

DAIRY CATTLE MANAGEMENT

A well established and managed dairy farming enterprise can be a highly profitable undertaking. When starting a dairy farm, consider the following issues:



Animal Breeds

The common breeds found in African dairy farms are the exotic Ayshire, Holstein/Fresian, Jersey, Guernsey, indigenous Zebu, Boran, Ankole, Fulani and crosses between the exotic and indigenous breeds.

- The pure exotic breeds are high milk producers e.g. Fresian can give 4300kg per lactation, so many farmers might want to keep these ones. However, the pure exotic breeds have some disadvantages, e.g.
 - Exotic breeds usually consume a lot, thus can be expensive to maintain.
 - Exotic breeds have low tolerance to tropical diseases.
- Indigenous breeds are low milk producers, e.g. zebu can give 880 kg per lactation thus income from milk sales is less than from exotic breeds. However indigenous breeds have some advantages, e.g.
 - They are low feed consumers, thus will cost less to main.
 - Indigenous breeds are better adapted to local environments and have higher tolerance to tropical bovine diseases.
- The crossbreeds, which combine the best traits from both exotic and indigenous breeds perform well in the tropics. They can give 1800kg per lactation.

Feeds

Before embarking on a dairy farming enterprise it is important to find out the type of feeds available affordably in your area. Types of feeds can be divided into:

- **Forages:** these include Napier grass, hay, grass, maize (Stover and residues) plants, and banana pseudo stems. Fodder legumes like leucaene (*Leucaena leucocephala*), calliandra (*Calliandra calothyrsus*), sesbania (*Sesbania sesban*)

and gliricidia (*Gliricidia sepium*). Different types of forages have different nutritional value to the animal. It is therefore necessary to mix or change between forages over time. Forages can be easily grown in your farm (if space is available) or purchased from neighboring farms. Although forages are relatively cheaper to buy than other types of feeds, a commercial dairy enterprise should endeavor to produce at least a proportion of the required forages.

- **Concentrates:** these include wheat bran, maize germ, dairy meal, and pollard or maize bran. These types of feeds cannot be produced on small or medium scale farms, as they require large capital investments. However, in almost all areas where dairy farming is suitable there are industries that specialize in producing and selling these types of feeds. Concentrates are usually used in small quantities, unlike forages.
- **Other byproducts:** e.g. cotton seed cake, fishmeal, molasses, brewer's waste and poultry waste. These are usually by products of other industrial or farm enterprises, but are rich in nutrients that increase productivity of dairy animals. Their availability depends on distance between the dairy farm and the industry producing the byproduct, ease of transport, and competition for the same products with other farms in the area.
- **Feed additives:** e.g. minerals and vitamins, livestock salts, buffers, enzymes, probiotics yeast and urea. These also have to be purchased and are an essential component of costs in a dairy enterprise. For example, the enzymes cellulase and xylanase increase fiber digestibility by reducing fiber and Dry Matter intake; probiotics (bacterial direct-fed microbes) produce metabolic compounds that destroy undesirable organisms, provide enzymes that improve nutrient availability, or detoxify harmful metabolites. Sodium Bicarbonate/Sodium Sesquicarbonate (Buffer) increases dry matter intake and stabilizes rumen pH.

Feeding

Productivity of dairy animals is to a large extent dependent on how well it is fed. Dairy animals are highly sensitive to changes in feeding regimes, and production can fall dramatically with small variations on a day-to-day basis. A good farmer should set a good feeding schedule and as much as possible adhere to it. Feeding can be affected by cyclical weather effects on availability and quality of forages and even quality of concentrates or additives varying with manufacturer.

Dairy Cow Nutrition

- Nutrient requirements vary with the stage of lactation and gestation.
- The early lactation phase is the period from 0 to 70 days after calving. Milk production increases rapidly during this period, peaking at 6 to 8 weeks after calving. Increasing concentrates by about 0.5 kg per day after calving will increase nutrient intake while minimizing off-feed problems, e.g. lack of appetite and acidosis (rumen acids increase which stops normal function and digestion). Feed intake can be increased and rumination stimulated by chopping the forage to small pieces. Chopped forages are better consumed so that cows increase milk production, and also reduces forage wastage.
- Peak period is between 70 to 140 days after calving. Cows should be maintained at peak production as long as possible. Forage quality should be high with intakes of at least 1.5 percent of the cow's body weight (Dry Matter basis) per day to maintain rumen function and normal fat test.

- Mid- and late lactation is 140 to 305 days after calving. This phase will be the easiest to manage in a dairy animals cycle. During this phase milk production is declining, the cow is incalf (pregnant), and nutrient intake will easily meet or exceed requirements. Concentrate feeding should be at a level to meet milk production requirements and begin to replace body weight lost during early lactation.
- Dry period (when milk production stops) commences and ends 60 to 14 days before calving. A most important requirement in this period is to meet calcium and phosphorus needs, but avoiding excesses. Calcium intakes of 60 to 80 grams and phosphorus intakes of 30 to 40 grams are sufficient for most cows. Dry cow feeding should not have above 0.6 % calcium and 0.4 % phosphorus (dry matter basis), as this can substantially increase milk fever problems.
- Adequate amounts of vitamin A, D, and E should be provided in rations to improve calf survival, reduce placenta retention and milk fever problems (see cow diseases and disorders below).
- Trace minerals, including selenium should be adequately supplemented in dry cow diets from livestock salts and feed additives.
- The transition or close-up period is 14 days before calving.

Calf Nutrition

- Calves should be fed on colostrum (first milk from a cow that has calved down) as soon after birth as possible (within 30 minutes and certainly within 4 hours) so as to protect the new calf against diseases.
- Commercial Colostrum supplements can also be given when colostrum is not available e.g. if cow dies during calving or quality is poor e.g. if cow is too sick and is being treated with drugs that can affect the newborn calf if they are taken in through the colostrum. These supplements contain bovine immunoglobulin and are prepared from cheese whey or colostrum from immunized cows. Milk or milk replacer should be fed by open pail method and calves are fed twice daily. For example, a 50 kg calf can be fed 2 kg of milk in the morning and 2 kg of milk in the afternoon.
- Weaning of calves from milk should be between 4 and 8 weeks after birth. Abrupt weaning is good as it usually stimulates dry feed consumption.

Problems likely to be encountered

Calf scours is diarrhea usually associated with incorrect milk feeding. However, scours can also develop as a result of several conditions. To minimize scours, the following should be avoided:

- **Overcrowding.** Provide about 20 – 24 square feet of building floor space for calves raised in confined, elevated stalls.
- **Inadequate ventilation.** Provide fresh air circulation in the calf pen but avoid direct drafts on the calf.
- **Wet, damp calves.** Provide adequate bedding and good ventilation, and avoid spraying calves with water when cleaning the pen to prevent calves becoming chilled.

- **Overfeeding.** Irregular amounts and too much of the wrong concentration or wrong kind of liquid diets are common causes of calf scours.
- **No first-milk colostrums.** Don't assume the newborn calf has nursed. Many newborn calves don't receive enough colostrum to be protected from calfhood diseases. Feed colostrum, preferably by hand, as soon as possible after birth
- **Dirty utensils.** Clean the feeding utensils thoroughly after each feeding. Store upside down to drain all water out. Small amounts of excess wash water that remains in utensils are perfect areas for bacteria to multiply rapidly.

Heifer Nutrition

In a dairy farm enterprise the greater interest is in the female calves, but male calves are also born. The farmer can decide to sell off the male calves while they are young or raise them and sell when bigger. However, keeping and maintaining them will cost money for feeds, drugs, labor and they will take space. For the retained female calves they have to be reared into heifers. The following feeding program should be followed:

Rearing the calf from 12 weeks to 1 year. During this period in life, all available type of forage and limited concentrates can be fed. Calves must have access to clean, fresh water. During this stage avoid overfeeding concentrates and allowing calves to become fat. Over-conditioned heifers produce less milk in later life than those reared on a more moderate level of nutrition. The key period in mammary gland development is between 3 and 9 months of age. During this period, mammary tissue is growing 3.5 times faster than body tissue.

Feeding program for heifers 1 to 2 years of age (to 2 months before calving). If good quality forage is available, this may be the only feed required for heifers over 1 year of age. Trace mineral salt and a calcium-phosphorus supplement are recommended on a free-choice basis. Heifers deficient in energy, phosphorus, or vitamin A will not exhibit estrus (heat). First estrus in heifers depends on a combination of size and weight. A general guideline is heifers will show their first estrus at 40 percent of their mature weight, which should be before 12 months of age.

Dairy Cow Diseases and Disorders

Dairy cows are vulnerable to infection and various types of disorders. Therefore every farmer must continuously monitor the animals to detect and address any problems early. Although many problems can be avoided by careful management or dealt with on the farm, every dairy farmer should always know a veterinary doctor who can quickly be called to attend to the more serious problems. Some of the common problems are highlighted below:

- **Acidosis** – (acute indigestion, engorgement toxemia): The rumen may develop an acid condition (pH of 4.0 to 4.5) that impairs rumen function and digestion. Avoid accidental access or rapid changes to a high-energy feed, such as grain mixture, or too much high moisture corn. Early diagnosis and treatment are very important in severe cases to maintain life of animals.
- **Bloat** - this is caused by an excessive accumulation of gases in the rumen. Severe bloat can occur after feeding on legume pastures. Breathing becomes labored and excessive salivation is common. The left side of the cow usually

balloons. It is advisable to feed cows on dry hay before permitting grazing, or give cows suitable bloat preventing drugs.

- **Foot rot** – this is caused by a break in the skin or hoof, usually between the toes, allowing bacteria to enter. Symptoms are a rapid, progressive lameness; swollen foot; and a characteristic foul odor. Infection often gets into joints, spreads up the leg, and may kill the cow. To avoid this problem, yards should be cleaned of any materials that might cause a break in the skin or hoof. Soft, non-callused feet are highly susceptible to injury. Small stones lodging between the toes can also be a problem. Animals should be provided with the recommended iodine and zinc levels. Use a footbath with copper sulfate (2%).
- **Grass tetany** (hypomagnesemia) – this is likely to be observed in cows grazing on lush grass pasture that is high in nitrogen, resulting in low absorption of magnesium. Cows will suddenly develop tetany, walk with a stiff gait, fall, go into convulsions, and die. Cattle grazing on grass fields fertilized heavily with nitrogen should be carefully monitored and supplemented with 60gm of magnesium oxide daily during this period.
- **Hardware disease**- this results from a puncturing of the reticulum if a cow swallows a sharp object. The animal will have a sudden lack of appetite, a reluctance to move, and a careful gait. Respiration is frequently rapid, pulse rate is fast, and rectal temperature is 40°C or higher. Give magnets to cows when a herd problem exists.
- **Mastitis** – this is infection of the mammary gland caused by any one of several bacterial organisms. Symptoms vary with degree of inflammation. Acute cases show a swollen and painful udder and frequently cause the cow to lose appetite. Chronic cases of mastitis have slightly swollen udder quarters and small flakes in milk. No feed is known to cause or cure mastitis. However, a sudden addition of nutrients to the feeds provided might result in a marked increase in production and cause more stress. This, in turn, might cause subclinical (below level of detection) cases of mastitis. For prevention of mastitis, consult a veterinarian. Feeding recommended levels of selenium and vitamin E may be helpful.
- **Milk fever** (parturient paresis) - this condition occurs at calving and is caused by a sudden shortage of blood calcium. First sign is staggering, followed by difficulty in rising, and finally falling down and being unable to rise. Cows are usually down with head turned back towards the flank. Delayed treatment results in death of cow or slow response to treatment. This problem can be minimized by feeding low calcium (less than 100 g) and phosphorus (30 to 40 g) ration during the dry period. Cows that are prone to milk fever should be fed on a specific calcium deficient ration 10 to 14 days before calving, or add anionic salts to the ration. **Anionic Salts** cause the diet to be more acidic, increasing blood calcium levels by stimulating calcium to move from the bones and increase calcium absorption from the small intestine to the blood and body.
- **Moldy feed toxicity** (aflatoxins) - The fungus, *Aspergillus flavus*, and certain other molds, may produce toxic substances when feed grains are stored under high moisture and poor ventilation conditions. Cows fed on such feed develop fatty liver degeneration, large adrenal glands and oversized bile ducts. They reduce feed intake, reduce milk production, and may have a poor reproductive performance. Death in adult animals is rare. Feeds suspected to be contaminated should be tested in a laboratory.
- **Poisonous plants** - Several hundred plants are known to be toxic to livestock under certain conditions. Bracken fern, algae, and nightshade are common

poisonous plants. Cattle will eat whatever is available when feed is scarce, and consuming enough of a toxic plant can have toxic or fatal effects. Fortunately, cattle that consume adequate amounts of other feeds will seldom eat enough of a poisonous plant to do any harm.

- **Udder edema** - Edema is an excessive accumulation of fluid in the udder under the skin. This condition usually occurs at calving and is more severe in first lactation cows. Prevention is by limiting access to either sodium or potassium salts during the dry period. Also avoid excess grain. Treatment includes stimulating circulation by massaging the udder. Diuretics (drugs that promote the formation of urine) should be used with care and direction of a veterinarian.
- **Urea toxicity** (ammonia toxicity) - Too much urea at one time or insufficient carbohydrate intake results in excessive ammonia in the rumen. Animals show uneasiness, muscle and skin tremors, excessive salivation, labored breathing, incoordination, and bloat. Animal urinates excessively. No more than 0.2 kg of urea should be fed per cow per day.

This information is available packaged as a brochure with colour images. Contact us for various types of training materials on dairy farming.

Any comments or questions on this article?

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