ESTABLISHING AND MANAGING A SMALL HERD OF BEEF CATTLE

DIRECTORATE
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1. INTRODUCTION

Beef production is a large and important segment of South African farming. A small herd of beef cattle works well with other agricultural enterprises like grain (in particular), orchard, vegetable, or other crop operations. Cattle can make efficient use of feed resources that have little alternative use, such as crop residue, marginal cropland, and land not suitable for tillage, or land that cannot produce crops other than grass.

For people who own land but work full-time off the farm, a beef enterprise can be the least labour-intensive way to utilise their land. A cattle enterprise can use family or surplus labour. Calving, weaning, vaccinations, castration and weighing can be planned for times when labour is available.

Consider your resources, the land available, and your level of interest; capabilities and more importantly, markets, before deciding to engage in the beef cattle business. Identify why you want to raise cattle and set goals to achieve the most constant economic return or personal satisfaction. Your goals must be clearly defined, firmly fixed, achievable and have a realistic time frame. Otherwise, your operation will lack focus.

2. PRODUCTION OPTIONS

There are few types of small-scale cattle enterprises.

- *Growing and feeding systems* - In these operations, calves or weaners are either raised or purchased and then are fed (fattened for slaughter). Included in this category are operations specialising in producing cattle for home use.
- *Breeding herds* - A breeding herd consists of cows and bulls that are used to produce calves for sale as breeding or feeder animals.
- *Combinations of growing, feeding and breeding herds*.

The success of your operation will depend entirely on adapting a strategy that fits your needs and capabilities.

2.1 Growing and feeding operations

In a weaners (yearlings) operation, weaner calves are acquired after weaning at 10 to 15 months of age. They can be fed out and marketed in less than a year from the time of purchase. Therefore, the investment on each calf is returned within a comparatively short time. This type of operation may not require much land, but adequate facilities are essential so that animals can be kept comfortable and under control.

Some good enterprises are based pasture operations. Weaned calves are purchased in early spring, go on pasture (when the grass is at its best with regard to productivity), and are sold when the pasture season is over. On the other hand, calves cost less during winter; therefore, depending on the cost of winter feed, this may be the best time to purchase cattle for the next pasture season. Purchase price and selling price greatly influence profitability in this enterprise.

2.2 Managing calves

Keep calves in an area that allows you to observe them quite closely for two weeks. This enables you to prevent the spread of disease. Calves should have access to plenty and fresh water and feed. Working the calves requires a lot of patience, as they are easily excited and stressed. Consult a veterinarian for a health programme that lowers the risk of disease for newly received calves.

2.3 Breeding herds

Establishing a breeding herd is a long-term objective. It also requires more land than in a situation where a weaner feeding programme is implemented. Consider how your available resources match your long-term objectives. There must be adequate feed, water and fences to accommodate a year-round operation.

Decide whether to have registered pure-bred cattle or commercial cattle. Income from a commercial beef herd comes mainly from the sale of calves and old or culled animals. Sale of breeding stock is the main source of income from registered cattle. Care and management of registered cattle is more intensive than for commercial cattle.

2.4 Developing a registered herd

If your objective is to raise registered cattle and supply breeding animals to other cattle producers, it may be necessary to make large capital investments in purebred stock. Development of a registered herd means that both the sire and dam must be purebred and registered with the same national breed association on the stud book.

You must keep accurate records and register the desirable purebred calves to be retained for breeding stock.

If you raise bulls for the beef industry, you must develop a selection programme based on characteristics of economic importance, such as fertility, mothering ability, ease of calving, growth rate and carcass merit. Also, use great care in the selection of breeding females, as considerable time and expense are involved. Competition is keen with already-established herds. However, there are successful registered herds with only 20 to 40 cattle.

3. DEVELOPING A COMMERCIAL HERD

The criteria for selection, or selling points, of good commercial cows depend on size, quality, age, condition, stage of pregnancy and market price. You should select breed and cow size to match your feed resources and topography. Local extension officers can give you an idea of what breeds are best suited to your area. Crossbreeding (mating animals from two or more breeds) can be an advantage in a commercial cow herd. Capitalising on the merits of several breeds, plus the extra vigour from crossbred calves, may give you a competitive edge in the market. Remember that advances in genetic merit probably will not be realised for several years.

3.1 Purchasing cattle

There are many sources of good cattle, both registered (stud breeds) and commercial. Usually it's best to purchase from a successful and reputable breeder. They usually sell only sound cattle as breeding animals and they are helpful in giving advice to less experienced producers.

If you are inexperienced, it might be best to buy good, young, crossbred cows that have calved at least once. This reduces problems associated with calving heifers. If you purchase open heifers, you should breed them to a bull that has the traits for easy calving.

4. MANAGING A COW-CALF HERD

The major concern of cattle producers is profit. For a cow-calf herd, profits are determined by the percentage calf crop (the number of calves weaned per cows bred), the weaning weight of the calves, the costs of maintaining breeding animals, and, ultimately, the sale price of the calves. Because your entire programme depends on the fitness of the breeding animals, it is essential to maintain good herd health by not allowing the cattle to become too fat or too thin. Cows do not milk as well and may have problems calving or getting bred if they are overweight or

underweight (refer to Body Score Conditioning in beef cattle). Bulls that are not in good condition may perform poorly during the breeding season.

4.1 Breeding season

It is ideal to have a controlled breeding season, rather than allowing the bull to run with the cows continuously. A month to one and half or even two months breeding season is recommended. The resulting shortened calving season increases the possibility of having a uniform set of calves to sell at market time. Cattle of similar breeding and size usually bring more money. Another advantage is that you can concentrate your work with cows during calving into a short span, instead of having it extended over months.

Cattle have a 283 days gestation period. Select breeding dates so that cows will calve at the time of year you desire. Considerations in determining calving season include weather conditions and the ability to match feed resources with the cows' requirements.

A quality sire is essential to maintain a good, healthy herd. The rule of thumb in terms of bull to cow ratio is 1 bull to 25 cows. The ratio varies, depending on the bull's age and health and the size of pasture. Small herd owners have the following options for obtaining a good-quality bull:

- You can buy a bull in cooperation with another farmer.
- You can lease or borrow a sire from a neighbour.

However, using a bull increases the risk of diseases. Bulls also may pose a safety risk, so treat them with respect.

Another good breeding option is artificial insemination (AI). If you use this method, you should synchronise oestrus in the herd. This process may require the aid of a veterinarian.

The last consideration of the breeding season is pregnancy testing the cows. The test helps determine which cows should be culled from the herd to avoid the costs of wintering a cow that is not pregnant. Veterinarians offer pregnancy testing services.

4.2 Calving

This aspect of beef cattle management requires experience and skill. If you are inexperienced, it is recommended that you contact your veterinarian and/or extension officers for advice on calving management (refer to weaning calves).

One of the simplest ways to add to the value of your calves is to make sure they are well fed, properly castrated, dehorned, vaccinated and clearly identified.

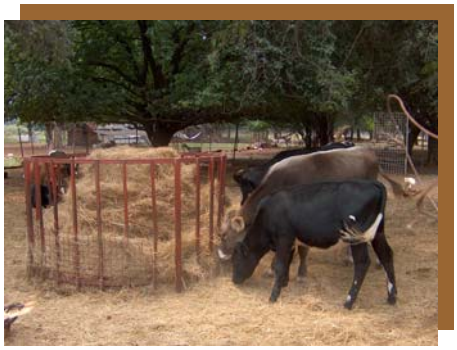
The most important thing to remember when working calves is to stress them as little as possible. You can learn how to castrate, dehorn and give vaccinations under the supervision of an experienced cattle producer or veterinarian.

Keeping performance records

Keeping records enables you to cull poor performers and maintain good overall herd healthy and vigour. Examples of helpful calf records include birth weight, weaning weight, and average daily gain.

5. COMBINATIONS OF BREEDING, GROWING AND FEEDING

Most calves produced in small commercial herds are marketed as weaned calves weighing from 250 to 300 kg. Other options include the following:



- Wean the calves, winter and sell them as yearlings.
- Creep feed calves while the animals are still nursing, put them on full feed after weaning and then sell them as slaughter cattle at 12 to 16 months of age.
- Wean calves, winter them on a growing ration, then graze them during spring and early summer and finish them to slaughter weight at 18 to 24 months of age.

6. FACILITIES AND EQUIPMENTS

Producing beef cattle on a small farm does not require elaborate or expensive housing or facilities. Under a wide range of weather conditions, cattle do very well outside. One method is to allow animals to have access to an open-air pole shelter. In an enclosed building, proper ventilation is important to maintain good health.

Design facilities to make your job easy and safe and to minimise your expenditure on time and labour. An effective working facility consists of a crush pens, a head clamp and a squeeze chute.

The crush pen is needed for vaccinations, deworming, etc. The neck clamp is needed if you must aid a cow with calving. The pens and narrow alley help confine animals that need to be handled and driven into the crush pen or neck clamp.

Well-designed handling facilities help to minimise animal confusion and stress. Poorly designed facilities increase stress on the animals and may cause poor

performance, which can affect meat quality. Use of electric prods is not recommended because they cause animals unnecessary pain and stress.

It is important to maintain the quality of feed. Store forages (including hay, straw, or silage) and grains in a dry building free from rodents. Forages lose nutritional value when exposed to direct sunlight. Wet hay loses feed value and palatability and presents a safety hazard owing to combustion and development of moulds. Rodents can damage feed and spread disease.

Feeders reduce waste and prevent the spread of many internal parasites and other cattle diseases. You can buy many kinds of manufactured feeders. Or, you can build them out of materials on hand.

An adequate, year-round supply of clean, fresh water is basic to any successful cattle operation. Many types of water troughs are available from local feed or farm supply stores. You can recycle old barrels and bathtubs to make functional troughs; be sure to clean them thoroughly prior to use.

Pens, feedlots, and the crush pen should be located at a convenient distance from feed storage facilities. These areas should be well drained, with drainage moving away from feed storage, working facilities and roads. It is important to make these areas accessible to tractors for easy feeding and cleaning.

Proper transportation is a must for your cattle. A 1-ton or 3/4-ton truck and trailer are convenient for any beef operation. A truck also is useful for transporting and dispersing hay.

7. FEEDING BEEF CATTLE

Unlike humans, cattle have a ruminant digestive system. Their stomachs are made up of four parts. Ruminant micro-organisms in the first three parts enable cattle to digest fibrous feeds that single stomach animals cannot. This microbial breakdown produces essential nutrients such as amino acids and B vitamins. The presence of these nutrients makes beef very useful for human consumption.

7.1 Nutritional needs

Cattle require protein, energy, water, fat, minerals and vitamins. The amounts vary according to environment, the cow's age, time of year, and production goals and stages. Availability of feedstuffs also varies by location and season. Up to 75 % of the cost of raising an animal goes to feed under an intensive feeding system.

Protein and carbohydrate levels adequate for growth and maintenance normally are found in high-quality legume hay, such as lucerne and clover. Poor-quality feeds, such as cereal straw, grass straws, or rain-damaged hay, require protein or energy supplements. You can purchase supplements from your feed supplier.

Beef cattle normally do not need vitamin A, B, or E supplementation. They can get these vitamins from normal-quality feedstuffs. However, a vitamin A deficiency can result from feeding dry, bleached-out hay. Symptoms of vitamin A deficiency include watery eyes, rough hair coat, night blindness and poor gains.

Vitamin D is formed by the action of sunlight on animal tissue. If you confine your cattle to a barn or stall for extended periods of time, vitamin D deficiency may become a problem.

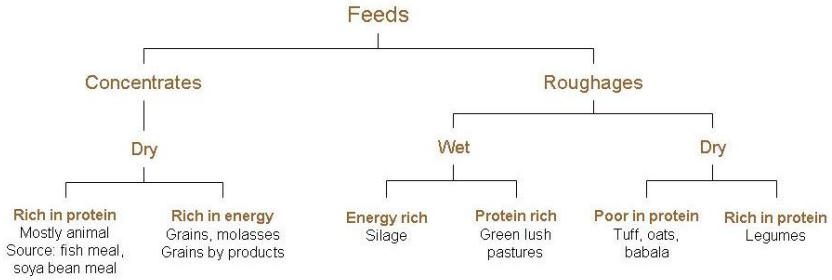
Minerals are inorganic compounds that contribute to bones, teeth, protein and lipid functions of the body. Minerals are provided through natural feeds and supplementation.

There are three main categories of mineral supplements:

- *Salt*, which usually is sold as iodised salt and does not contain other minerals
- *Trace mineralised salt*, which consists of a large percentage of salt and traces of some or all of the following: copper, iron, iodine, cobalt, manganese, selenium, and zinc
- *Mineral mixes*, which usually contain major minerals such as calcium and phosphorus as well as trace minerals and some salt

You can provide supplements as licks or mix them into feed. The composition of needed salt or mineral supplements varies, depending on your locale and feedstuffs. Clean water is essential and must be provided at all times. Under normal conditions, cattle consume 20 to 70 litres of water per day, depending on size, age, and weather. Heat dramatically increases water consumption.

7.2 Types of feedstuffs



Feedstuffs are categorised as concentrates or roughages. Concentrates are high in digestible nutrients. Grains and protein supplements are examples of concentrates.

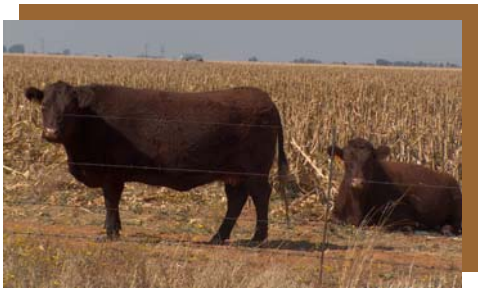
Roughages are feedstuffs that are low in digestible nutrients. Examples of roughages include hay, pasture and silage.

The percentage of roughage and concentrate in beef cattle rations depends on the type of animal being fed. For example, feedlot steers are fed mostly grain and a little roughage, while bred cows may be wintered on good-quality roughage alone. *Caution*: High-quality legume hay such as lucerne may cause bloat (most probably if grazed by hungry animals). As a general rule, beef cattle consume up to 3 kg of feed per day for each 100 kg of body weight. A 300 kg weaned calf, for example, will eat 9 kg of high-quality lucerne hay per day, reaching an average weight of 450kg.

Cattle usually weigh 250 to 300 kg before they are placed on a high-grain (high-energy) ration. This diet is fed until slaughter weight is achieved over a period of 100 days.

If you feed out cattle for slaughter, you can purchase feed or grow and mix it at home. If only a few animals are being finished, it may be more economical to purchase the mixed ration from a feed dealer.

Growth promotants, including implants, may have a place in your operation. They are used widely in the industry and have been proven safe. Ionophores are feed additives that decrease rumen upset, increase feed efficiency and increase daily gains. These chemicals can improve gain significantly; however, they do not compensate for poor management.



8. HEALTH RELATED PROBLEMS

Cattle of all ages, particularly young, growing cattle, are subject to a variety of ailments. They range from mild conditions to severe infectious diseases that may cause death within 24 hours. The cost of caring for sick cattle can seriously reduce your profit margin. With the increasing need to cut production costs, good herd health care is very important for any beef operation. Prevention is the easiest and cheapest method of disease control. Clean sheds, lots, and feed and water troughs could reduce the occurrence of diseases. A sound vaccination programme, parasite control and frequent observation of the herd also help to reduce the occurrence of illness.

You can recognise a sick animal first by its abnormal behaviour or physical appearance. Droopy ears, loss of appetite, head down, scouring (diarrhoea), or inactivity may indicate illness. A high temperature usually indicates disease.

The best course of action is to find a sick animal quickly, treat it and then work to eliminate the cause of the sickness. If one or two animals come down with a

disease, the rest of the herd has been or will be exposed to it. Health problems are more frequent during and after periods of stress, including calving, weaning, shipping, working or moving the cattle and extreme weather conditions. Stress can reduce an animal's ability to resist infectious agents. After a period of stress, give extra attention to your animals' health.

9. COMMON CATTLE DISEASES

The following are five of the more common health problems that beef producers encounter. You also need to be aware of other diseases that affect the health of livestock in your region.

9.1 Respiratory diseases

Respiratory diseases are frequent in cattle. A number of factors contribute to an outbreak: inadequate nutrition, stress and viral or bacterial infection. Good management and vaccination of cows and calves is the best way to prevent outbreaks of respiratory disease. Your veterinarian can help you develop a programme to reduce losses on your ranch and in the feedlot.

9.2 Brucellosis

Brucellosis is a serious disease. It causes abortion and sterility in cattle. Under South African Animal Health Acts, they effectively outline brucellosis as a notifiable disease. Vaccination is required for all heifers. Brucellosis most commonly enters a herd through the purchase of infected cattle. To help prevent brucellosis from entering your herd, vaccinate all heifers between the ages 4 to 10 months and purchase only brucellosis-vaccinated cattle.

9.3 External parasites

External parasites include horn flies, face flies, stable flies, ticks and lice. The largest health problem comes from the additional stress these insects cause to animals. When infested, cattle spend more time in the shade and do not graze, which leads to poor performance. You can reduce these problems by using fly-repellent ear tags or another parasite control treatment. Eliminating the areas where pests reproduce also helps to reduce the severity of external parasites. Pour-ons and dips are effective in treating animals infested by ticks.

9.4 Internal parasites

Internal parasites such as roundworms, lungworms and liver flukes commonly occur in cattle. These hidden parasites cause poor performance and occasionally kill young animals. Cattle are likely to pick up internal parasites when they graze on

established pastures. Internal parasites also can be a big problem in confined areas.

Invasion of the stomach or intestinal wall by a parasite leads to poor digestion of nutrients and damage to organs. Signs of parasitic infestation include scouring, rough hair coat, poor gains and a potbelly appearance.

Use dewormers at strategic times during the year to reduce the numbers of internal parasites. Use faecal sampling to determine the severity of the infestation and the type of dewormer that will be effective.

10. DISEASES CONTROL

Vaccinations and parasite controls are available for many of the diseases affecting cattle. The choice of remedy and time of application depend on a variety of things, including the animals' nutritional level, disease prevalence in the herd and the region in which the cattle are located. A local veterinarian should be consulted for a vaccination programme according to the conditions existing in that area.

11. MARKETING

It may not be easy to determine how and where to market your animals. The choice of market outlet depends on the class and grade of the cattle. Therefore, the method of marketing usually is different for fed cattle, feeder, or purebred cattle.

There are many different methods of marketing cattle, but most livestock are marketed through one of three channels: auction, carcass grade and informal market (ceremonies, funerals and rituals) basis. The informal and auction markets are for both fed (feedlots) and feeder (farmers) cattle, while the carcass grade and weight basis is primarily for fed cattle.

11.1 Informal markets

Direct selling, or farm selling, refers to sales of livestock directly to consumers, local dealers, or farmers without the use of agents or brokers. This market pays good money to farmers for older animals, where consumers slaughter for festivities (funerals, weddings and other ceremonies). The sale usually takes place on the farm, or some other non-market buying station or collection yard. This method does not involve a recognised market. Sellers who participate in direct-marketing should be aware of possible regulations regarding Animal Welfare.

11.2 Niche markets

A producer often can develop a local or regional market for certain cuts of beef or specialty beef products. If this interests you, check into meat handling requirements, inspections and permits that may be necessary. This type of marketing usually takes time to develop and also may require a consistent seasonal or yearly supply. Leather craft artifacts are one of the possibilities for the tourism markets which need to be exploited fully.

11.3 Auction markets

Livestock auctions or sales barns are trading centres where animals are sold by public bidding to the buyer who offers the highest price per hundred weight or per head. Auctions may be owned by individuals, partnerships, corporations, or cooperative associations.

12. GRADES OF BEEF

Carcass beef sold to wholesale and retail outlets usually is graded to determine the quality and price. There are two categories of grades for beef: yield grade and quality grade in South Africa.

The system is especially designed to make the purchase of red meat basic for customers. The main characteristics used to classify beef carcasses are the age of the animal and the fatness of the carcass.

The age of an animal is determined by the number of permanent incisor teeth; the more permanent incisors, the older the animal. The age of an animal is an indication of the tenderness of the meat — the meat of a younger animal is more tender than that of an older animal. The age classes are known as

A = meaning the youngest animals;
AB = older animals
B = even older animals; and
C = the oldest animals

The fatness classes are known as class zero (no fat) to class 6 (excessively over-fat). The rollermark on a carcass includes the age class (AAA, ABAB, BBB or CCC) and the fatness class (000, 111, 222, 333, 444, 555 or 666). When referring to a class of carcass, both the age class and fatness class are said, written, read or supposed to be listed to e.g. A1, AB2, C3 etc.

Each abattoir has a specific identity code which also appears in the rollermark. Consumers can therefore read in a rollermark on a carcass its class relating to

carcass and eating quality characteristics and also be assured that the carcass originated from an approved abattoir and has passed a health inspection.

13. BUDGETS AND FINANCIAL RECORDS

Standard ranch records cover all production and financial management aspects of a beef operation. Use records to evaluate your business in terms of efficient use of resources and productivity. Records are important for ranch planning, tax reporting and applying for credit.

13.1 Budgets

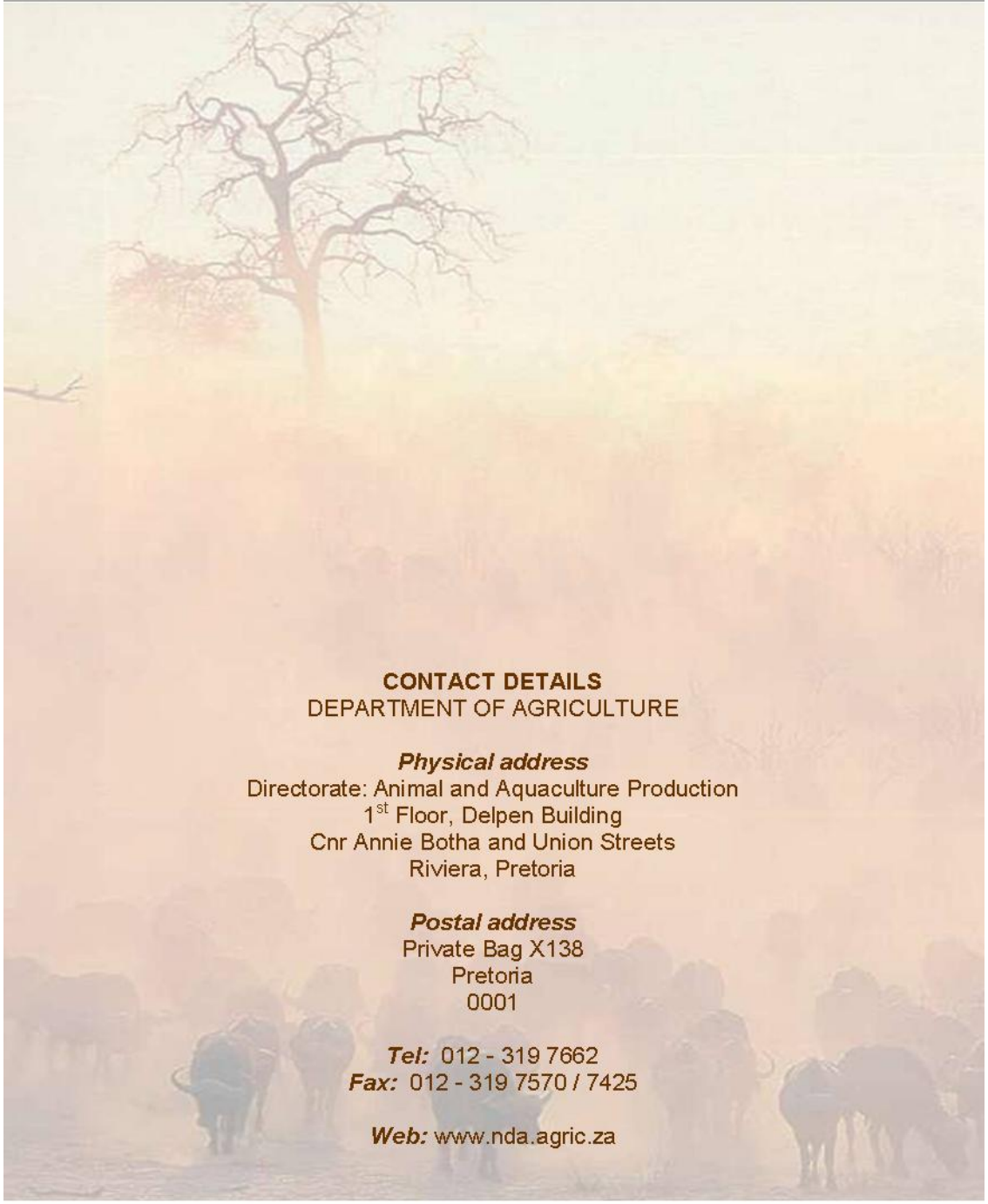
Decisions are only as good as the information on which they are based. Budgets provide the information for making ranch management decisions and are constructed to estimate the outcomes of future activities. Budgeting allows you to anticipate problems that you may encounter and to alleviate or avoid them.

13.2 Financial records

The way ranchers keep financial records varies, but the key is to use a system that provides the information you need to meet your responsibilities. The minimum set of financial records should include a balance sheet, a statement of cash flow and an income statement.

There are several ways to keep accurate records. Hand-kept records are inexpensive and easy to store. On the other hand, this method may be slow and subject to errors. Retrieving information may be time consuming if extensive records are kept.

Computerised record systems are available, from basic cheque book balancing systems to sophisticated, double-entry accrual programmes. Computerised systems for production records also are available in a range of features and reporting capabilities. Advantages include easy retrieval of information and reduced chances of mathematical errors. However, entering information takes time, and entries must be posted properly. If you choose a computer system, it should meet the requirements and objectives of your individual operation.



CONTACT DETAILS
DEPARTMENT OF AGRICULTURE

Physical address
Directorate: Animal and Aquaculture Production
1st Floor, Delpen Building
Cnr Annie Botha and Union Streets
Riviera, Pretoria

Postal address
Private Bag X138
Pretoria
0001

Tel: 012 - 319 7662
Fax: 012 - 319 7570 / 7425

Web: www.nda.agric.za