 231 above depicts that females dominated the Masters Degree in this CESM with 75% whilst males accounted for 25%. White females constituted the majority of the female graduates with 83% followed by African females with 17%.

At PhD Degree level there were 6 White graduates produced: 2 were males and 4 were females.

4.4.3.24 Rural Development Graduates at Universities in 2008

Six (6) Africans were awarded with Rural Development Degree during the 2008 academic year.

Table 116 below presents a demographic breakdown of Rural Development graduates in 2008 by level of qualification.

Table 116: Demographic breakdown of Rural Development graduates at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Honours	0	2	**2**	0	0	**0**	0	0	**0**	0	0	**0**	**2**
Masters	2	1	**3**	0	0	**0**	0	0	**0**	0	0	**0**	**3**
PhD	1	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	**1**
TOTAL	**3**	**3**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**

Of the 6 Rural Development graduates produced during the 2008 academic year; 2 were at Honours Degree level, 3 were at Masters level and 1 was at PhD level.

4.4.4. Inst. Agrar. Stream Programmes

4.4.4.1 Land Reclamation (Land Use Inst. Agrar Stream) Graduates in 2008

Two (2) male graduates were produced in this CESM during the 2008 academic year at Undergraduate Degree: 1 was African male and 1 was White male.

4.4.4.2 Plant Science (Inst.Agrar Stream) Graduates in 2008

Eleven (11) graduates were produced in this CESM during the 2008 academic year.

Table 117 below presents a demographic breakdown of Plant Science (Inst. Agrar Stream) graduates during the 2008 academic year.

Table 117: Demographic breakdown of Plant Science (Inst. Agrar Stream) graduates at in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	1	1	**2**	0	0	**0**	0	0	**0**	0	0	**0**	**2**
Honours	4	2	**6**	0	0	**0**	0	0	**0**	0	0	**0**	**6**
Masters	1	1	**2**	0	0	**0**	1	0	**1**	0	0	**0**	**3**
TOTAL	**6**	**4**	**10**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**11**

Two (2) African graduates were produced in this CESM at Undergraduate level, 1 was male and 1 was female.

Six (6) African graduates were awarded with Honours Degree in this CESM: 4 were males and 2 were females.

Three (3) graduates were awarded with Masters Degree in this CESM during the 2008 academic year: 2 were Africans and 1 was White.

4.4.4.3 Agricultural Economics (Inst. Agrar Stream) Graduates in 2008

Two (2) graduates were produced in this CESM during the 2008 academic year; 1 African was awarded with an Honours Degree, whilst 1 Coloured female was awarded with a Masters Degree.

4.4.4.5 Horticulture (Inst. Agrar.) Graduates in 2008

One (1) African male graduated in this CESM at Undergraduate Degree level during the 2008 academic year.

4.4.4.6 Food Science (Inst. Agrar.) Graduates in 2008

Five (5) African graduates were awarded with Undergraduate Degree in this CESM during the 2008 academic year: 2 were males and 3 were females.

4.4.4.7 Land Reclamation (Inst. Agrar.) Graduates in 2008

Two (2) male graduates were awarded with Undergraduate Degree in this CESM during the 2008 academic year: 1 was African and 1 was White.

4.5 Conclusion

Enrolment figures during the 2008 academic year have decreased radically when compared to the 2007 academic year. Only 4 348 students were registered in 2008 whilst 14 503 students enrolled in 2007. This could be attributed to the fact that a number of Universities in the study decreased from 13 Universities in 2007 to 9 Universities during the 2008 academic year. No data were received from the Universities of KwaZulu-Natal, Johannesburg, Western Cape and Zululand, despite numerous attempts made to gather this data. Another reason might be that student intake at Universities during the 2008 academic year dropped significantly compared to 2007; for example, University of Stellenbosch registered 1 965 students in the 2007 academic year whilst in the 2008 academic year only 356 students were registered.

Enrolments far outweigh graduate figures during the 2008 academic year at Universities as has been the trend in 2006, 2007 and previous academic years.

A trend continues at Universities; that is the number of enrolment figures at Undergraduate level is very high as compared to the enrolment figures at Postgraduate level and this is cause for concern. For example, during the 2008 academic year, Undergraduate level constituted 80% of the total number of enrolments in Universities, followed by Masters with 11%, Honours with 6% and PhD with 2%. The least enrolments were recorded at Postgraduate Diploma level with 1% of the total enrolments at Universities.

The same situation applies to graduate outputs, where Undergraduate Degree comprised 69% of the total graduate output at Universities, followed by Masters and Honours with 14% and 13% respectively. PhD and Postgraduate Diploma respectively accounted for 3% and 1% of the total number of graduates at Universities.

Agricultural Management recorded the highest enrolment figures at Universities during the 2008 academic year with 727 students followed by Animal Science with 608 students, Agricultural Science

(Science Streams) with 474 and Wildlife with 444. The lowest intakes were recorded at Rural Development and Agricultural Economics (BCom Stream) with 6 and 3 students registered respectively.

Graduates produced at Universities during the 2008 academic year were dominated by Animal Science with 18% followed by Agricultural Science (Art Streams) with 10% and Agricultural Management with 9%. The lowest graduate output was recorded at Rural Development and Agricultural Economics (BCom Stream) with 6 and 3 graduates produced respectively.

Only 23 students were registered for Inst.Agrar programmes in 2008 as compared to 155 students enrolled in 2007. It is the conclusion of this study that the insignificance of the Inst.Agrar programmes representation is due to the fact that Inst. Agrar programmes are offered only by University of Pretoria in South Africa.

University of Pretoria enjoys a distinct bigger share of both the enrolments and graduates during the 2008 academic year. This may be attributed to the fact that University of Pretoria offers many agricultural programmes as compared to other Universities such as Fort Hare and Venda. For example, University of Pretoria constituted 28% of the overall University enrolments, whilst University of Venda contributed only 2%. Again with graduates, University of Pretoria produced a high number of graduates with 39% of the overall graduates produced at Universities whilst University of Fort Hare produced only 3%.

Generally Africans have continued to dominate in most of the agricultural programmes in Universities in terms of enrolments and graduates; however it is worth noting that Whites have also dominated in some programmes such as BSc: Veterinary Biology, Agricultural Food Technology, Renewable Natural Resources and Consumer Science. As is the case in enrolments, African graduates have also dominated the other race groups in almost all the programmes. There is a great under-representation of Coloureds and Asian students in almost all programmes in the Universities. This is prevalent even in institutions that are in provinces where these racial groups are largely represented socially such as Western Cape and KwaZulu-Natal.

Unlike previous academic years, during the 2008 academic year males and females contributed an equal share of the enrolment figures at Universities. It is also worth noting that females dominated in programmes such as Agricultural Science (Science Stream), Agricultural Food Technology and Consumer Science. The different situation applies to the graduates: females have dominated the overall number of graduates produced at Universities in 2008 with 54%, whilst male graduates accounted for 46%.

African and White males comprised 62% and 35% respectively of the total number of male enrolments whilst in the case of graduate outputs things were different, White males were the highest with 64% and African males contributed 33%.

The findings indicate a continuing trend in the Universities where White students dominated in the programmes in Agricultural Food Technology, Agricultural Science (Science Stream), BSc Veterinary Biology and Horticulture. On the other hand Africans dominated significantly in programmes such as Agricultural Economics, Agricultural Extension, Animal Science, Plant Science, Soil Science, Agricultural Management and Inst.Agrar programmes.

CHAPTER 5: ENROLMENTS AND GRADUATES FOR SCARCE SKILLS IN AGRICULTURE

CHAPTER 5

ENROLMENTS AND GRADUATES FOR SCARCE SKILLS IN AGRICULTURE

5.1 Introduction

This chapter presents data on enrolments and graduates in scarce skills programmes. Veterinary Science (BVSc), Agricultural Engineering, Viticulture and Oenology, Food Science and Technology and Biotechnology were regarded as scarce skills by the Department of Agriculture, Forestry and Fisheries in 2008. Hence, they are discussed separately from other CESM.

5.2 Breakdown of scarce skills enrolments per institutions during 2008

Five hundred and forty seven (547) students were enrolled at scarce skills programmes during the 2008 academic year. Table 118 below presents a breakdown of scarce skills enrolments by institution and field of study.

Table 118: Enrolments of the scarce skills programmes per institution in 2008

Name of Institution	Study field	Number of enrolled students in 2008		%
		Sub-total	Total	
CIAT: Elsenburg	B.Agric Viticulture	109	**109**	**20**
University of Western Cape	Biotechnology	41	**41**	**7**
University of Kwazulu-Natal	Agricultural Engineering	91	**91**	**17**
University of Pretoria	BVSc	205	**205**	**37**
University of Johannesburg	Food Technology	31	**31**	**6**
University of Stellenbosch	Food Science	44	**70**	**13**
	BSc Viticulture & Oenology	26		
TOTAL		**547**		**100**

Figure 232: Enrolments of scarce skills programmes per institute

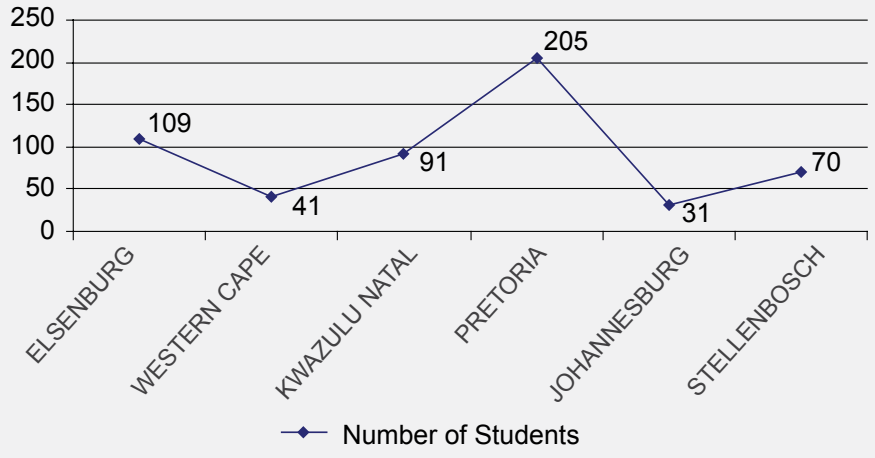


Table 118 and Figure 232 above shows that University of Pretoria dominated the number of enrolments in the scarce skills category with 37% followed by CIAT: Elsenburg with 20%. The lowest enrolment numbers were recorded at University of Western Cape and University of Johannesburg with 7% and 6% respectively.

5.3 Breakdown of scarce skills enrolments during the 2008 academic year

5.3.1 Demographic breakdown of scarce skills enrolments by gender and race

Table 119 below presents a demographic breakdown of scarce skills enrolments by gender and race.

Table 119: Demographic breakdown of scarce skills enrolments by gender and race

LEVEL	African			Coloured			White			Asian			Total	%
	%	F	T	M	F	T	M	F	T	M	F	T		
BSc Agricultural Engineering	56	17	**73**	0	0	**0**	8	0	**8**	6	4	**10**	**91**	**17**
B.Agric Viticulture	8	3	**11**	8	8	**16**	65	17	**82**	0	0	**0**	**109**	**20**
BSc Biotechnology	15	11	**26**	6	5	**11**	2	2	**4**	0	0	**0**	**41**	**7**
Food Science and Technology	8	25	**33**	4	4	**8**	3	30	**33**	0	1	**1**	**75**	**14**
BSc Viticulture and Oenology	5	3	**8**	2	3	**5**	7	6	**13**	0	0	**0**	**26**	**5**
BSc Veterinary Science	31	11	**42**	2	0	**2**	49	103	**152**	2	7	**9**	**205**	**37**
TOTAL	**123**	**70**	**193**	**22**	**20**	**42**	**134**	**158**	**292**	**8**	**12**	**20**	**547**	**100**

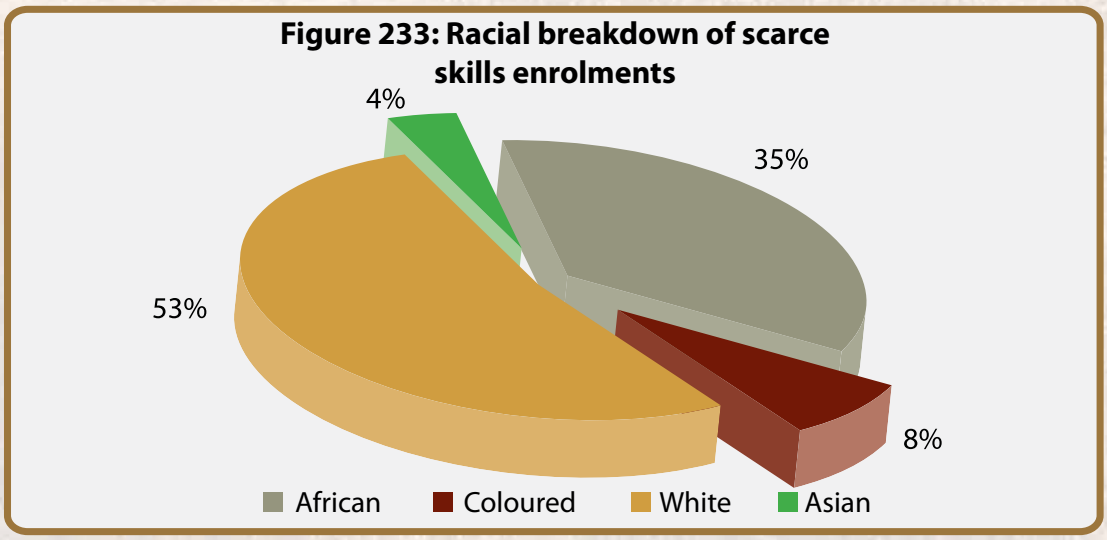


Table 119 and Figure 233 above depicts that White students and African students had higher enrolment figures constituting 53% and 35% of the total enrolments respectively. Coloured and Asian students constituted 8% and 4% of the total number of scarce skills enrolments respectively.

Figure 234: Gender breakdown of scares skills enrolments

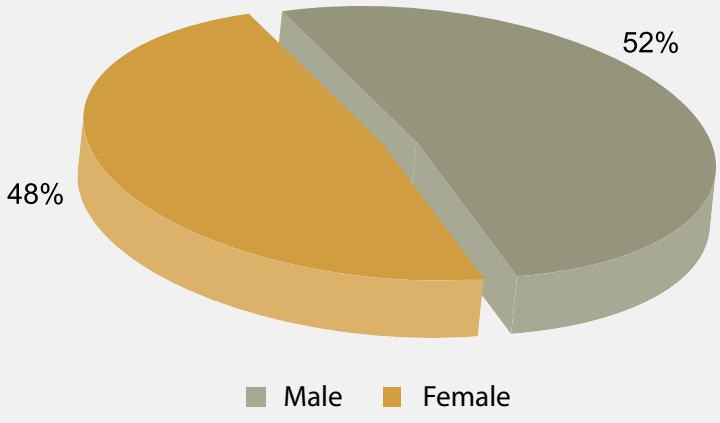


Figure 234 above indicates that male students constituted 52% of the total number of scarce skills enrolments and female students accounted for 48%.

Figure 235: Racial breakdown of scares skills male enrolments

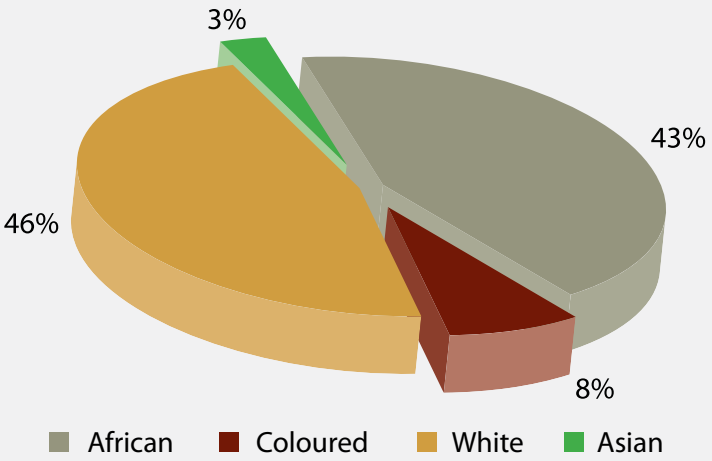


Figure 235 above indicates that Whites constituted the highest number of male enrolments in scarce skills programmes with 46%, followed by Africans with 43%. Coloured and Asian male students accounted for 8% and 3% respectively.

Figure 236: Racial breakdown of scares skills female enrolments

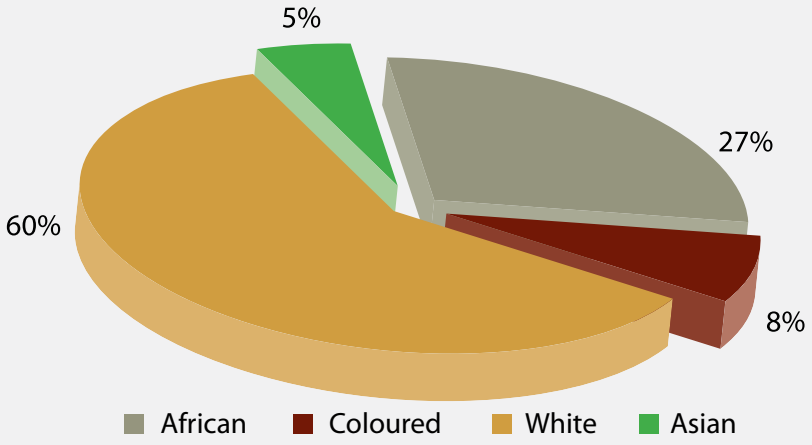


Figure 236 above depicts that Whites dominated the female enrolments in scarce skills programmes with 60%, followed by Africans with 27%. Coloured and Asian female students contributed 8% and 5% of the enrolments respectively.

5.3.2 Breakdown of scarce skills enrolments by levels of qualification during the 2008 academic year

Table 120: Breakdown of scarce skills enrolments by levels of qualification during the 2008 academic year

CESM	Undergraduate	Honours	Masters	PhD	Total	%
Agricultural Engineering	91	0	0	0	**91**	**17**
B Agric Viticulture	109	0	0	0	**109**	**20**
Veterinary Science	128	10	53	14	**205**	**37**
Biotechnology	7	2	8	24	**41**	**7**
Viticulture and Oenology	14	5	6	1	**26**	**5**
Food Science and Technology	65		8	2	**75**	**14**
TOTAL	**414**	**17**	**75**	**41**	**547**	
Percentage	**76**	**3**	**14**	**7**		**100**

Table 120 above indicates that Undergraduates dominated the scarce skills enrolments in the 2008 academic year with 76% followed by Masters enrolments with 14%. PhD and Honours enrolments constituted 7% and 3% of the overall scarce skills enrolments in the 2008 academic year respectively.

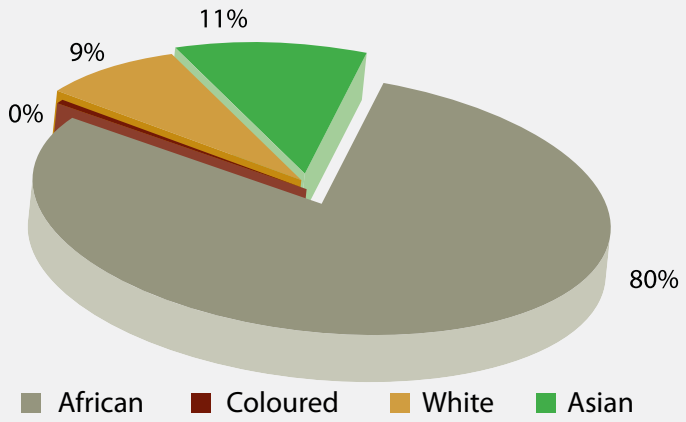
5.3.3 Demographic breakdown of BSc Agricultural Engineering enrolments during the 2008 academic year

Table 121: Demographic breakdown of BSc Agricultural Engineering enrolments during the 2008 academic year

LEVEL	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Undergraduate	56	17	**73**	0	0	**0**	8	0	**8**	6	4	**10**	**91**	**100**
TOTAL	**56**	**17**	**73**	**0**	**0**	**0**	**8**	**0**	**8**	**6**	**4**	**10**	**91**	**100**

Ninety one (91) students were enrolled at BSc Agricultural Engineering during the 2008 academic year.

Figure 237: Racial breakdown of BSc Agricultural Engineering Degree enrolments



As depicted in Figure 237 above, the BSc Agricultural Engineering Degree enrolments are dominated by Africans with 80%, followed by Asians with 11% and Whites with 9%. No Coloured students were enrolled in this programme during the 2008 academic year.

Figure 238: Gender breakdown of BSc Agricultural Engineering Degree enrolments

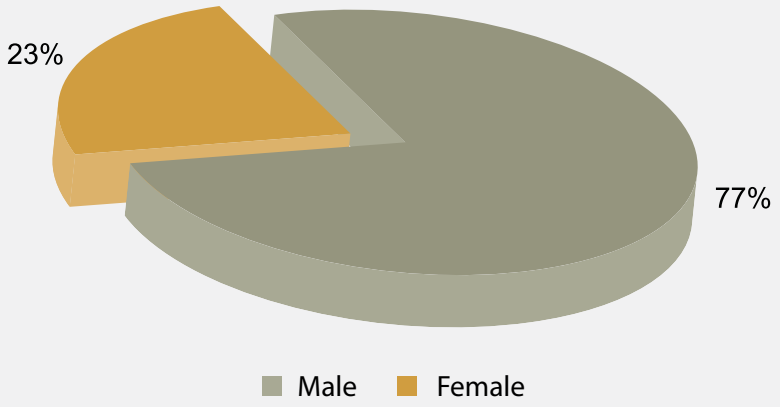


Figure 238 above indicates that male students dominated the BSc Agricultural Engineering Degree enrolments during the 2008 academic year with 77% and female student enrolments accounted for 23%.

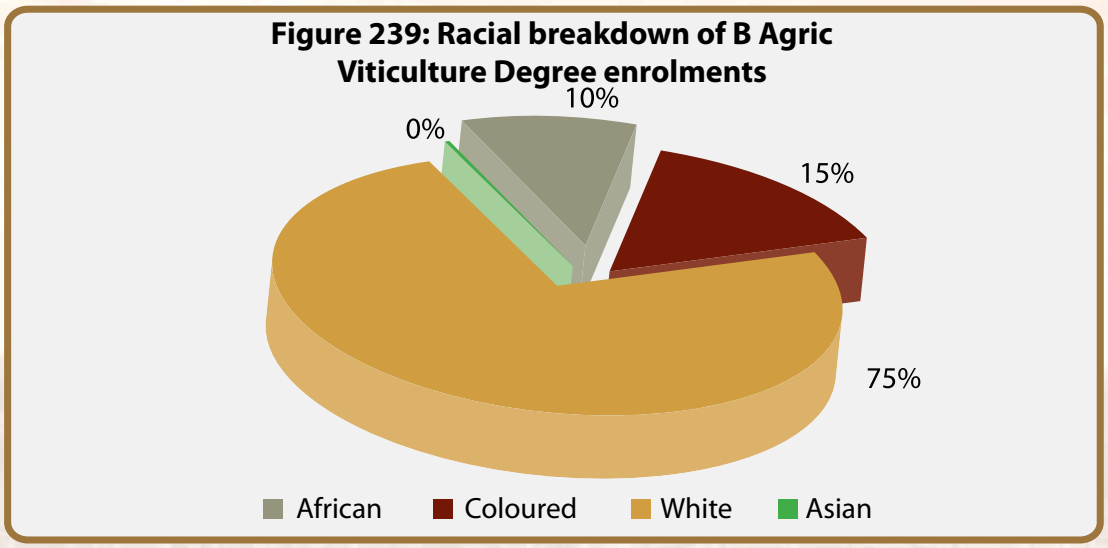
5.3.4 Demographic breakdown of B.Agric Viticulture enrolments during the 2008 academic year

The B.Agric Viticulture is offered by CIAT: Elsenburg. Table 122 below presents a demographic breakdown of B.Agric Viticulture enrolments during the 2008 academic year.

Table 122: Demographic breakdown of B.Agric Viticulture enrolments in the 2008 academic year

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	8	3	**11**	8	8	**16**	65	17	**82**	0	0	**0**	**109**
TOTAL	**8**	**3**	11	**8**	**8**	16	**65**	**17**	82	**0**	**0**	0	**109**

One hundred and nine (109) students enrolled for the B.Agric Viticulture Degree during the 2008 academic year.



As depicted in Figure 239 above, the B.Agric Viticulture Degree enrolments are dominated by Whites with 75% followed by Coloureds with 15% and Africans with 10%. No Asian students were enrolled in this programme during the 2008 academic year.

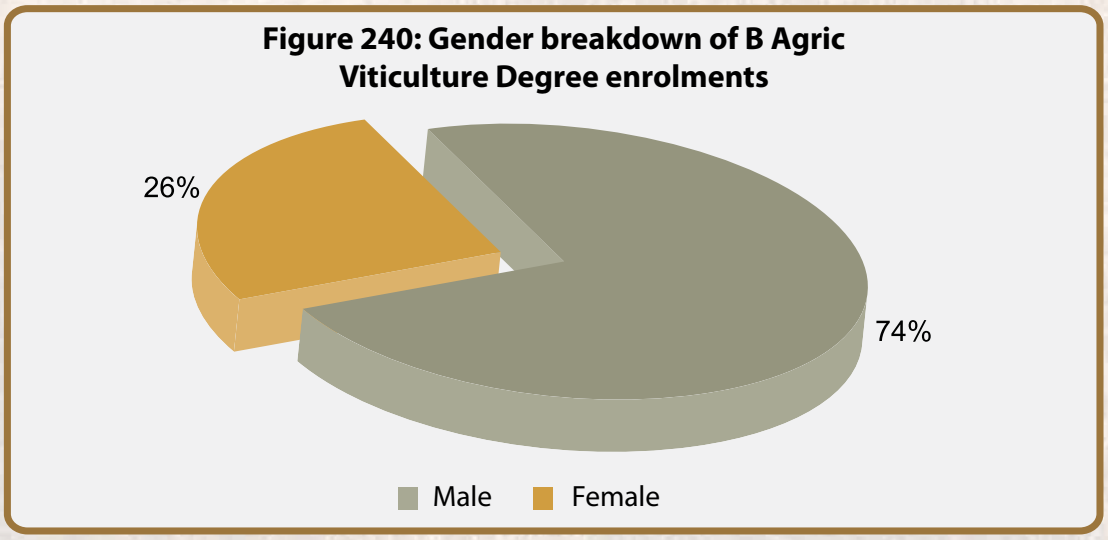


Figure 240 above indicates that male students dominated the B.Agric Viticulture Degree enrolments during the 2008 academic year with 74% and female student enrolments accounted for 26%.

5.3.5 Demographic breakdown of Viticulture and Oenology enrolments during the 2008 academic year

The BSc Viticulture (Science Stream) is offered by the University of Stellenbosch. The Viticulture (Science Stream) is offered from Degree to PhD level.

Table 123 below presents a demographic breakdown of BSc Viticulture and Oenology enrolments during the 2008 academic year.

Table 123: Demographic breakdown of BSc Viticulture and Oenology enrolments during the 2008 academic year														
LEVEL	**African**			**Coloured**			**White**			**Asian**			**Total**	**%**
	%	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**		
Undergraduate	**4**	2	**6**	2	1	**3**	3	2	**5**	0	0	**0**	**14**	**54**
Honours	**0**	1	**1**	1	0	**1**	1	2	**3**	0	0	**0**	**5**	**19**
Masters	**1**	0	**1**	0	0	**0**	3	2	**5**	0	0	**0**	**6**	**23**
PhD	**0**	0	**0**		1	**1**	0	0	**0**	0	0	**0**	**1**	**4**
TOTAL	**5**	**3**	**8**	**3**	**2**	**5**	**7**	**6**	**13**	**0**	**0**	**0**	**26**	**100**

Twenty six (26) students were enrolled at BSc Viticulture and Oenology during the 2008 academic year. Fifty four percent (54%) of overall students were Undergraduate students, 23% were Masters and 19% were Honours. PhD students accounted for 4% of the overall students in this CESM.

Figure 241: Racial breakdown of Undergraduate in BSc Viticulture and Oenology enrolments

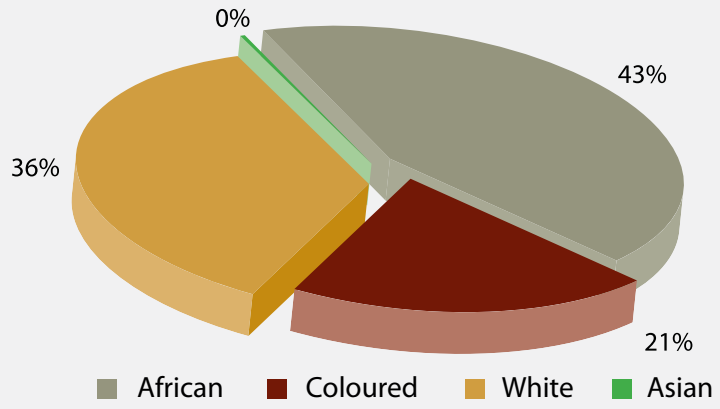


Figure 241 above depicts that African students dominated the total number of BSc Viticulture and Oenology enrolments at Undergraduate level with 43% followed by White students with 36% and Coloured students with 21%. No Asian students were enrolled in this CESM at Undergraduate level during the 2008 academic year.

Figure 242: Gender breakdown of Undergraduate in BSc Viticulture and Oenology enrolments

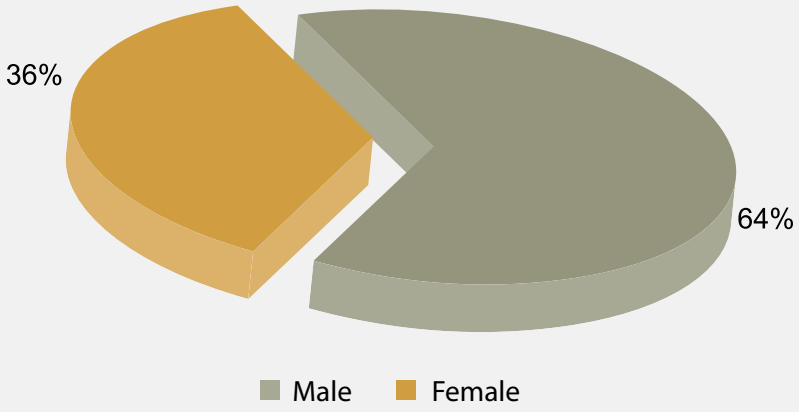


Figure 242 shows that male students dominated the Undergraduate enrolments in BSc Viticulture and Oenology during the 2008 academic year with 64% and female student enrolments accounted for 36%.

Figure 243: Racial breakdown of Honours in BSc Viticulture and Oenology enrolments

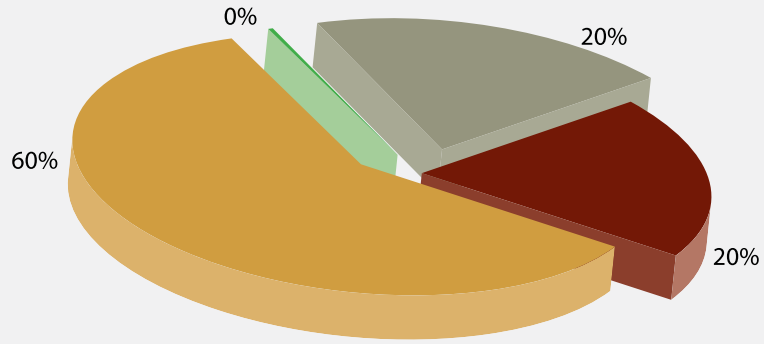


Figure 243 above indicates that Whites dominated the BSc Honours Viticulture and Oenology enrolments during the 2008 academic year with 60% followed by Africans and Coloureds with 20% each. No Asian students were enrolled in this programme at Honours Degree level during the 2008 academic year.

Figure 244: Gender breakdown of Honours in BSc Viticulture and Oenology enrolments

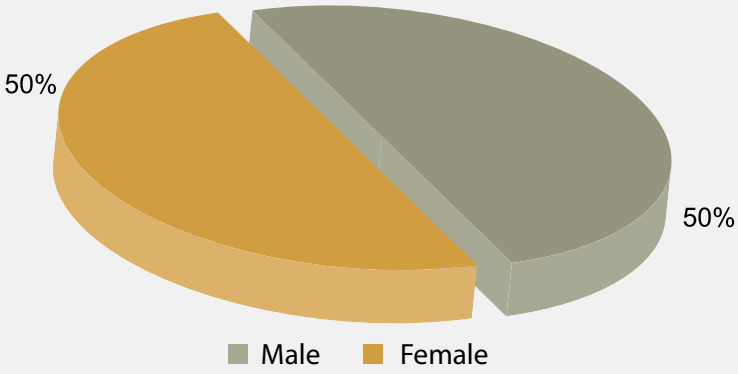


Figure 244 above shows that both males and females contributed the equal share of Honours enrolments in BSc Viticulture and Oenology enrolments during the 2008 academic year.

Figure 245: Racial breakdown of Masters in BSc Viticulture and Oenology enrolments

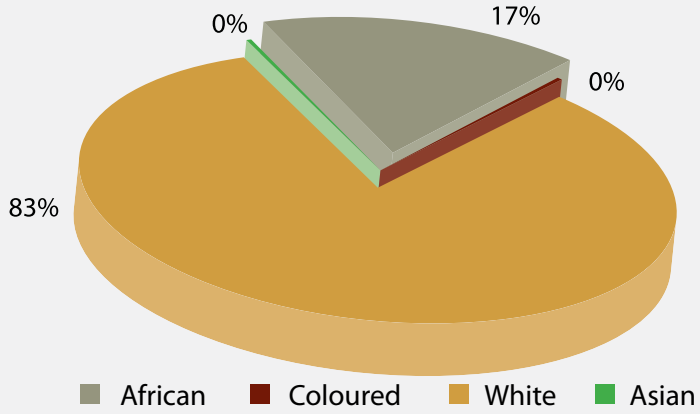


Figure 245 above indicates that Whites dominated the BSc Masters Viticulture and Oenology enrolments during the 2008 academic year with 83%, followed by Africans with 17%. No Coloured or Asian students were enrolled in this programme at Masters level during the 2008 academic year.

Figure 246: Gender breakdown of Masters in BSc Viticulture and Oenology enrolments

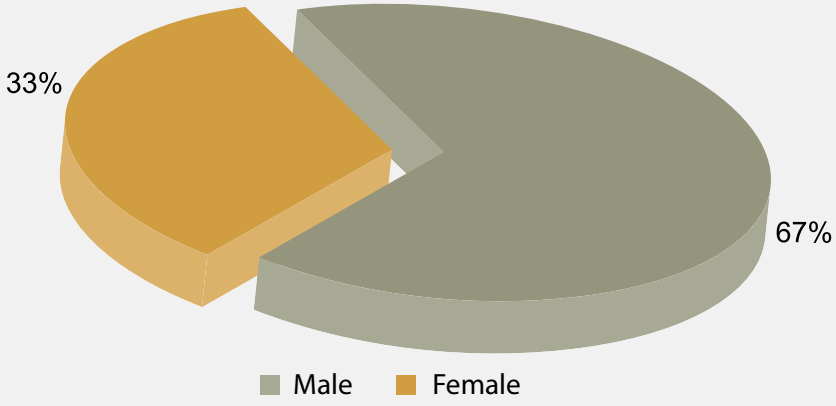


Figure 246 shows that male students dominated the Masters enrolments in BSc Viticulture and Oenology during the 2008 academic year with 67% and female student enrolments accounted for 33%.

5.3.6 Demographic breakdown of Food Science and Technology enrolments during the 2008 academic year

Food Science and Technology programmes in the scarce skills category are offered by the Universities of Stellenbosch, Pretoria and Johannesburg.

Table 124 below presents a demographic breakdown of Food Science and Technology enrolments during the 2008 academic year.

Table 124: Demographic breakdown of Food Science and Technology enrolments during the 2008 academic year														
LEVEL	**African**			**Coloured**			**White**			**Asian**			**Total**	**%**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**		
Undergraduate	8	25	**33**	4	4	**8**	3	20	**23**	0	1	**1**	**65**	**86**
Masters	0	0	**0**	0	0	**0**	0	8	**8**	0	0	**0**	**8**	**11**
PhD	0	0	**0**	0	0	**0**	0	2	**2**	0	0	**0**	**2**	**3**
TOTAL	**8**	**25**	**33**	**4**	**4**	**8**	**3**	**30**	**33**	**0**	**1**	**1**	**75**	**100**

Seventy five (75) students were enrolled at Food Science and Technology during the 2008 academic year. Eighty six (86%) of the total number of Food Science and Technology students were Undergraduate students, 11% were Masters students and 3% were PhD students.

Figure 247: Racial breakdown of Undergraduate in Food Science & Technology enrolments

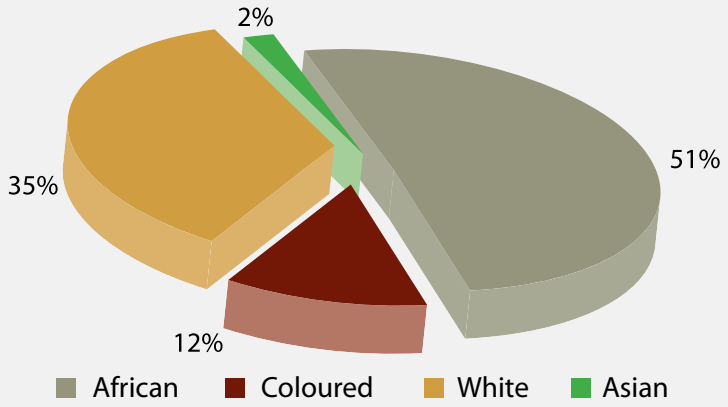


Figure 247 above illustrates that African students dominated the Undergraduate in Food Science and Technology enrolments during the 2008 academic year with 51% followed by Whites with 35%, Coloureds with 12% and Asians with 2%.

Figure 248: Gender breakdown of Undergraduate in Food Science & Technology enrolments

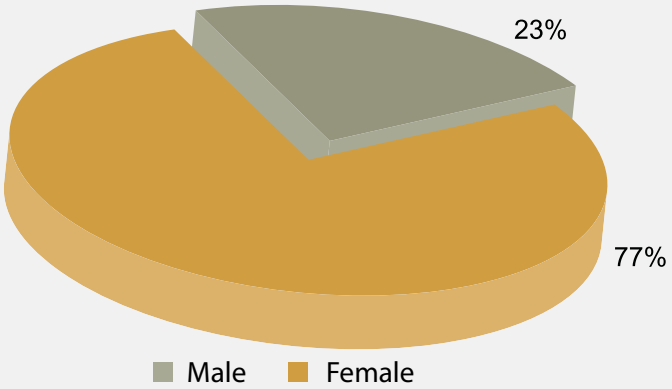


Figure 248 above shows that female students dominated the Undergraduate Degree in Food Science and Technology enrolments with 77% and male students constituted 23%.

5.3.7 Demographic breakdown of BSc Biotechnology enrolments during the 2008 academic year

BSc Biotechnology programme in scarce skills is offered by the University of the Western Cape.

Table 125: Demographic breakdown of BSc Biotechnology enrolments during the 2008 academic year

LEVEL	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Undergraduate	15	11	**26**	6	5	**11**	2	2	**4**	0	0	**0**	**41**	**100**
TOTAL	**15**	**11**	**26**	**6**	**5**	**11**	**2**	**2**	**4**	**0**	**0**	**0**	**41**	**100**

Forty one (41) students were enrolled at BSc Biotechnology during the 2008 academic year.

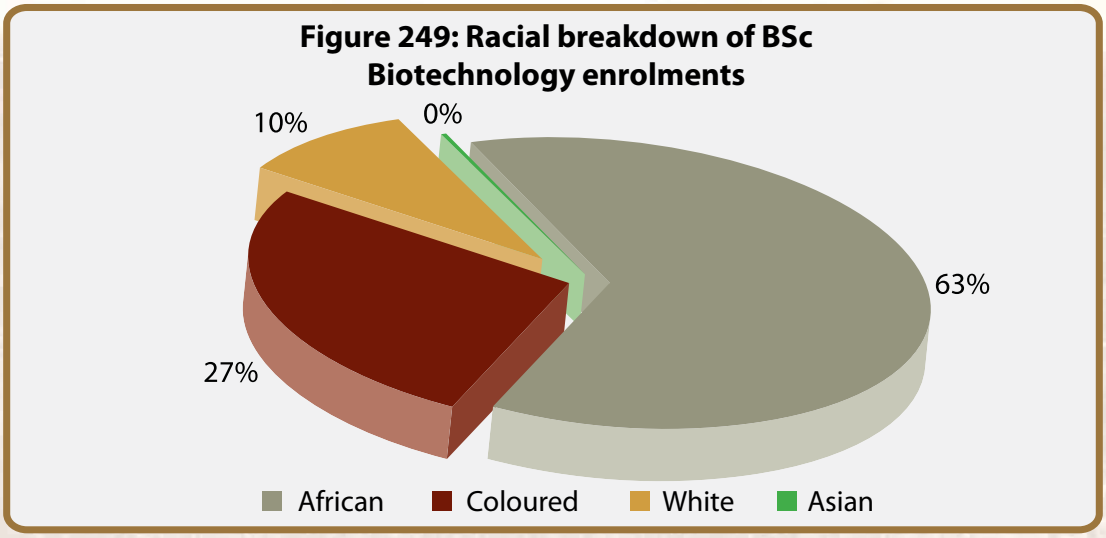


Figure 249 above illustrates that African students dominated the BSc Biotechnology enrolments during the 2008 academic year with 63%, followed by Coloured and White students with 27% and 10% respectively. Asian students were not represented in this CESM.

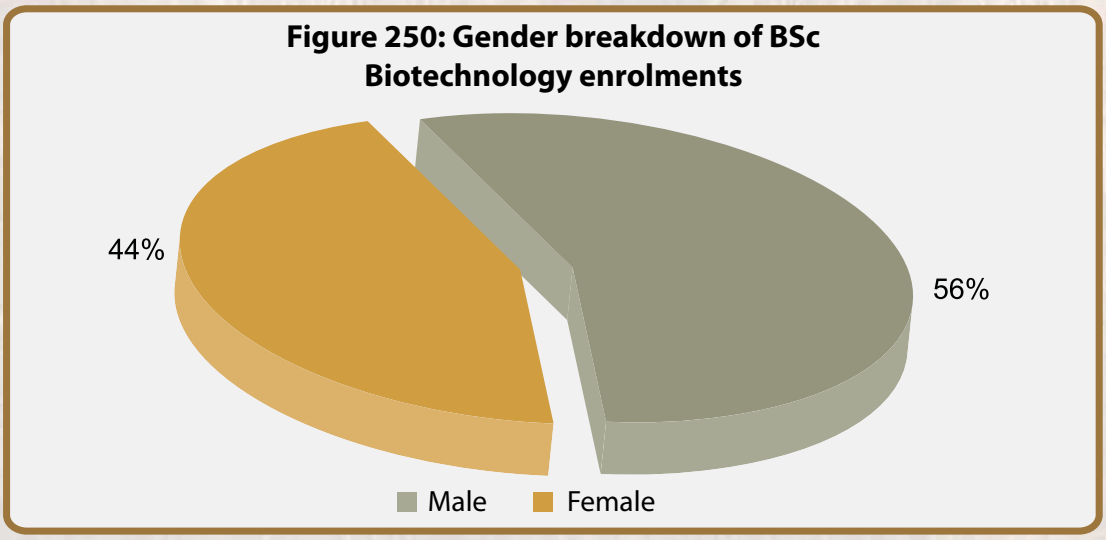


Figure 250 above shows that male students accounted for 56% of the BSc Biotechnology enrolments and female students constituted 44%.

5.3.8 Enrolments in BVSc Veterinary Science Degree in 2008

The BVSc Veterinary Science Degree is only offered by the University of Pretoria from Undergraduate to Postgraduate levels.

Table 126 below presents a demographic breakdown of BVSc Veterinary Science Degree enrolments during the 2008 academic year.

Table 126: Demographic breakdown of BVSc Veterinary Science enrolments in 2008

LEVEL	African			Coloured			White			Asian			Total	%
	M	F	T	M	F	T	M	F	T	M	F	T		
Undergraduate	31	11	**42**	2	0	**2**	49	103	**152**	2	7	**9**	**205**	**100**
TOTAL	**31**	**11**	**42**	**2**	**0**	**2**	**49**	**103**	**152**	**2**	**7**	**9**	**205**	**100**

Two hundred and five students (205) students enrolled for the BVSc Veterinary Science Degree during the 2008 academic year.

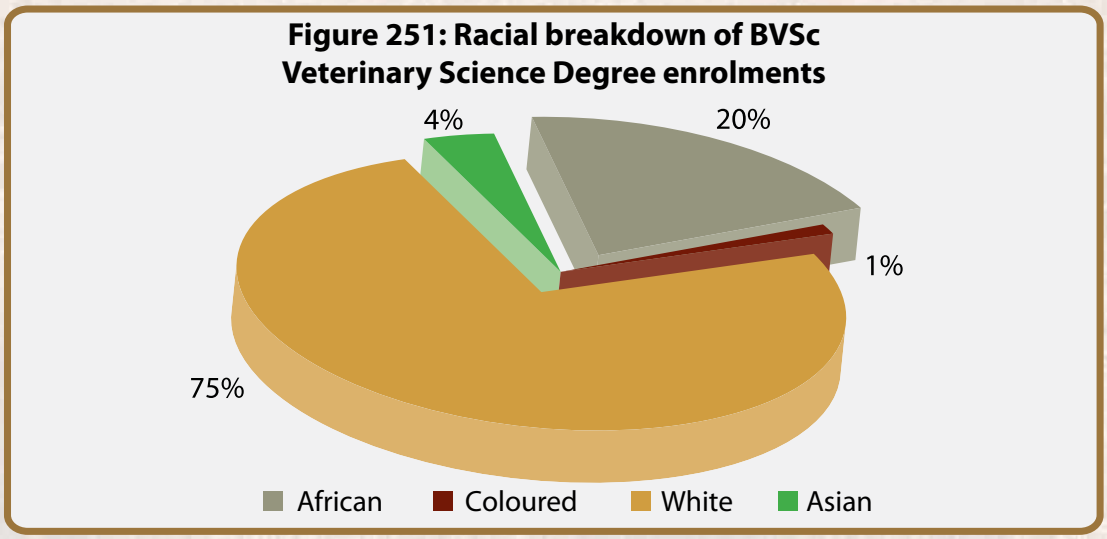
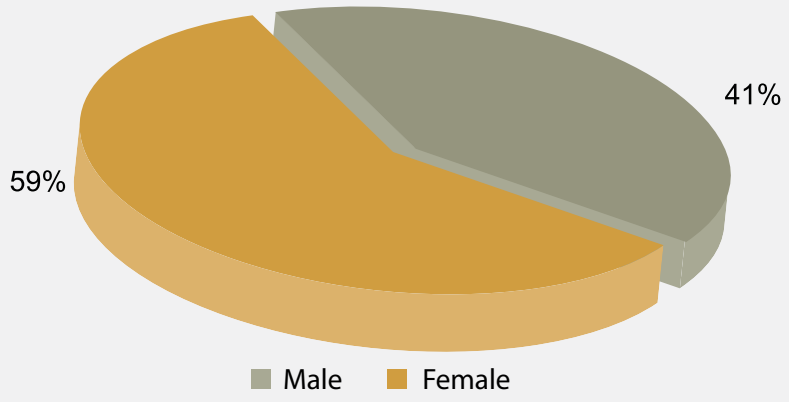


Figure 251 above outlines the racial breakdown of BVSc Degree enrolments during the 2008 academic year. White students accounted for 75% of the Degree enrolments in this programme, followed by African students and Asian students with 20% and 4% respectively. Coloured students comprised 1% of the BVSc enrolments during the 2008 academic year.

Figure 252: Gender breakdown of BVSc Veterinary Science Degree enrolments



Gender breakdown in Figure 252 above depicts that female students constituted 59% of the students in this programme during the 2008 academic year and male students accounted for 41%.

5.4 Breakdown of scarce skills graduates during 2008

5.4.1 Demographic breakdown of scarce skills graduates by gender and race

Table 127 below presents the breakdown of scarce skills graduates by gender and race.

Table 127: Demographic breakdown of scarce skills graduates by gender and race

LEVEL	African			Coloured			White			Asian			Total	%
	%	F	T	M	F	T	M	F	T	M	F	T		
BSc Agricultural Engineering	**2**	4	**6**	0	0	**0**	0	0	**0**	1	0	**1**	**7**	**2**
B Agric Viticulture	**2**	2	**4**	5	1	**6**	65	26	**91**	0	0	**0**	**101**	**27**
Food Science and Technology	**15**	35	**50**	3	1	**4**	5	32	**37**	0	1	**1**	**92**	**24**
Viticulture and Oenology	**2**	1	**3**	1	0	**1**	18	18	**36**	0	0	**0**	**40**	**11**
BVSc Veterinary Science	**11**	9	**20**	0	0	**0**	42	75	**117**	0	3	**3**	**140**	**37**
TOTAL	**32**	**51**	**83**	**9**	**2**	**11**	**130**	**151**	**281**	**1**	**4**	**5**	**380**	**100**

Figure 253: Racial breakdown of graduates in scarce skills

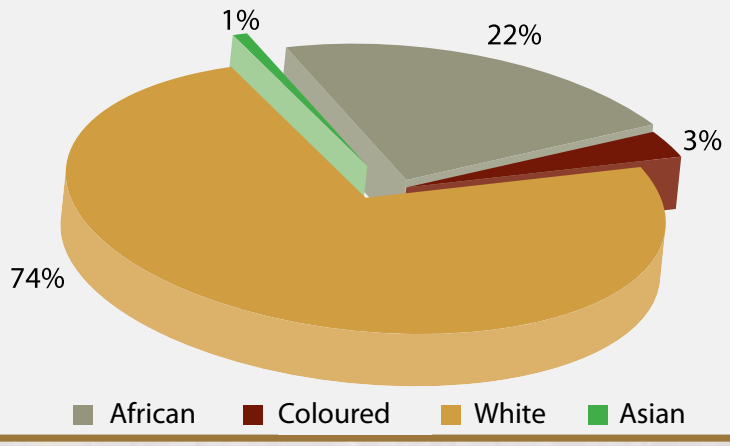


Table 127 and Figure 253 above indicates that White graduates dominated the scarce skills graduates with 74% followed by African graduates with 22%. Coloured and Asian graduates accounted for 3% and 1% of the overall scarce skills graduates respectively.

Figure 254: Gender breakdown of graduates in scarce skills

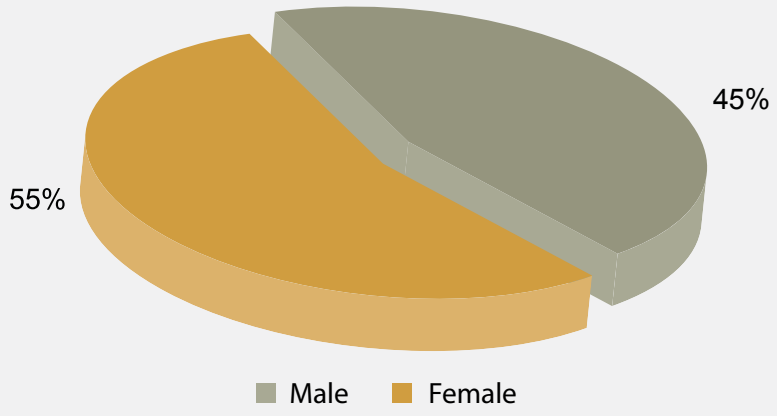


Figure 254 above indicates that female graduates constituted 55% of the overall scarce skills graduates and male graduates accounted for 45%.

Figure 255: Racial breakdown of scarce skills of male graduates

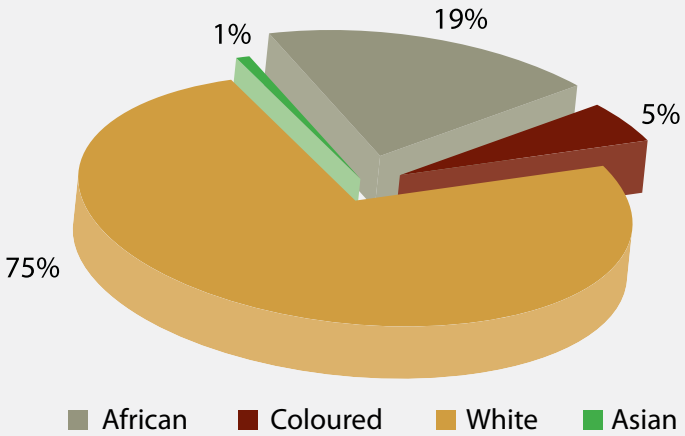
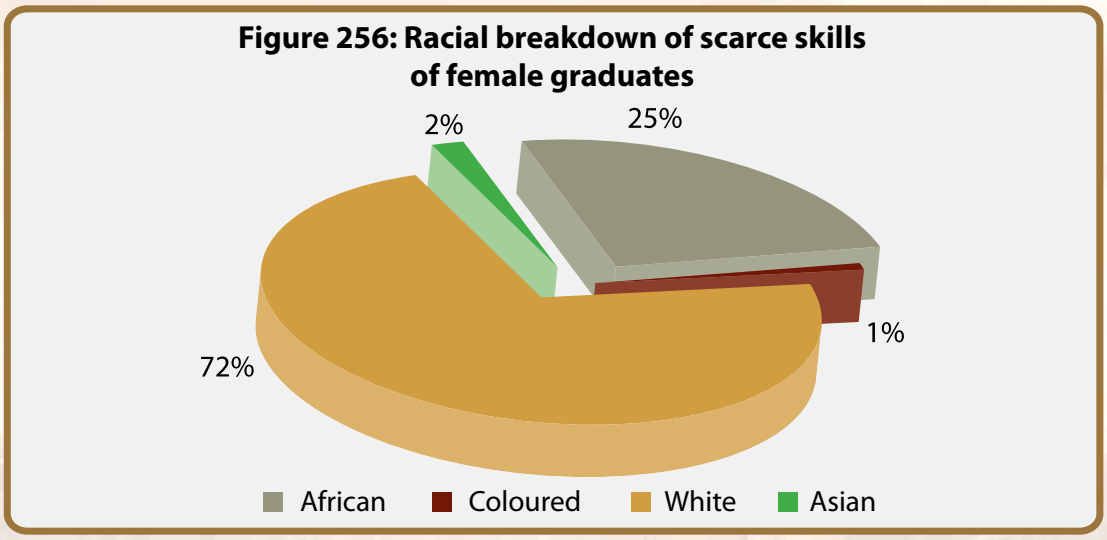


Figure 255 above shows that Whites dominated the male graduates in scarce skills programmes with 75%, followed by Africans with 19%, Coloureds with 5% and Asians with 1%.



As depicted in Figure 256 above, Whites accounted for 72% of the overall scarce skills female graduates. Africans and Asians constituted 25% and 2% respectively of the overall female graduates in scarce skills programmes and Coloureds contributed the remaining 1%.

5.4.2 Breakdown of scarce skills graduates by levels of qualification during the 2008 academic year

Table 128 below presents a breakdown of scarce skills graduates by levels of qualification during the 2008 academic year.

Table 128: Scarce skills graduates in 2008 by academic level

CESM	Undergraduate	Honours	Masters	PhD	Total
Agricultural Engineering	7	0	0	0	**7**
B.Agric Viticulture	101	0	0	0	**101**
BSc Viticulture and Oenology	34	6	0	0	**40**
BVSc Veterinary Science	97	8	33	2	**140**
Food Science and Technology	78	0	13	1	**92**
TOTAL	**317**	**14**	**46**	**3**	**380**

Undergraduate graduates dominated the scarce skills graduates produced in 2008 with 84% followed by Masters with 12% and Honours with 3%. PhD graduates constituted less than 1% of the total number of scarce skills graduates produced during the 2008 academic year.

5.4.3 Graduate Outputs in BVSc Veterinary Science Degree at 2008

Table 129 below presents a demographic breakdown of BVSc Degree graduates during the 2008 academic year.

Table 129: Demographic breakdown of BVSc Veterinary Science graduates during the 2008 academic year

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	3	0	**3**	0	0	**0**	33	59	**92**	0	2	**2**	**97**
Honours	0	0	**0**	0	0	**0**	4	4	**8**	0	0	**0**	**8**
Masters	7	9	**16**	0	0	**0**	4	12	**16**	0	1	**1**	**33**
PhD	1	0	**1**	0	0	**0**	1	0	**1**	0	0	**0**	**2**
TOTAL	**11**	**9**	**20**	**0**	**0**	**0**	**42**	**75**	**117**	**0**	**3**	**3**	**140**

One hundred and forty (140) graduates were produced in the BVSc Veterinary Science Degree during the 2008 academic year.

Figure 257: Racial breakdown of Undergraduate in BVSc Veterinary Science graduates

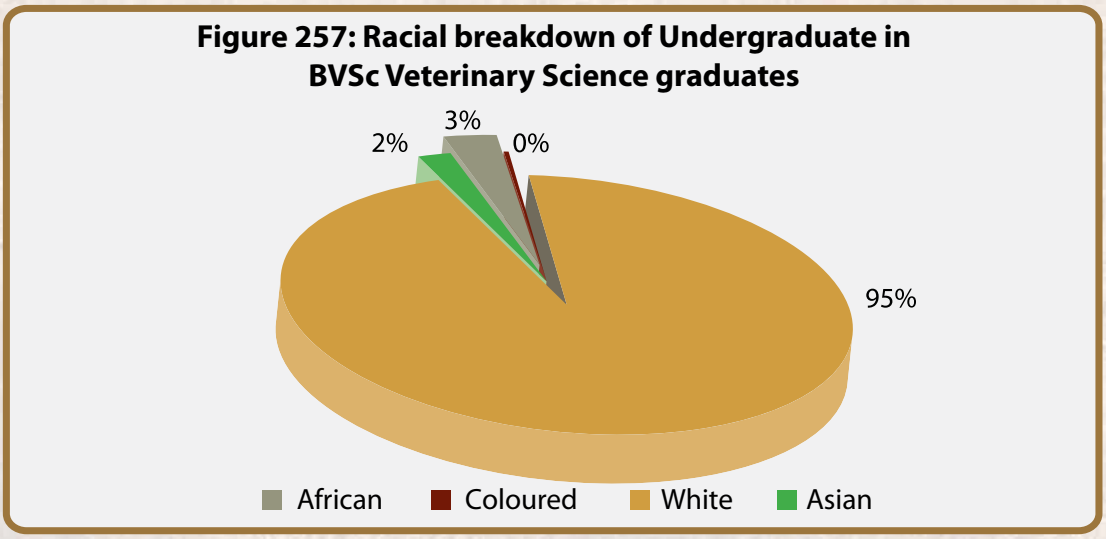


Figure 257 above depicts that White graduates constituted 95% of the BVSc Degree graduates during the 2008 academic year, followed by African graduates with 3%, Asian graduates with 2%. No Coloured graduates were produced in this CESM at Undergraduate level during the 2008 academic year.

Figure 258: Gender breakdown of Undergraduate in BVSc Veterinary Science graduates

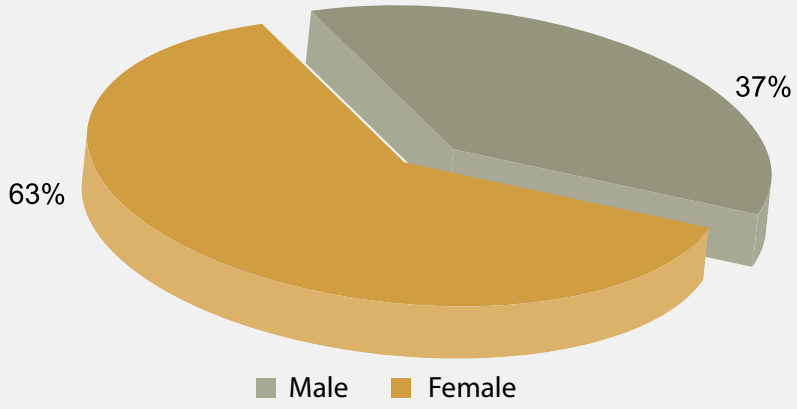


Figure 258 above indicates that female graduates dominated the BVSc Degree graduates with 63% and male graduates accounted for 37%.

Figure 259: Gender breakdown of Honours in BVSc Veterinary Science graduates

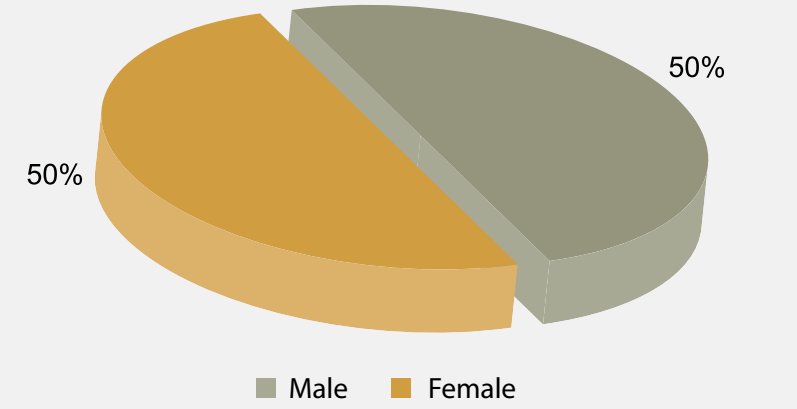


Figure 259 above indicates that both male and female graduates shared the equal percentage of BVSc Honours graduates with 50% each.

Figure 260: Racial breakdown of Masters in BVSc Veterinary Science graduates

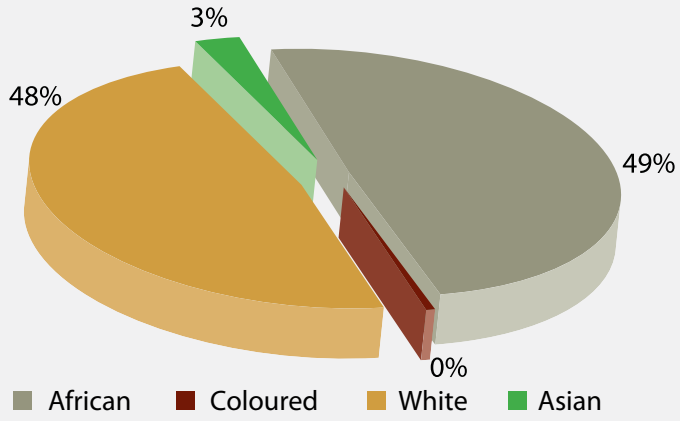


Figure 260 above depicts that African graduates constituted 49% of the BVSc Masters Degree graduates during the 2008 academic year followed by White graduates with 48% and Asian graduates with 3%. No Coloured graduates were produced in this CESM at Masters level during the 2008 academic year.

Figure 261: Gender breakdown of Masters in BVSc Veterinary Science graduates

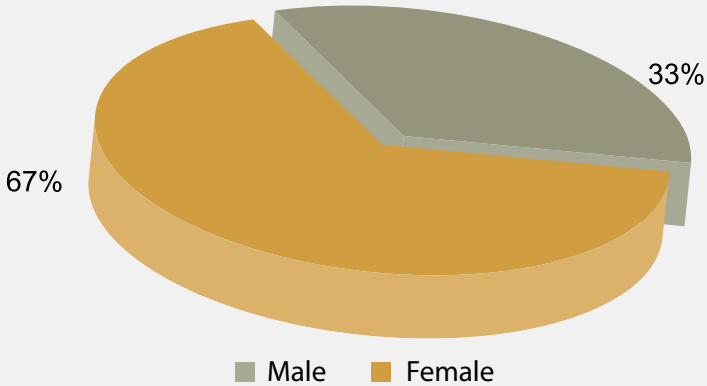


Figure 261 above indicates that female graduates dominated the BVSc Masters Degree graduates with 67% and male graduates accounted for 33%.

5.4.4 Graduate Outputs for BSc Agricultural Engineering in 2008

The BSc Agricultural Engineering Degree produced 7 graduates during the 2008 academic year. Table 130 below presents a demographic breakdown of Agricultural Engineering graduates during the 2008 academic year.

Table 130: Demographic breakdown of BSc Agricultural Engineering graduates during the 2008 academic year													
LEVEL	**African**			**Coloured**			**White**			**Asian**			**Total**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Undergraduate	2	4	**6**	0	0	**0**	0	0	**0**	1	0	**1**	**7**
TOTAL	**2**	**4**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**7**

Table 130 above indicates that only seven graduates were produced in BSc Agricultural Engineering during the 2008 academic year: 6 were Africans and 1 was White.

5.4.5 Graduate Outputs in B.Agric Viticulture in 2008

Table 131 below presents a demographic breakdown of B Agric Viticulture Degree graduates at CIAT: Elsenburg during the 2008 academic year.

Table 131: Demographic breakdown of B.Agric Viticulture graduates during the 2008 academic year													
LEVEL	**African**			**Coloured**			**White**			**Asian**			**Total**
	M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	
Undergraduate	2	2	**4**	5	1	**6**	65	26	**91**	0	0	**0**	**101**
TOTAL	**2**	**2**	**4**	**5**	**1**	**6**	**65**	**26**	**91**	**0**	**0**	**0**	**101**

One hundred and one (101) graduates were produced in B.Agric Viticulture Degree during the 2008 academic year.

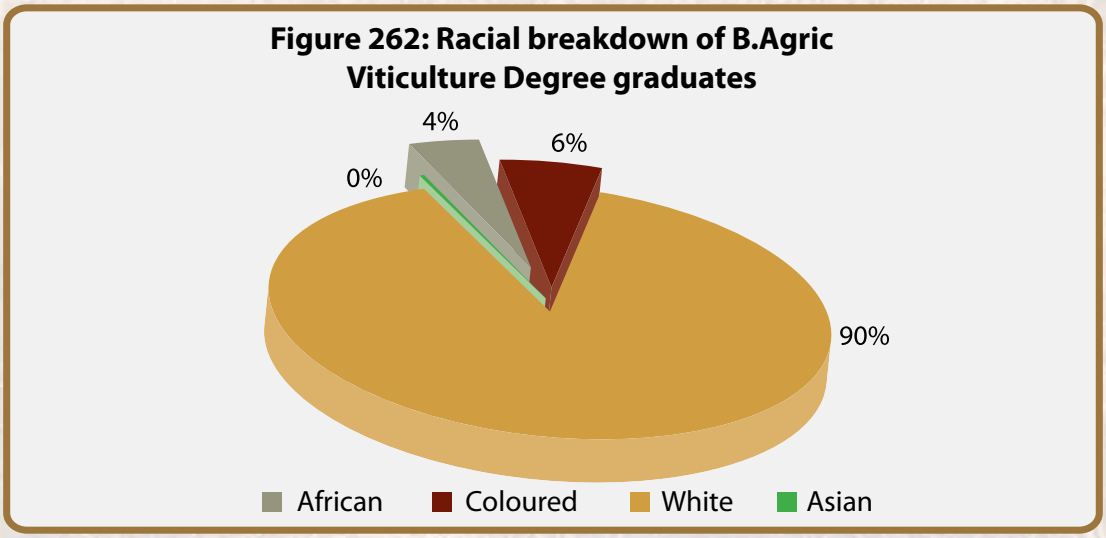


Figure 262 above indicates that Whites dominated the B.Agric Viticulture Degree graduates during the 2008 academic year with 90%, followed by Coloureds with 6% and Africans with 4%. No Asians graduated in this programme during the 2008 academic year.

Figure 263: Gender breakdown of B.Agric Viticulture Degree graduates

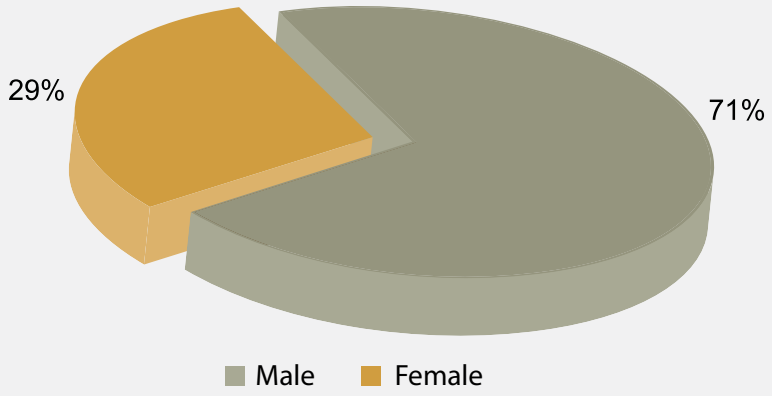


Figure 263 above shows that male graduates accounted for 71% of the B.Agric Viticulture Degree and females constituted 29%.

5.4.6 Graduate Outputs for BSc Viticulture and Oenology in 2008

Forty (40) graduates were produced in BSc Viticulture and Oenology during the 2008 academic year. Table 132 below illustrates the demographic breakdown of BSc Viticulture and Oenology graduates during the 2008 academic year.

Table 132: Demographic breakdown of BSc Viticulture and Oenology graduates during the 2008 academic year

LEVEL	African			Coloured			White			Asian			Total	%
	%	F	T	M	F	T	M	F	T	M	F	T		
Undergraduate	**1**	1	**2**	0	0	**0**	17	15	**32**	0	0	**0**	**34**	**85**
Honours	**1**	0	**1**	1	0	**1**	1	3	**4**	0	0	**0**	**6**	**15**
TOTAL	**2**	**1**	**3**	**1**	**0**	**1**	**18**	**18**	**36**	**0**	**0**	**0**	**40**	**100**

Table 132 above illustrates that 85% of the total number of BSc Viticulture and Oenology graduates were Undergraduates and 15% were Honours graduates.

Figure 264: Racial breakdown of Undergraduate Degree in Viticulture and Oenology graduates

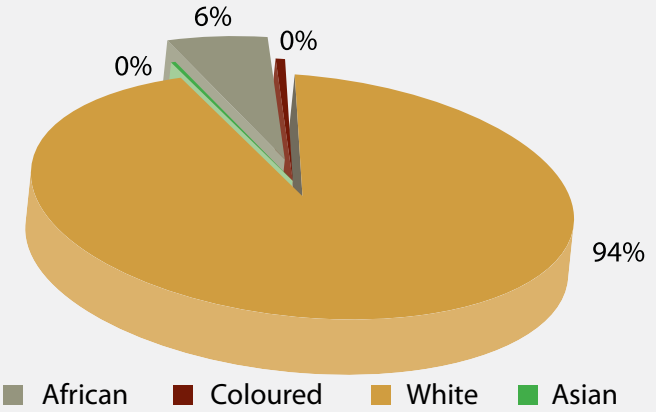


Figure 264 above depicts that White graduates dominated the total number of BSc Viticulture and Oenology graduates with 94%, followed by African graduates with 6%. No Coloured or Asian graduates were produced in this programme at Undergraduate level.

Figure 265: Gender breakdown of Undergraduate Degree in Viticulture and Oenology graduates

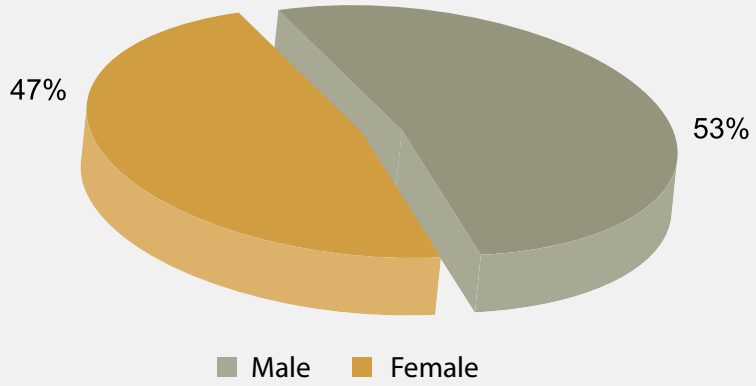


Figure 265 above indicates that male graduates dominated the Undergraduate Degree graduates in BSc Viticulture and Oenology during the 2008 academic year with 53% and female graduates accounted for 47%.

5.4.7 Graduate Outputs in Food Science and Technology in 2008

Ninety two (92) graduates were produced in Food Science and Technology during the 2008 academic year. Table 133 below illustrates the demographic breakdown of Food Science and Technology graduates during the 2008 academic year.

Table 133: Demographic breakdown of Agricultural Food Technology graduates at Universities in 2008

LEVEL	African			Coloured			White			Asian			Total
	M	F	T	M	F	T	M	F	T	M	F	T	
Undergraduate	12	35	**47**	2	1	**3**	3	24	**27**	0	1	**1**	**78**
Masters	3	0	**3**	1	0	**1**	2	7	**9**	0	0	**0**	**13**
PhD	0	0	**0**	0	0	**0**	0	1	**1**	0	0	**0**	**1**
TOTAL	**15**	**35**	**50**	**3**	**1**	**4**	**5**	**32**	**37**	**0**	**1**	**1**	**92**

As illustrated in Table 133 above, 85% of the graduates in this CESM were produced at Undergraduate level followed by Masters with 14% and PhD with 1%.

Figure 266: Racial breakdown of Undergraduate in Food Science and Technology graduates

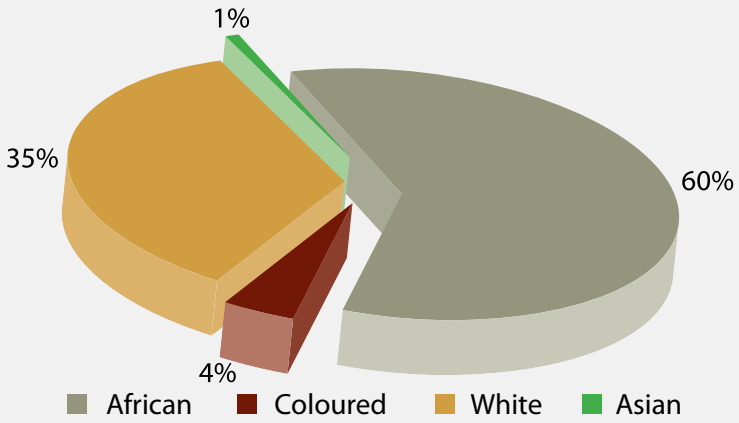


Figure 266 above illustrates that African graduates dominated the Undergraduates in Food Science and Technology during the 2008 academic year with 60% followed by White graduates with 35%, Coloured and Asian graduates accounted for 4% and 1% respectively.

Figure 267: Gender breakdown of Undergraduate in Food Science and Technology graduates

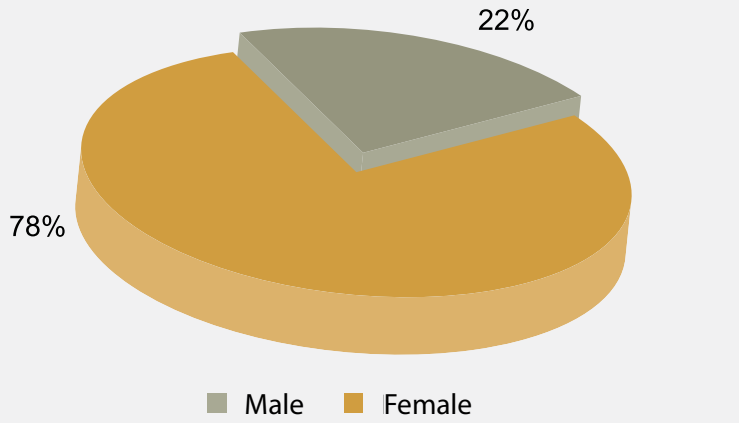


Figure 267 above shows that female graduates dominated the Undergraduate Degree in Food Science and Technology graduates with 78% and male graduates constituted 22%.

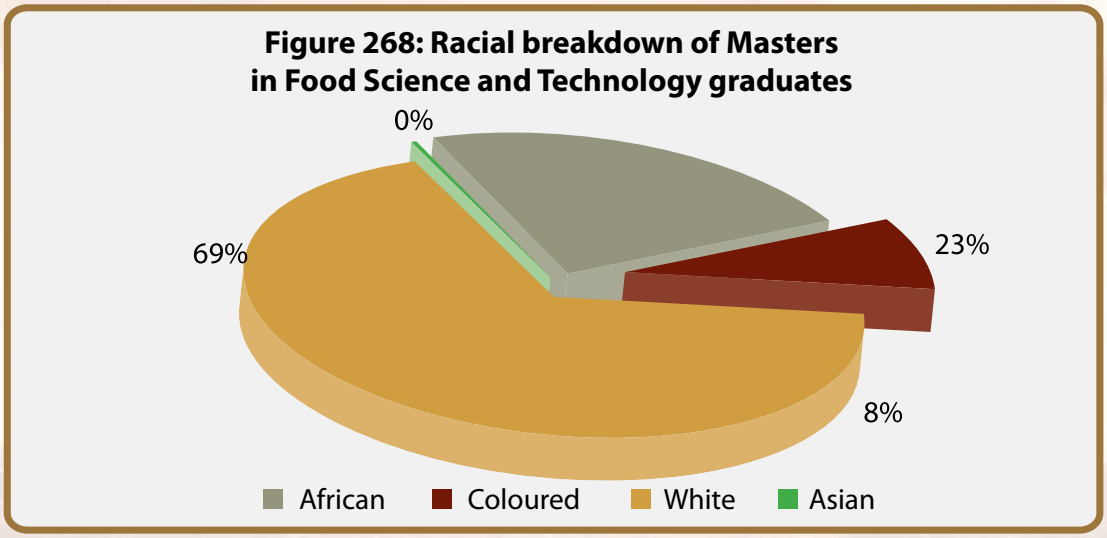


Figure 268 above illustrates that White graduates dominated the Masters Degree in Food Science and Technology graduates during the 2008 academic year with 69% followed by African graduates with 23% and Coloured graduates with 8%. No Asian students graduated in this programme during the 2008 academic year.

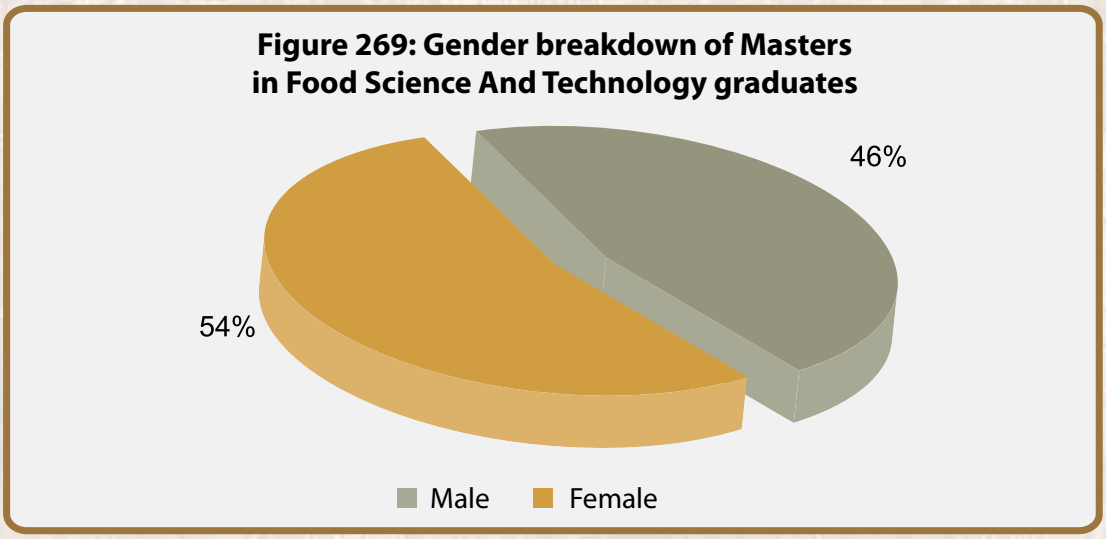


Figure 269 above shows that female graduates dominated the Masters Degree in Food Science and Technology graduates with 54% and male graduates constituted 46%.

5.5 Conclusion

Generally, White females dominated both the enrolment and graduate figures in the scarce skills programmes in agriculture. Five hundred and forty seven (547) students enrolled and 380 graduated in the scarce skills categories, which constituted approximately 69% of the total number of enrolments. Whites still accounted for the highest enrolment figures compared to other racial groups with 53% of the enrolments and 74% of the graduates.

Of the 547 students enrolled in these programmes during the 2008 academic year, 53% were White students, 35% were African, 8% were Coloured students and 4% were Asian students.

One would expect that Africans will dominate in all the programmes including scarce skills categories as they are the majority in terms of the country's demographics. But it needs to be indicated that Africans and Coloureds have shown a great improvement in terms of enrolments and graduates in the scarce skills programmes compared to the previous years.

Veterinary Science recorded the highest enrolment figures at higher institutions during the 2008 academic year with 205 students, followed by B. Agric Viticulture with 109 students, BSc Agricultural Engineering with 91 students and Food Science and Technology with 75 students. The lowest intakes were recorded at BSc Biotechnology and Viticulture and Oenology with 41 and 26 students registered respectively.

Of the 380 graduates produced in these programmes during the 2008 academic year, 74% were Whites, 22% were Africans, 3% were Coloureds and 1% were Asians. The highest graduate figures were recorded in BVSc Veterinary Science with 140 graduates, followed by B. Agric Viticulture with 101 graduates, Food Science and Technology with 92 graduates and Viticulture and Oenology with 40 graduates. The lowest numbers of graduates were recorded by BSc Agricultural Engineering with only 7 graduates during the 2008 academic year.

CHAPTER 6: ANALYSIS AND RECOMMENDATIONS

CHAPTER 6

ANALYSIS AND RECOMMENDATIONS

6.1. Analysis of agricultural graduate outputs and enrolments during the 2008 academic year

The overall number of enrolments in all AET programmes during the 2008 academic year at Colleges of Agriculture, Universities of Technology and Universities is 1 616, 3 894 and 4 348 respectively. Enrolments generally increased at Colleges of Agriculture by 91 and decreased by 10 155 at Universities when compared to the 2007 academic year, whilst an increase of 149 students at Universities of Technology occurred in 2008. These figures decreased from 19 773 students in 2007 to 9 858 students enrolled for AET programmes in the Higher Education Band, ranging from Higher Certificate (NQF level 5), offered by agricultural colleges, to PhD programmes (NQF level 8) in 2008.

The number of graduates produced at Colleges of Agriculture, Universities of Technology and Universities is 744, 816 and 1 879 respectively which therefore totalled to 3 439 graduates produced in these institutions in 2008. Overall number of graduates produced in 2008 decreased by 503 when compared to 2007. Despite the fact that three Universities did not provide their data on enrolments and graduates, the general trend is that enrolments and graduates figures decreased in 2008.

An observed trend in this study indicates that, as has been the case in previous academic years, Africans and Whites are largely dominant on both enrolments and graduate figures in all the agricultural programmes, except in the case of scarce skills programmes which are dominated exclusively by whites. Similarly, these two racial groups collectively represent a major portion of the total population in terms of the country's demographics. Generally the number of agricultural enrolments and graduates for Coloureds and Asians are very insignificant and in some cases these two racial groups do not feature at all. African and White males dominated most of the agricultural programmes.

Enrolments in the Colleges of Agriculture increased from 1 525 in 2007 to 1 616 in 2008, whilst graduates increased to 744 in 2008 from 644 in 2007, and they were dominated by Africans and Whites. Though numbers of students have increased generally, Whites have decreased dramatically from 749 students in 2005 which has been the highest to just 369 in 2008. Asian enrolments and graduates remained under-represented for the most part from 2004 to 2008. Coloured enrolments and graduates seem to be fluctuating in the Colleges of Agriculture when comparison is made between the academic years from 2004 to 2008. Coloured enrolments increased from 43 in 2004 to 113 in 2005, and decreased again to just 42 students in 2006, increased to 70 in 2007 and decreased to 60 in 2008, while Coloured graduate figures increased from 29 in 2004 to 72 in 2005 and decreased to just 11 in 2006, 12 in 2007 and 16 graduates in 2008. Overwhelmingly, males dominate both the enrolments and graduate figures from 2004 to 2008.

Cedara, CIAT, Grootfontein and Potchefstroom continued to be the only colleges which attract students from diverse racial groups, while other colleges still enroll students from one racial group. Madzivhandila, Tompi Seleka and Tsolo introduced skills programmes and phased out the HET programmes.

The short course programmes introduced by colleges, in addition to the Diploma and Higher Certificate Programmes were widely offered in the agricultural colleges in 2008 at General Education and Training (GET) and Further Education and Training (FET) levels. Short course programmes offered by the colleges

are more demand driven and are aimed at addressing the needs of the farming community and LRAD beneficiaries in their respective locations and other projects. Some of the short courses are accredited while others are not. The non-accredited programmes are offered in the form of short courses which is more of information sharing rather than competency based and as such the participants receive Certificates of attendance only.

Racial composition of the short courses has not changed in 2008; many of the beneficiaries and participants are Africans, and very few participants are from the other racial groups. Some colleges have reported that they did not keep statistics of the trainees who participated in these programmes, and others have statistics, but no demographic breakdown of the participants in the short courses. Short course beneficiaries have increased from the 7 109 participants in 2007 to 9 987 in 2008 and this figure might be far greater, considering that some of the colleges do not keep statistics of the number of participants in short courses. It is therefore advised that all the colleges keep a database of the beneficiaries and participants in these programmes in order to be able to evaluate the impact of the programmes to the socio-economic situation of the beneficiaries at a later stage.

It is evident from the findings that generally Africans dominate both the enrolments and graduate figures in the Universities of Technology and this trend also continues from previous academic years. From 3 894 students registered at Universities of Technology, 72% are Africans, and of the 816 graduates, 64% are Africans. Some of programmes that were dominated by Whites in the past four series of reports have shown a new trend: and these programmes are dominated by Africans; for instance in Animal Science 773 Africans enrolled and 158 graduated compared to 121 Whites who enrolled and 21 who graduated. Nonetheless, in Agricultural Biotechnology the dominance of Asians is still prevalent; in 2008, 120 Asians enrolled and 42 graduated compared to 89 Africans who enrolled and 31 who graduated. A major improvement has been witnessed with regard to Asian enrolments and graduates. From the findings, Coloured enrolments and graduates are still insignificant in all the agricultural programmes offered by Universities of Technology.

In almost all of the programmes males dominated enrolments and graduates across all race groups. It is only two cases, in the case of Agricultural Biotechnology and Veterinary Technology enrolments where females outweigh the number of males. The general trend is that males, particularly African and White males constituted a higher number of graduates and enrolments, with African males dominating.

Continuously the general trend is that the majority of the enrolments and graduates at the Universities of Technology are recorded in the Diploma level, for instance 81% of enrolments are Diploma students and 73% of graduates are Diploma graduates. MTech and DTech enrolments are generally at a low level, representing just less than 3% of the total enrolments in 2008 collectively. On the other hand, MTech graduates accounted for 2% of the total number of graduates, whilst no DTech graduates were produced and this is applicable to all racial groups.

The lowest enrolment and graduate figures at postgraduate level is also a cause for concern, considering the fact that research scientists have been identified as some of the critical skills required in the sector. There is a need to investigate factors influencing the trends in order to implement interventions which will reverse the situation.

The 2008 academic year has seen a general enrolment decrease at Universities when compared to the previous academic years. A total of 4 348 students registered for AET programmes in the 2008 academic year. Enrolments far outweigh graduate figures during the 2008 academic year at Universities as it has been the trend in previous academic years.

Agricultural Management comprised 17% of the total enrolments in 2008, whilst Agricultural Science both Science and Art streams and Animal Science comprised significant enrolment figures with 15% and 14% respectively. Slight decreases in enrolments in both Agricultural Science and Agricultural Management were prevalent during the 2008 academic year when compared to the previous academic years. Agricultural Extension (Inst.Agrar. Stream) and Land Development (Land use) enrolments were the lowest, where only 1 student registered.

Graduates produced in Agricultural Science both Science and Art streams were the highest at 18% of the total number of graduates followed by Animal Science with 17% and Agricultural Management with 9%. The lowest graduate output was recorded in Agricultural Economics Agribusiness (Inst.Agrar. Stream),Environmental Management and Horticulture.

Ninety eight (98) students enrolled in Inst.Agrar programmes in 2006, 155 in the 2007 and 25 in 2008. It is the conclusion of this study that the insignificance of the Inst.Agrar programmes representation is due to the fact that Inst.Agrar programmes are offered only by University of Pretoria in South Africa. The outlook of these programmes is therefore subject to the influences and dynamics in that institution, such as student fee hikes.

University of Pretoria enjoys a distinct bigger share of both the enrolments and graduates during the 2008 academic year. Enrolments and graduates were the lowest at the Universities of Venda and Western Cape. It is important to note that these institutions offer relatively fewer programmes compared to such institutions that have had significant enrolments and graduate outputs e.g. Stellenbosch, UNISA and Pretoria.

As the larger population group, Africans continued to represent bigger numbers of enrolments. However, Whites also recorded a high number of enrolments. White students were even more dominant in all scarce skills and other AET categories such as Agricultural Science (Science Stream), Consumer Science and Veterinary Biology which leads to BVSc Veterinary Science. As is it the case in enrolments, African graduates dominated every racial group in almost all AET programmes with the exception of scarce skills. There is a great under-representation of Coloured and Asian students in almost all programmes in the HET institutions; this is prevalent even in institutions that are in provinces where these racial groups are largely represented socially such as Stellenbosch, Western Cape and KwaZulu-Natal.

As is the case in 2008, males dominated the enrolments and graduates in almost all the programmes, except in the case of Agricultural Food Technology, Veterinary Biology and Consumer Science where females outweigh the number of male enrolments.

African males and White males comprised 62% and 35% respectively of the total male enrolments and, in the case of graduate outputs for the most part, there are two programmes where female dominance is prevalent and these are Agricultural Food Technology and Consumer Science.

A concerning factor is that the Undergraduate Degree continues to record the most enrolments and graduate outputs compared to Postgraduate Degree as was the case in previous academic years. During the 2008 academic year Undergraduate Degree enrolments represented 80% of the total enrolments at Universities followed by Masters with 11%, Honours and PhD with 6% and 2% respectively. The least enrolments were recorded in Postgraduate Diploma with 1% of the total enrolments at Universities. The same applies to graduate outputs where Undergraduate Degree comprised 69% of the total graduate output at Universities followed by Honours and Masters with 14% and 13% respectively. PhD

and Postgraduate Diploma accounted for 3% and 1% respectively of the total number of graduates at Universities during the 2008 academic year.

As the agricultural sector is expected to play a decisive role in the future of the bio-fuels a critical evaluation by institutions of relevant study programmes will have to be intensified to ensure a proper contribution by these institutions. Also there is still a need to cut down on AET programmes that are less relevant in addressing the needs of the sector, with more emphasis on programmes with high enrolments and graduates to ensure that there is no overproduction of skills in some of the programmes which leads to unemployed agricultural graduates and a negative imbalance of supply and demand of agricultural skills in the labour market. It will also be essential that the sector together with institutions of higher learning review the content of the curriculum to ensure that it prepares students for the world of work.

Generally, White males dominated both the enrolments and graduate figures in the scarce skills programmes in agriculture. Five hundred and forty seven (547) students enrolled in the scarce skills categories. Whites still accounted for the highest enrolment figure compared to other racial groups with 53% of all the enrolments in scarce skills. Three hundred and eighty (380) graduates were produced in the scarce skills programmes during the 2008 academic year; 74% were White with other racial groups constituting the remaining 26%.

Of the 547 students enrolled in these programmes during the 2008 academic year, 29% were White females, 24% were White males and 22% were African males. Likewise, White females who graduated in scarce skills programmes constituted 72% of the female graduates in scarce skills programme, followed by African females who constituted 25%. White males dominated the male graduates with 75% followed by African males with 43%, Coloureds with 5% and Asians with 1%.

One would expect that Africans will dominate in all the programmes, including scarce skills categories as they are the majority in terms of the country's demographics. But it needs to be indicated that Africans and Coloureds have shown a great improvement in terms of enrolments and graduates in the scarce skills programmes compared to the previous years.

Very low numbers of Blacks (Africans, Coloureds and Asians) in all the scarce skills categories might be attributed to several factors, which might include among others, the lack of interest by Blacks in the agricultural scarce skills programmes and or admission requirements for pursuing studies in the scarce skills categories which the majority of Blacks might not meet. The contribution of the Universities offering scarce skills programmes with regard to their efforts in attracting Black students in these programmes could also be a contributing factor.

The highest enrolment figures were registered in BVSc Veterinary Science and it has enrolled 205 students, followed by B.Agric Viticulture with 109. The highest graduate figures were recorded in BVSc Veterinary Science with 140 graduates, followed by B.Agric Viticulture with 101 graduates, Food Science and Technology with 92 graduates and Viticulture and Oenology with 40 graduates. The lowest numbers of graduates were recorded by BSc Agricultural Engineering with only 7 graduates during the 2008 academic year.

BVSc Veterinary Science continue to be dominated by Whites, for instance 205 students were enrolled during the 2008 academic year and 74% were Whites while the other racial groups contributed only 26%. Factors contributing to most Africans not progressing to the BVSc level need to be investigated, and interventions should be implemented to address the problem.

There are still very low numbers of graduates in Agricultural Engineering across all racial groups. Many Africans register for BSc Agricultural Engineering compared to other racial groups, but the graduate output is very low. From the trends it indicates that although enrolment figures for Africans are increasing every year from 2003, the graduate figures decline every year. In both cases of BVSc and BSc Agricultural Engineering although there is an increase in the number of Blacks enrolments. The number of Blacks graduating in the two programmes is very insignificant and the figures continue to drop every year. However, it is evident from the data collected in 2004 to 2007 that in the case of BSc Agricultural Engineering, the number of Black graduates is almost equal to that of White graduates.

This situation has a negative impact on employment equity in the sector, and it is therefore essential that interventions aimed at marketing scarce skills in agriculture be focused on schools that target predominantly African, Coloured and Asian learners. It is also essential that all the factors influencing this situation be investigated in order to make evidence-based decision making which will eliminate the skewed participation of Blacks and ensure equity in the agricultural sector.

Generally, there has been a decrease in enrolments in the scarce skills programmes when compared to the previous year, with the exception of Viticulture that has increased. Agricultural Engineering graduates were the least amongst the scarce skills programmes throughout the years since 2004. There has been a steady increase in the BVSc Veterinary Science graduates from 83 graduates in 2004, 87 in 2005, 92 in 2006, 94 in 2007 and 140 in 2008.

6.2 Recommendations

6.2.1 Reducing overproduction of graduates in programmes which are not in demand in the agricultural sector.

From the findings it is evident that some institutions produce many graduates and enroll more students in programmes which are not in demand in the agricultural sector. This overproduction and over enrolment in certain programmes is attributed to the fact that institutions do not have information about market demands and the rate of employment for their graduates. It is also a known fact that graduates in certain programmes and from certain institutions have high employment rates than others. It is therefore necessary to investigate the reasons for these trends. To curb this problem it is crucial that all the institutions should develop systems which will track the employability of their graduates in the various programmes in order to decrease over production of skills which are not in demand in the agricultural sector. Funding formula for Universities should be done in terms of the relevance, type of programmes offered and according to the demand within the agricultural sector.

There are challenges in agriculture and the curricula need to be responsive and aligned to the needs of the agricultural sector, by increasing the supply of graduates in fields of demand. HET institutes need to involve themselves in alumni studies to determine the employability of their graduates and adapt the programmes accordingly.

Career guidance, career awareness at school levels and the marketing of the Higher Education and Training Institutes must include the scarce skills and the programmes which are in demand in the agricultural sector. Senior lectures of Higher Education and Training institutes can be involved at school levels assisting in the training of Agricultural Science subjects, to promote agriculture as a career.

6.2.2 Effective participation of the agricultural sector in agricultural curriculum reviews and development of higher and further education institutions

The National Agricultural Education and Training Forum was established in terms of the Agricultural Education and Training Strategy (2005) and should play a major role in curriculum review meetings of higher education institutions as well as during the development and reviews of the agricultural curriculum for General Education and Training and Further Education and Training bands. This will ensure that agricultural curriculum at all levels of the education system addresses the needs of the agriculture sector.

This study also recommends that DAFF Directorates should play a major role in determining the agricultural curricula, i.e. directly influence the curricula for respective departments at Universities, e.g. Directorate Animal Health should liaise with Animal Health departments at different Universities for them to know what the labour market requires in terms of skills required, e.g. Animal Health Technicians.

6.2.3 Quality benchmarking of same agricultural programmes in all the higher education institutions

The perception that the quality of programmes varies in terms of content from one institution to the other is also a cause for concern. For instance, BSc in Agriculture does not offer the same content in all the institutions offering the programme and admission requirements for the same programme varies. It is therefore necessary that the Department of Agriculture, Forestry and Fisheries in collaboration with the Department of Higher Education and Training investigate the quality of programmes in each institution and to establish quality benchmarks for same programmes in higher education institutions.

Higher Education and Training Institutes which present AET need to review the alignment of the AET curricula at all Higher Education and Training levels to support the development of an effective, harmonised, mobile and articulated AET curriculum.

6.2.4 Encouraging undergraduates to pursue post graduate studies in specialised fields in agriculture to increase a pool of agricultural scientists

From the findings the general trend is that there is an increasing number of entrants into agriculture at undergraduate level. For instance, a high number of Africans are enrolling for agricultural programmes at undergraduate level. However, this is not addressing the needs of the rapidly changing landscape as well as the skills demands in the sector. It is also evident from the findings that there are a limited number of agricultural enrolments and graduates at post graduate level, particularly at Masters and PhD levels. It is therefore recommended that graduates with undergraduate qualifications outside of the identified scarce skills programmes including those with undergraduate qualifications in agricultural economics should pursue higher education programmes and be specialists in Certification fields of agriculture. This will establish a strong scientific research base for the sector.

Higher Education and Training Institutes which present AET need to review the alignment of the AET curricula at all Higher Education and Training levels to support the development of an effective, harmonised, mobile and articulated AET curriculum.

Regular studies to investigate the challenges and needs of the agricultural sector, to adapt the curricula and encourage research into the needs identified.

6.2.5 Marketing agricultural careers to Indians and Coloureds

From the findings there are an insignificant number of Indians and Coloureds graduating in and enrolling for agricultural programmes. It is necessary to target Indian and Coloured dominated schools to market agriculture as a career to Indian and Coloured youth.

6.2.6 Recruiting female learners to register for scarce skills programmes in agriculture

The general trend is that there are a lower number of Black (Coloured, Indian and African) female enrolments and graduates in scarce skills categories. To recruit females into the agricultural scarce skills professions it is important to work in collaboration with the Provincial Departments of Education and to liaise with Female-Learner coordinators to market agricultural scarce skills careers to female learners. Female–Learner Coordinators in the various PDEs can also provide a platform for providing guidance to females in terms of the correct subject combinations at the General Education and Training levels to pursue scarce skills in agriculture.

6.2.7 Increasing the number of Black students enrolling for and graduating in scarce skills programmes in agriculture

Massive career awareness campaigns in schools targeting learners before entry into FET (Grade 10) phase are necessary so that they can choose correct subject combination which are required to pursue studies in agricultural scarce skills earlier in the FET phase. The target group will be learners from the African, Coloured and Indian communities. White females should also be targeted for agricultural engineering and other scarce skills. This will be a collaborative venture with Public Relations Departments of the Universities and managers of girl learner educational programmes from Provinces.

It is necessary that agricultural engineering courses are offered in the agricultural colleges and produce agricultural engineering technicians. This will provide basic skills and knowledge of agricultural engineering for those with Mathematics and Science at Senior Certificate level, but do not meet the admission requirements for a degree in agricultural engineering. The engineering technician qualification obtained from agricultural colleges might provide skills and knowledge required to pursue a Agricultural Engineering Degree at University level, and might also encourage them to pursue Agricultural Engineering Degree at University level. This will then require systems which will allow easy progression and mobility from the agricultural college sector to the University or University of Technology, as well as effective Recognition of Prior Learning (RPL) systems.

6.2.8 Introduction of Veterinary Science studies by another University

Given the failure of University of Pretoria to produce African, Coloured and Asian veterinarians meeting the labour market demand, this study highly recommends that another University should introduce in its agricultural curricula the veterinary science studies. Secondly, a variety in this field of study is highly envisaged as it is impossible for one institution to successfully and sustainably provide the whole country's labour market with enough veterinarians. Moreover, this veterinarian shortage is further aggravated by the fact that a significant number of veterinarians leave the country though brain drain, preferring oversees countries like the United Kingdom.

6.2.9 Partnership between the Department of Agriculture, Forestry and Fisheries, Faculties of Agriculture at HET and Colleges of Agriculture

The Department of Agriculture, Forestry and Fisheries should develop relations with all the faculties of agriculture in Higher Education Institutions whereby the DAFF officials will get a platform to communicate to students the skilled people the agricultural labour market is looking for in terms of relevant skills, knowledge and behavior. Secondly, senior leaders in the agricultural business such as CEOs and other senior managers of private companies should be invited for lectures on an ongoing basis as it is being done by institutions.

An indication will be given as to what exactly should be the focus of the curricula in the institutions of higher learning with regard to AET. This will not only give confidence to the students completing their qualifications, but will ensure that by the time graduates get to the labour market they are ready to take on tasks assigned to them and understand the skills that are currently required in the labour market.

6.2.10 Task team formulation to look at the progression of Black individuals in scarce skills programmes particularly the BVSc Veterinary Science

Factors contributing to Blacks not progressing in the scarce skills need to be investigated, especially considering that during 2004 to 2008 there has not been significant representation of Blacks in these programmes. The skills shortage impact is two fold: firstly, it cripples the economic growth due to poor contribution to the GDP by the agricultural sector and secondly political efforts towards fair distribution of opportunities in the agricultural economic division such as employment equity lag behind as there are relatively very few professionals in these fields of study.

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS

1.	Agricultural Broad Based Black Economic Empowerment	(AgriBee)
2.	Agricultural Education and Training	(AET)
3.	Association of Principals of Agricultural Colleges	(APAC)
4.	Baccularius of Technology	(BTech)
5.	Bachelor of Veterinary Science	(BVSC)
6.	Cape Peninsula University of Technology	(CPUT)
7.	Categorisation of Education Subject Matter	(CESM)
8.	Central University of Technology	(CUT)
9.	Council on Higher Education	(CHE)
10.	Department of Agriculture, Forestry and Fisheries	(DAFF)
	Doctor of Technology	(DTech)
11.	Durban University of Technology	(DUT)
12.	Education, Training and Extension Services	(ETES)
13.	Free State Central University of Technology	(CUT,FS
14.	Further Education and Training	(FET)
15.	Higher Education	(HE)
16.	Higher Education Quality Committee	(HEQC)
17.	Higher Education and Training	(HET)
18.	Land Reform & Agricultural Development	(LRAD)
19.	Magister of Technology	(MTech)
20.	Mangosuthu Technikon	(Mantec)
21.	National Education and Training Forum	(NAETF)
22.	Nelson Mandela Metropolitan University	(NMMU)
23.	National Qualification Framework	(NQF)
24.	Recognition of Prior Learning	(RPL)
25.	Sector Education and Training Authority	(SETA)
26.	Standard Generating Bodies	(SGB)
27.	Tshwane University of Technology	(TUT)
28.	University of South Africa	(UNISA)