

Managing Through Drought

Whether it occurs once in five years or for five consecutive years, drought is inevitable throughout the west. In order to deal with this natural phenomenon, range managers and producers throughout British Columbia must develop both short and long term strategies. Unfortunately, your ability to manage through drought is often decided long before the drought occurs. This is why a grazing management plan with a drought survival component becomes a crucial component of your year to year operations. This factsheet will attempt to provide you with ideas and suggest some tips on how you can survive a drought. This coupled with unknown externalities such as a poor market may force you to make tough decisions that will undoubtedly affect your bottom line.



Herd Management

In order to prepare your operation for a drought it is important that you monitor and evaluate your current year's forage growth potential. In order to do this, you must understand the historical precipitation patterns of your area including average snow pack levels. If your area has received only 25 to 30 per cent of the normal rainfall mid-June in the northern portions of the province, and early to mid May in the southern interior, it is time to act as the chance of getting enough rain to compensate for the early season's shortage is slight. If your pasture or range doesn't have enough grass to carry your herd by this time, it is often advisable to reduce your numbers right then rather than wait until September when other producers are trying to sell their livestock. Here is a list of herd management strategies that may assist you in planning through a drought.

- **Plan ahead** - make your drought management decisions early, match your herd size to your feed supply, look at opportunities to move livestock to rented pasture and range or consider selling some livestock. If you are short of feed, try and buy it early in the year before shortages occur.
- **Early weaning** - early weaning may be a way to reduce the effects of drought. Research in Kamloops has indicated that when calves were weaned in late August and the cows returned to range, they weighed more at the start of winter than cows with calves weaned in late October. Better conditioned cows typically require less winter feed due to their increased body condition resulting in lowered feeding costs. In addition some researchers have demonstrated increased calf weights on calves weaned early and placed on improved pastures versus those left with their mothers until fall.
- **Early weaned calves** – consider the options of selling calves early if the market price is favorable or pasturing calves on tame forages with and without additional grain sources. In addition, bloat control products are becoming available that provide an option for intensive grazing on high legume pastures with minimal risk.
- **Still short of grass** - consider moving your livestock to grass or buying feed. You may also want to consider working with a nutritionist to develop a feeding strategy which may include alternative feeds such as straw, vegetable waste or concentrates, but don't go broke trying to feed your way out of a drought. Before making any decision, conduct a thorough financial analysis of these options to ensure they are cost effective.

Overall, it is important that you maintain some form of flexibility.

Forage Management

Fertilizing

In British Columbia, fertilizer is often forgotten as a useful drought management tool. Depending on your soil needs, an application of nitrogen often increases the water use efficiency of your forage plants thus allowing them to extract water from greater depths within the soil profile. This often results in extra late-summer and early fall grazing during a drought when compared to unfertilized pastures. Fertilizing tame grasses and native grasses may also be a good renovation tool provided it is economical and runoff is not a concern. If there is insufficient moisture however, no amount of fertilizer will help. Finally, as mentioned above, it is important to base your fertilizer application on your soil requirements as excessive fertilization not only damages your pocket book it may also damage the environment.

Tame Forages

You may also consider adding alternative forages to your drought management plan:

- **Annual tame forages**- if your operation includes annual crops, you may want to consider managing annual crops for forage production. This may include converting cultivated acres to temporary pasture during the summer and swath grazing of cereals during the winter.
- **Perennial tame forages** - species such as crested wheatgrass can also be valuable components of a drought management plan. Crested wheatgrass and others are drought tolerant and, depending upon moisture availability, can also exhibit regrowth in the fall. This allows you to graze these pastures in the spring and fall thus alleviating grazing pressure on less tolerant forages such as your native grasses. Other perennials including smooth or meadow brome grass and alfalfa, due to their growth characteristics, also have the ability to provide forage during short dry periods.
- Other possibilities include irrigating (if possible) hay and silage acres, grazing crop stubble following harvesting, and using your livestock to harvest your crops especially light or poor hay and annual crops.



Native Forages

When managing native rangelands your drought management options are limited. While many native plants express some degree of drought tolerance they are typically less able to survive overgrazing than most tame species. In fact, even moderate grazing during a drought year may cause a reduction in range health for many years following a drought. When grazing native range, it is extremely important that you:

- Allow your native plants to complete their lifecycle (seed) and, depending on the species involved, maintain at least some stubble (plant residue) to ensure that some moisture is captured in the spring.
- Maintain at least 10 cm (4 inches) of stubble at the end of the growing season in order to increase snow catchment, reduce erosion, and increase the probability of filling your water developments and maintaining the moisture on your land.
- Always assume that a drought will continue. Don't overgraze native rangelands with the expectation that the drought will subside next year. Overgrazing often results in the loss of important forage species, increased bare ground, and corresponding weed invasions.
- If possible, graze grasslands during the dormant season and forests during the growing season.

Forested rangelands often become useful forage resources during times of drought. These ranges are often overlooked and as a result are often underused. If available and economical you may want to increase your use of these areas while reducing use on riparian, wetland or grassland ranges. Overall, tame forages including annuals and perennials when combined with native grass and forest rangelands give you maximum flexibility when faced with drought.

Irrigated Pastures

Water shortages for irrigation purposes are often associated with long periods of drought. When faced with a looming water shortage, irrigators may want to consider the following options:

- **Irrigation timing** - Well-timed irrigations will help you irrigate more acres without lowering crop yields. This means avoid irrigating during the heat of the day and irrigate only when your forages need it. For example, in order to promote plant health and continued root growth during the growing season, alfalfa should be irrigated within 10 to 15 days following harvesting. Also, minimize early-season irrigations and eliminate late-season irrigations.
- **Forage selection** – If you live in an area where drought is common, select tame species that display some drought resistance. For example, due to its vast root system, alfalfa is one of the most drought-resistant forages available. When water is not available, it actually stops growing and goes dormant. This helps maintain its presence in the stand through long periods of drought. It is also important to note that all varieties are not created equal. Some are more drought resistant than others.
- **Reduce expectations**- If your forced to cut back on the amount you irrigate during the active growing season, lower your stocking rates or production predictions.
- **Maintain residual plant material**- It is extremely important to leave an adequate amount of residual plant material, often called stubble, after each harvest. Plants need this material so that they can continue growing both above and below ground. A good rule of thumb is to maintain 10 to 15 cm of stubble after every harvest and between 15 and 20 cm at the end of the growing season. The 15 to 20 cm of stubble will allow the plants to survive the drought conditions and assist you in capturing the winter snow which will hopefully give your pasture a head start next year.

Grazing Management

When faced with drought you may also want to consider changing the distribution of your animals. This may enable you to take advantage of areas that normally receive little or no grazing pressure during average years. Various tools can be used including:

- **Water** - consider trucking or developing new water sources.
- **Salt, mineral and feed (protein blocks etc.)** - all of these may be used to attract livestock to underutilized areas and act as supplements to tame and native forages.
- **Fencing** - temporary or permanent fencing can be a useful tool to increase pasture utilization.
- **Herding** - although labour intensive, herding can also be very effective in improving pasture utilization.



Finally, whether you're managing tame or native forages it is important for you to maintain at least some plant stubble (residue). This material, commonly called stubble, is extremely important before, during and after a drought since it breaks down to form a litter layer on the soil surface. This litter layer insulates both your tame and native pastures, reduces soil temperatures and water loss, and may increase forage production during drought. Also by maintaining an adequate amount of stubble, you are encouraging root development below the soil surface. This root development can be especially crucial during dry years by allowing plants that have been conservatively managed to access an additional amount of water from lower depths within the soil profile. It is also important to note that for the most part, native forages tend to be more drought tolerant than tame forages. The obvious exception is crested wheatgrass which is very tolerant of drought and grazing, and thus can be grazed early and longer than normal during periods of drought as long as you resist the temptation of re-grazing it in the late summer or fall.

In order to prepare your ranch for a drought your best bet is to develop a grazing management plan that contains drought survival strategies. To learn more about developing a grazing management plan, please refer to Factsheet 10 of the Pasture and Range Health Factsheet series, *Designing a Grazing Management Plan*

Summary

- **Plan ahead!**
- **Early Weaning**
- **Fertilization**
- **Forage diversification**
- **Grazing Management**

For further information contact:
Darren Bruhjell
Phone: 250.371.6058
Email: Darren.Bruhjell@gov.bc.ca

Graham Strachan
Phone: 250.371.6054
Email: Graham.Strachan@gov.bc.ca

INDUSTRY COMPETITIVENESS BRANCH
Ministry of Agriculture, Food and Fisheries
162 Oriole Road
Kamloops, BC V2C 4N7

REGIONAL OPERATIONS
Ministry of Agriculture, Food and Fisheries
162 Oriole Road
Kamloops, BC V2C 4N7