

CHAPTER 10 ~ DROUGHT MANAGEMENT ON PASTURE

INTRODUCTION

Many of our Maritime soils are susceptible to drought conditions. How producers manage drought events can have a significant impact on the profitability of their farm. The major impact of drought is a reduction of forage yields and pasture regrowth. Improperly handled, the impact of drought can be far reaching. Poor animal body condition resulting from reduced forage quality and feed availability can reduce animal fertility. Poor animal body condition in the fall can increase winter feeding costs, reduce conception rates, decrease milk production, and depress immune function – all resulting in decreased weaning weights and longer calving or lambing intervals.

Strategies for maintaining healthy pastures also allow for dealing with pasture drought as a healthy pasture will withstand drought better than a pasture in poor condition. In the long term, a planned grazing system, which includes drought management strategies, should be developed to adapt to flexible management under a variety of conditions. Producers should review drought management strategies for their farms each spring to prepare for possible drought events. A well thought out plan involving reducing stocking rates or early livestock weaning and sale can provide significant savings and reduce stress on the livestock, pasture and producer.

Other factors will also reduce the effect of a drought on an operation. For example, stockpile extra forage. In a normal year, aim to have 1.5 years worth of forage stored in the fall. This practice of banking forage for lean years has been practiced for hundreds of years in farming and has particular relevance for drought. The type of livestock raised will also have an impact. Simply put, big cows eat more. A 680 kg. (1500 lb) cow will eat 17% more feed than a 570 kg. (1250 lb) cow. Optimally, producers should aim to raise cows that are economical to keep and raise a big calf. A minimum target for beef producers is weaning 50% of cow weight.

A drought management plan not only involves pastures and livestock but should also incorporate finances and people. Key factors to the financial section of a drought management plan include working toward a better equity position, involving your banker and planning for the leaner times the year after you liquidate. A plan should be in place to aid in your decision to destock – which animals, at what time and where. Producers should accept drought as a normal part of farming and reduce their stress by sharing their concerns and burdens.

This chapter will provide information on techniques to plan for drought events and to mitigate the impact of those events on your farm. Information is provided on:

- Managing Forages Under Drought
- Management Tips for Beef Producers During Drought and Feed Shortages
- Making an Informed Decision on Creep Feeding
- Reducing stocking rates
- Supplemental Feeding Strategies
- Body Condition Scoring

MANAGING FORAGES UNDER DROUGHT

Grazing Management

Many of our grasses are weakened by drought through the lack of plant growth and the low level of stored carbohydrates in the root system. Under dry conditions it is important not to graze pastures too short. Close continuous grazing under drought conditions reduces root biomass leaving plants even more susceptible. Leaving 3 to 5 cm (2 inches) of stubble helps shade the soil reducing evaporation losses and will aid in the recovery of plant growth once rain returns (Thomas 2008).

Grazing Hayland

Care must be taken when grazing hayland. Overgrazing can cause serious long-term damage to red clover, alfalfa, timothy, and other species. Block grazing or strip grazing using temporary electric fencing will help control grazing, reducing trampling and prevent overgrazing. The time spent on a hay field should be long enough to graze the area off evenly, but short enough to prevent the grazing of any regrowth. As a general rule, seven consecutive days is the maximum length of time animals should be left on a hay field.

Set Mowers High to Encourage Quicker Regrowth When Moisture Returns

Forage mowers should be set to leave at least 5 cm of stubble, especially during hot, dry periods. Cutting a plant too short reduces the plant's ability to regrow and exposes the ground to greater drying.

Clip Over-mature Pastures

Following the drought, over-mature pastures should be clipped and fertilized to respond most effectively to moisture. Clipping grasses to a 10 cm height will stimulate regrowth and increase utilization by the cattle and sheep.

Cereals for Fall Grazing

Provided there is sufficient fall moisture, cereals such as oats, barley and fall rye can be seeded late August to provide grazing approximately six to eight weeks from planting. Oats have the fastest growth and are tolerant of light frosts. Care should be taken if grazing oats as oats tend to accumulate nitrates at early growth stages. The recommended seeding rate for oats is 120 kg/ha. Fall rye is very tolerant to frost and its regrowth is superior to other cereals. Fall rye can also be grazed very early the following spring, long before any other pasture is available. If using bin run seed, ensure the seed has proper germination and is clean of weed seed.

Nitrate Poisoning

High nitrate levels in forage can poison livestock. Hay or silage harvested during or immediately after a drought can be high in nitrates. As a precautionary measure (especially if the forage makes up the bulk of the ration), hay, grass and corn silage harvested during or immediately following a drought should be tested for nitrates. Forage can be tested for nitrate nitrogen at the NS Department of Agriculture Analytical Lab in Truro, NS. A nitrate concentration in the feed of less than 0.15 % on a DM basis is considered safe for all conditions and livestock (Cash et al. 2007). If the NO₃ level is high, then delay the harvest or grazing for one to two weeks and retest.

Nitrogen Fertilizer

Once the rains return, if required, regrowth on forage fields and pastures can be increased with an application of ammonium nitrate (34-0-0). Response to nitrogen application is usually rapid if moisture conditions are favorable. It is important to allow at least three weeks between application and harvest or grazing. It is not economical to apply nitrogen fertilizer later than early September.

Use Drought Tolerant Species

The use of drought tolerant species of grasses will reduce the impact of drought on pasture availability. Ryegrass, orchardgrass, and brome grass are known to have some drought tolerance. Whereas pasture species such as bluegrass and timothy are known to be drought intolerant. Though bluegrass, with its shallow roots, will not tolerate drought, it does recover relatively quickly with moisture.

MANAGEMENT TIPS FOR BEEF PRODUCERS DURING DROUGHT AND FEED SHORTAGES

The following are tips designed to provide producers with ideas in a year of feed shortages. They are focused toward simple management tips, not cropping options (Firth 2001). Think about one or more combinations of the following options if the cows look like they are going to be thin in the fall or if the pastures are not regrowing:

1. *The Use of Creep Feed* – Creep feeding is an economic decision. Creep feeding should be used when the pasture has been depleted (or just before) and when feed is cheap and calf prices are high. The general methods for creep feeding are:

- Traditional grain in creep feeders.
- Pasture creep – calves graze new pasture or other feed exclusive of the cow but have access to the cows.

Creep Feeding Rules of Thumb:

1. Each kilogram of creep feed will replace 0.5 – 1.0 kg. of forage dry matter eaten. If a calf consumes 90 kg. (200 lb) of creep feed throughout the summer, there is a savings of about 68 kg. (150 lb) of forage dry matter. This represents an additional animal unit per month of pasture for every four calves being fed (Hand 2001).
2. Average feed conversions with creep feed are 5:1 to 8:1 kg. (lb) of creep feed consumed per kg. (lb) of calf gain.
3. Use caution with barley and corn – irregular intakes can lead to digestive problems.
4. The entrance to the creep area should be 0.4 – 0.5 m (16-20 in.) wide and 0.75 – 1.0 m (30-42 in.) high. A feeder space for two or three calves to feed at once is required and should be about 0.3 m (12 in.) wide. The feeders should be placed close to where cattle loaf (near shade, water, mineral feeder, etc.).

Examples of creep feeders:



<http://www.teemoreengineering.com/Feeders-and-Barriers.htm>



http://www.barnworld.com/sa/c/Feeders_Cages.htm

Some simple mathematics will determine if it is cost effective to use creep feed.
Follow the sample ration below and using grain prices FOB Truro, August 2007 Smith Brokerage Limited:

A sample creep feed ration from Firth (2002) with 15% crude protein is below:

Item in Ration	% by Weight in Ration
Oats	47
Barley	46
Soybean Meal (SBM)	5
Limestone	1.3
Trace Min. Salt	0.4
Vitamins A, D & E	0.1
TOTAL	100

Note: if you use a commercial protein source, use a non-urea source.

Grain prices FOB Truro, August 2007 Smith Brokerage Limited

Barley	\$215/tonne
Oats	\$200/tonne
Corn	\$210 /tonne
SBM	\$435/tonne

Cost of grains in one tonne of ration	\$215
+ cost of mixing one tonne	\$ 25
Total cost per tonne	\$240

The total cost for barley and mixing at \$240/tonne is equivalent to \$0.24/kg. or \$0.11/lb

The \$0.11 lb feed at an 8:1 conversion ratio = \$0.88/lb of calf gain

Add \$0.10 per lb gain for the equipment and labor - \$0.88/lb of calf gain + \$0.10 = \$0.98/lb gain

If the expected feeder price meets or exceeds \$0.98/lb, consider creep feeding

Quick Tips to Consider for Creep Feeding

Feed Efficiency

- The feed efficiency of young animals fed creep feed will average 7:1 to 10:1 with free choice access to the creep.
- A better feed efficiency can be obtained (5:1) if calf access is limited.
- Calf creep feed intake can be limited to 0.9 kg./day (2.0 lbs/day) by adding salt to the ration.
- 13-15% crude protein is adequate for creep feed.
- Use in conjunction with a high quality forage.
- Complicated vitamin/mineral premixes are not required.

Creep Mixes

- There are as many creep feed mixes as there are grain types.
- Rations based on corn or grain plus protein are available upon request.
- Be flexible and adjust creep feed as the pasture conditions change
- Feed a protein creep when forage or pasture quality is low
- Protein will increase forage intake by 15% and digestibility by 20%
- Feeding a high energy creep when forage quantity is low will decrease forage intake

When to Use Creep Feeding

- The most obvious use of creep feed is when pasture quality and quantity decline.
- Use creep feeds in the absence of top quality preserved forage for fall calving herds
- Creep feeds can be used 3-4 weeks preweaning as part of a preconditioning program to decrease incidence of stress related illness due to weaning
- Using creep feed when there are a high percentage of first or second calf dams will reduce the nutritional demand on the dams and the addition of creep feed will help the calves
- When grain prices are low relative to current or anticipated calf prices.

The use of creep feed can complicate which animals to select as replacement stock if heifer calves are being selected as replacements. The rule of thumb is to select the largest heifer calves for replacement stock. The maternal ability of the cow is not clear if the calf has been fed creep feed as it becomes difficult to determine if the calf growth is coming from the genetics of the cow or from the creep feed itself. Calves will sometimes be discounted as feeders if they flesh out too much from the creep feed. Many feedlots will shy away from creep fed calves because of the loss of compensatory gain advantage.

2. Sell Now Option

Producers can decrease stocking rates by selling culls in the drought period (or before) that would normally be sold in the fall. Culls sold earlier in the year are often sold for a higher price than those sold in the fall. For example, assume heifers and cows weighing 1000 lbs and up are trading at approximately 45 cents per live lb. This price will decrease by 10-15 per cent by October or November. On a 1300 lb cow that is a decrease of \$65/cow, so selling earlier is an economical option. Cows should be pregnancy checked by mid to late summer or earlier to identify all non-pregnant animals. For cows bred between April 25 and June 28 for a February 1st calving, veterinarians can accurately pregnancy check as early as August 7 (40 days post breeding).

A mathematical example showing the net gain of selling open and cull cows early is as follows:

	Time for Selling	
	Late Summer	Fall
Cow Weight (lbs)	1300	1250
Cow Price (\$/lb)	0.45	0.40
Return (\$)	585	500
Pregnancy Check	-5	-5
Additional feed cost*	0	- \$20.50
Net Value	\$580.00	\$475
Difference	Late Summer + \$105.00	

* Feed cost = 30 days x 20lbs @ \$75/T

Points to Consider:

- a. Cows will eat feed and lose weight between late summer and October.
- b. Cull bottom 15 % of cows if necessary and all open cows.
- c. Sell by late summer not later in the fall for maximum return.

3. Remove the bull from pasture 60 days post calving

The simple practice of removing the bull from the pasture 60 days post calving, coupled with pregnancy testing in the fall, will allow you to make easy culling decisions. These are valuable practices in any year, but are especially valuable in drought years.

- Ship any cows that are not bred. The drawback to this, particularly in years of drought applies to late calving herds or cows calving later than the middle of June.
- With later calving cows, the spring flush of grass is over and rebreeding time could increase if adequate nutrition is not available.

4. Early Weaning

Early weaning accomplishes two things;

- a. it decreases the pressure on pasture and
- b. it maintains cow condition for the upcoming fall and winter.

Calves born April 1, or earlier, can be weaned by late summer. Calves should be weaned directly onto grass 60 days before the anticipated sale date to maximize the benefit of their weight gain. An alternative is to sell the calves directly off the cows.

5. Consider selling your calves

- Consider selling the calves in the fall to reduce the reliance on stored winter feeds.
- Know the local price for calves and be aggressive in identifying buyers.
- Choose replacement heifers early and try to choose the oldest (they should be the biggest). Then, decide if you will sell the remaining heifers as feeders.
- Consider having the calves custom fed at a local feedlot.

6. Test Feed Early

Testing the feed early allows you to be better prepared for winter feeding. Knowing the nutrient levels in the feeds allows time to plan your feeding program well in advance.

- Feed the poorest quality feed first, providing the cows are in adequate condition coming off pasture and save the best feed for just before and after calving.
- Consider some processing of the poorer quality forage.
- Grinding increases the intake of poorer quality feeds.
- Remember to always provide adequate supplements (protein, mineral and vitamins).

7. Supplemental Feeding

Supplement feeding the entire cow herd on pasture will decrease grazing pressures and can be a valuable practice to get through a drought situation.

- Supplemental feed can be hay, straw, grain or other opportunity feeds.
- To decide if supplemental feeding is an option, first take a feed inventory.
- If you have more forage than you need for this winter, then feed it as supplemental feed while the animals are on pasture. A cow needs 5,500 lbs of as fed hay for the winter (12 only 4x4 bales or 7 only 5x4 bales).
- Consider feeding vegetable waste if it is available.
- Straw can be used but cows will lose body condition.
- The use of straw plus grain is another alternative to consider.
- Grain can also be fed but the intake should be limited by adding salt or restricting the amount fed.

8. Investigate Alternative Feeds

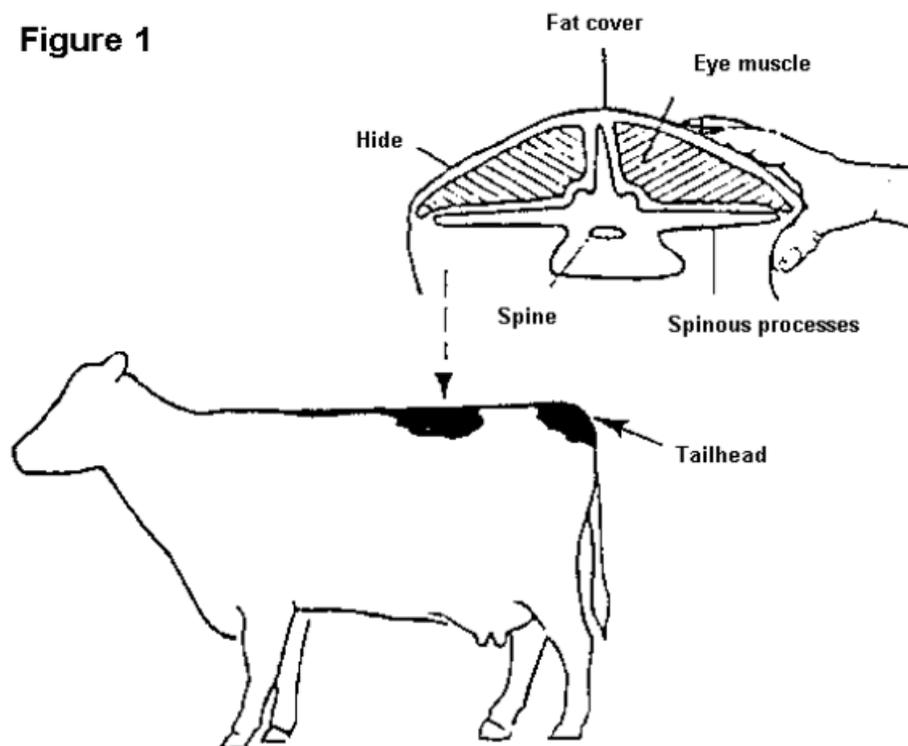
Economical, nutritious feed may be available as a by-product depending on your location.

- By-products suitable for use as alternative feeds can include straw, apple pomace, cull potatoes, cull carrots, vegetable processing waste (beans, peas, cabbage, etc.), bakery waste, brewer's grains and even cranberry and grape by-products.
- These feeds can compensate for shortages of forage and may provide an economical alternative to grain supplementation.
- Contact a ruminant nutritionist for information regarding any special feeding considerations before deciding to use by-products as a feed source.

9. Monitoring the Cows and Body Condition Scoring

Body condition scoring is a management tool that can help the cow/calf producer better utilize a year round feed supply and achieve better reproductive and calf rearing performance. Body condition scoring is a relatively objective method of determining the overall body fat covering of an individual animal. A number between 1 (very thin) and 5 (very fat) is assigned to the animal depending on its body fat covering. In the mid 1970s, several researchers in Scotland created a system of condition scoring for application to beef cows. The system consists of five grades determined by appraisal of the fat cover over the loin area between the hook (hip) bone and the last rib (See Figure 1). See Table 10.1 for Body Condition Scoring Descriptions.

Figure 1



Areas to handle in assessing condition score

Table 10.1 Body Condition Scoring Descriptions

Score	Description
1	Outline of the spine is very prominent and individual short ribs are sharp with no fat cover. Individual ribs and tail head are prominent.
2	Short ribs have a rounded look but can still be felt. Individual ribs and tail head have some fat cover.
3	Short ribs are felt with firm pressure, tail head has fat cover that is easily felt.
4	Short ribs cannot be detected even with firm pressure; fatty deposits around tail head are quite obvious.
5	Characteristic bone structure is no longer noticeable; flesh hangs from the tail head and mobility may be impaired.

Body condition scores may fall between these values, if so, assign an intermediate number (e.g. 2.5).

Body Condition Scores and Optimum Production

Beef cattle body condition scores for optimum production, based on calving season are as follows:

Winter Calving - February

Generally, winter calving cows can be bred at a lower body condition score than those calving in autumn. Cows calving in winter are bred on a rising plane of nutrition. The target body condition score for cows calving in winter is 2.5 and not below 2.0 at breeding. Early calving cows should not be allowed to lose any body condition between calving and pasture turnout. At weaning, these cows should have a body condition score of 3. See Table 10.2.

Table 10.2 Winter Calving-February

	February Calving	April Breeding	November Weaning
Condition Scoring	3	Cows 2.5 Heifers 3.0	3.0

Spring Calving - May

The major difference between this group and the winter calving cows is the body condition score can be 2.0 - 2.5 (instead of 2.5) at calving. By July, (breeding season), the cows have regained their body fat reserve to the point where they should have a body condition score of 3.0. At weaning and housing, these animals usually have a body condition score of 3.5. A fall body condition score of 3.5 enables feed levels to be reduced during the latter stages of pregnancy. See Table 10.3.

Table 10.3 Spring Calving- May

	May Calving	July Breeding	November Weaning
Condition Scoring	2.0 - 2.5	3.0	3.0 - 3.5

Fall Calving - October

Body condition scoring is especially applicable to fall calving cows. A body condition score of 4.0 for fall calving cows is the maximum to avoid calving difficulties. A body condition score of 2.5 is adequate for rebreeding, but may be difficult to obtain due to poor winter feeding conditions. A balance between body condition scores at calving and rebreeding must be obtained. Once pregnant, fall calving cows may be allowed to lose body condition scores reaching as low as 1.5 - 2.0 until pasture turnout. See Table 10.4.

Table 10.4 Fall Calving (October – November)

	October – November Calving	January Breeding	August Weaning
Condition Scoring	2.0 - 2.5	3.0	3.0 - 3.5

Remember that good nutrition from post calving to rebreeding is vital if cows are to conceive within the desired 60 day breeding period.

Practical Application

The establishment of an objective body condition scoring system eliminates the use of broad terms such as “thin”, and “fat”. The body condition scoring system applies across breeds and herds. Individual animal body condition scoring records can be kept on a year round basis to determine the success of feeding or general management changes.

Body condition scoring will increase awareness of winter feeding programs and the impact of body condition on reproductive management.

Body condition scoring can be used as an indicator of management. Producers should become aware of why individual cows or the whole herd is thin (body condition score 2.0 or less) or fat (body condition score 3.5 or greater). Look at causative factors in the management system and know what the potential problems with each body condition will be. Above all, strive to make positive management changes.

Remember that body condition problems will impact not only performance this year, but will affect the calf and cow's performance in the long term.