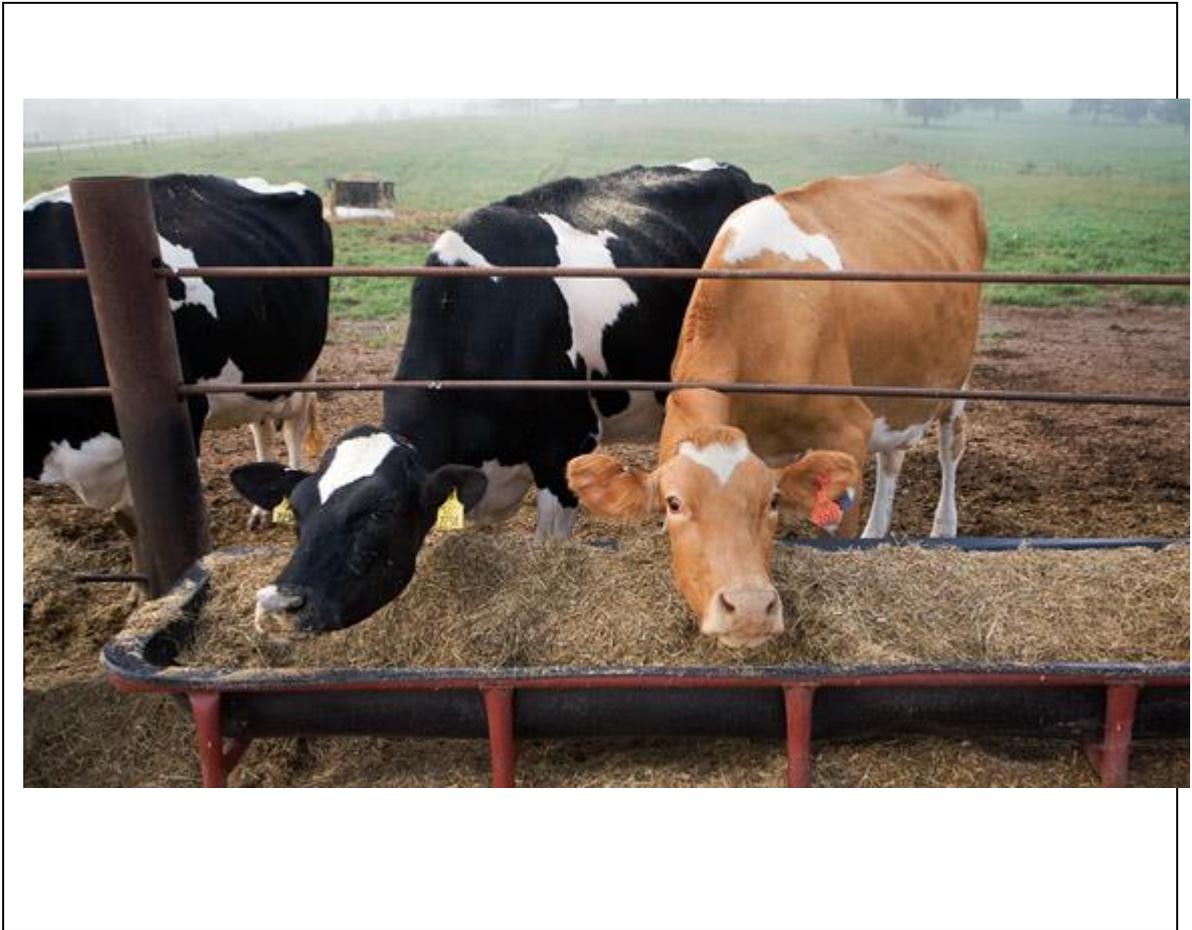




SWAZILAND DAIRY BORD
(Established in terms of the Dairy Act 28/1968)
**OPERATING AS SWAZILAND DAIRY DEVELOPMENT BOARD
TO PROVIDE DEVELOPMENTAL AND REGULATORY SERVICES
TO THE DAIRY INDUSTRY**



DAIRY BREEDS AND FEEDING



1. Common Dairy Breeds in the World

a) Ayrshire

The first cows of this breed were thought to have arrived in New England from Scotland's County Ayr in the early 1820's. Well adapted to rocky farms and harsh winters, the Ayrshires thrived, eventually spreading to dairy farms all across the country. Average output is 7,711kg of milk per 305 day-cycle/year, with 3.9% butterfat, 3.3% total protein.



b) Brown Swiss

Believed to have originated in the Alps of Switzerland, these hardy animals are tolerant of harsh climate and produce large quantities of milk, close behind the Holsteins. Officially recognized as a breed in the U.S. in 1906, the first small group of cows arrived here in 1869. Though few animals were actually imported, this hasn't stopped their steady growth in number, and today, the Brown Swiss are very important members of the dairy industry. Average output is 9525kg of milk per cycle with 4.0% butterfat, 3.5% total protein.



c) Guernsey

As their name suggests, these cows hail from the British Isle of Guernsey in the English Channel. Well-bred by monks from select French Norman/Breton cattle lines (Alderneys from Normandy, Froment du Leons from Brittany), the first to arrive in the U.S. were brought by ship in 1840. Guernseys are small, about three-fifths the size of a Holstein, but produce up to 6,350kg milk with 4.5% butterfat, 3.5% total protein each cycle.



d) Holstein-Friesian

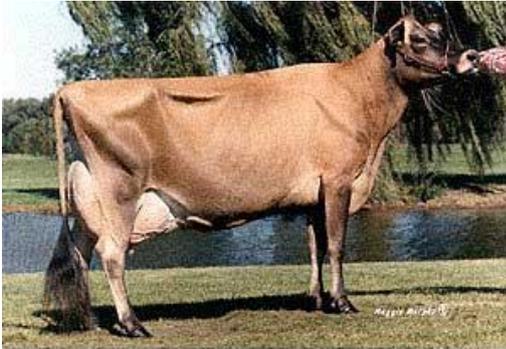
Originally bred in Northern Germany, and the North Holland/Friesland regions of the Netherlands. These familiar black and white cows were selectively bred to make large quantities of milk from the area's most abundant natural food source- grass. First brought to the U.S. in the late 1850's, their ready adaptability, and economic production of large volumes of milk relative to other cows has made them common on dairies worldwide. Figures for average milk output range up to 12,700kg per cycle, with 2.5-3.6% butterfat, 3.2% total protein.



e) Jersey

Developed on Britain's Isle of Jersey, close to the Isle of Guernsey just off the coast of France. With a history as a pure breed that dates back several hundred years, they are descendants of stock from the French region of Normandy.

The 1850's saw the arrival of the first Jersey's in the U.S. Like the Guernsey, they, too, are small, but produce relatively large amounts of milk- on average, 7,260kg per cycle, with a high butterfat content of 4.9%, total protein 3.7%.



provided by Hoard's Dairyman

f) Milking Shorthorn

Part of the Shorthorn cattle breed originally developed for beef in Britain, descendants of these moderate producers were bred and selected for milk rather than meat. Arriving in the U.S. in 1783, the first multi-purpose Milking Shorthorns provided the early settlers with not only milk, but meat and pulling power as well. A typical cow produces 6,990kg of milk per cycle with a butterfat content of 3.8%, total protein 3.3%.



2. Definition of Dairy Cattle Feeding

This is the intake of nutrients to satisfy body needs.
The animal can be satisfied in terms of quantity, quality and consistency.
The definition is deemed incomplete without the inclusion of water.

a) Why plan feeding in dairy

1. To maintain feeding level throughout the year.
2. To maximize dairy productivity through proper feeding.
3. To be able to calculate feed required in the dairy over a specified period.

4. To minimize disease occurrence in the dairy as a result of poor feeding management.

b) Determinants for planning feeding in dairy

- I. Know the actual size of grazing area if there is a provision of pasture.
- II. Be knowledgeable about the weight of the animals.
- III. Know the dairy intake of roughage of the animals.
- IV. Be well versed about the nutritional content in the feed you plan to provide.

c) Daily feed intake of dairy cows

- Theory states that an average intake of dairy cows is 2.5% of its body mass
- Intake varies with the age of the cow, productive stage and gender.
- Dry non-pregnant cows can eat up to 2.5 but highly productive lactating cows can eat up to 3% of its body mass.
- To avoid underestimating feeding we normally say a cow eats up to 3% of its body mass.
- Once the cow has taken the feed it needs it will lie down or stand and start regurgitating.

d) Nutrients required in the feed

Carbohydrates (CHO)

- These are energy source. They are responsible upon digestion to provide energy to the cow.
- The energy produced enables the cow to do all fundamental processes in its body.
- Their source: grass fresh or dry - ground maize -
Maize stalks.

Symptoms of carbohydrates deficiency

1. silent heat
2. Liability to ketosis.
3. Impaired resistance to uterine and udder infection.
4. Anorexia

Proteins (CHON)

- These are growth boosters.
- They are responsible for growth, productivity, hormonal production and speeding other essential activities in the cow.
- Source: beans stover, ground nut stover, lucerne. Lucerne, soya beans, dairy meal, fish meal, bone meal, desmodium and sunflower cake.

Symptoms of proteins deficiency

1. Lack of appetite.
2. Slow or failure to show estrus signs.
3. Less milk production.

4. Delayed sexual maturity.

Vitamins

- They are mainly for immune boosting and immune and facilitating other physiological processes.
- They are categorized as water soluble and fat soluble.
- Water soluble B (made in the rumen), and C (made by the cow in its body).
- Fat soluble: a,d,e,k. these are all obtainable in green herbage.

Minerals

1. **Sodium Chloride:** Lactating cow often require additional salt as milk contains high amounts of sodium.
2. **Calcium:** Must be added to the diets of lactating cows. Milk fever can occur when calcium levels in the blood drop.
3. **Phosphorus:** Deficiency may occur with cows grazing on range lands if the forage is deficient in this

e) Feeding lactating cows

These are milking cows. The lactation period is 305 days. During this time the animal draws more from its body and feed to produce milk needed by the farmer.

As Calving Process

2 weeks or more out:

- @ Udder fills out, "makes a bag." Can be even more gradual in first-calf heifers;
- @ Vulva will noticeably relax and enlarge, "springing";
- @ Cervical or mucous plug may dislodge and be excreted.

12 to 24 hours out:

- @ Pelvic ligaments will relax, resulting in "lank" appearance around tail and pins.
- 12 hours out:
 - @ Possible behavioral changes; trying to isolate herself, not coming to feed, etc.

1. Early lactation (Day 1 to day 100)

- The cow does not have appetite.
- The animal still smell blood from after births.
- The rumen of the cow is still regaining its normal size.

How to feed Day 1-day 3 (cow)

Feed concentrates that have high nutrient e.g. dairy meal.

Do not feed poor quality feed during this period e.g. maize brane?

Enough clean water should be provided about 10 meters from the birth site.

Day 1 to day 3 (calf)

Make sure the calf get colostrums its dam within 6 hours from calving.

If calf cannot suckle on its own, try to help it.

Milk the cow after the calf has suckle to empty the udder (mastitis prevention)

f) Making artificial colostrums

It can happen that a cow dies immediately after calving before the calf gets colostrums. So one has to formulate artificial colostrum and make it available to the calf.

Formula =1 litre warm fresh milk

3 fresh eggs (preferable from indigenous chickens)

2ml caster oil

Mix the above and give the calf one liter in the morning one litre in the Afternoon for three days.

From day 3 to day 42

This is the period when the cow starts producing milk that can be supplied to the market. Milk production starts to increase gradually daily because the animal secretary cells are becoming more active. This is accompanied by high feed and water intake. During this period the cow should start showing signs of heat, first at 21 days post calving (don't breed) and 42 days post calving (can breed).

Try to provide high feed good in proteins and roughage.

Proteins stimulate milk production.

Roughage provides energy to keep the cow actively producing milk.

Mineral leaks should available too.

Note a properly established pasture provides all of the above.

During the winter season pastures cannot supply enough to meet cow demand so

Provide hay bales= Rhodes grass, tuff grass, guinea grass or any other nutritious grass.

Protein source = lucerne hay, beans stover, groundnut stover, cowpeas stover, brewers bran.

Mineral leak= purchase mineral block.

*Mixing ratio = roughage 60% to 75%.
Proteins 20% - 35%
Minerals and vit 5%*

Day 42 to day 250

This period the cows maintains its highest production level called the peak of lactation. Feeding is the same as in day 3 to day 42. The ingested feed starts to splits to support more function in the cow's body; to maintain its body, to provide for its activities, to provide for growing embryo and to produce milk. Milk production level is maintained during this period. Cows producing milk above 15 litres should be supplemented with dairy meal during or immediately after milking. In every 3 liter produced after 15 litres give a bonus of 1 kg dairy meal.

Example= 15 litre production = no bonus

16 -18 litres production = 1 kg dairy meal bonus

18 – 21 litres production = 2 kg dairy meal bonus

21-24 litres production = 3 kg dairy meal bonus

Day 251 to day 305

The calf in the cow is complete in this period, it then start growing in size. This causes the cow to divert more feed to support the growing foetus hence milk production starts to decrease gradually until day 305 when it is recommended that you stop milking the cow (drying it). The stomach of the cow is pressed forward and downwards by the growing foetus causing a decrease in feed consumption.

How to feed

Try to provide highly digested feedstuffs, e.g. fresh grass or hay mixed with molasses.

Protein level should be maintained to support the demand of the growing foetus.

g) Feeding Dry Cows

This is the group of cows that are no longer milked because they are at most two months before calving. These cows are always isolated from the milking herd because they are fed differently. The foetus is then complete and big in size, pressing against the stomach of the cow.

How to feed

- i. Decrease the plane of concentrate feeding.
- ii. Avoid calcium diet.
- iii. If the animal was thin please increase the plane of feeding until you can only see the two last ribs of the cow.
- iv. The rate of concentrate supplementation should decrease in these animals to decrease feeding costs.
- v. Avoid mixing the cow with milking herd.

Note. Bulls are fed similar to dry cows with the exception of a calcium free diet.