Managing Grazing Lands During Drought
Grazing Management Guide

Disclaimer: This factsheet includes minor revisions as of December 2025; most content is as of original publishing date May 2005.

Introduction

Whether it occurs once in five years or for five consecutive years, drought is inevitable. In order to deal with this natural phenomenon, range managers and producers should develop both short- and long-term strategies. Unfortunately, the ability to manage during 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 any operation.

Figure 1. Dry soil with no vegetation or plant cover.

This coupled, with unknown externalities such as a poor market, may force tough decisions that will undoubtedly affect the bottom line. This factsheet provides ideas and suggests some tips on how to survive a drought.

Herd management

In order to prepare an operation for drought it is important to monitor and evaluate the current year's forage growth potential. This includes understanding the historical precipitation patterns of the area. For example, if an area has received only 25–30% of normal rainfall by mid-June in the north or early to mid-May in the southern interior, it's time to act. The chances of getting enough rain later to make up for the early shortage is very low. If your grazing lands don't have enough forage to carry your herd by this time, consider some of the following options.

Reduce numbers

It may be a consideration to reduce your numbers when forage shortages are developing rather than waiting until September when other producers are trying to sell their livestock

Additional feed

Another strategy could include finding additional forage, either by renting pasture or range or by purchasing feed. If feed is purchased, buy it as early as possible before shortages occur. Other management strategies include:

Early weaning

Early weaning may reduce the effects of drought. Research in Kamloops found that cows whose calves were weaned in late August weighed more at the start of winter than cows with calves weaned in late October. Better conditioned cows typically require less winter feed resulting in lowered feeding costs.

Early weaned calves

Consider selling calves early if the market conditions are favorable or pasturing calves on tame forages with and without additional grain sources.

Still short of grass?

Consider moving livestock to grass or buying feed. Also, you may want to work 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 to maintain flexibility in any operation.

Forage management

A healthy forage stand is better able to withstand drought conditions than one which is already struggling. Consider management approaches which will help optimize forage vigour prior to drought

Fertillizing

In British Columbia, fertilizer is often forgotten as a useful drought management tool. Depending on soil needs, the application of nitrogen often increases the water use efficiency of 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, it is important to base any fertilizer application on what the soil requires as excessive fertilization not only damages the pocketbook, but it may also damage the environment

Annual tame forages

If annual crops are part of an operation, consider managing them for forage production. This may include converting cultivated acres into temporary pasture during the summer and swath grazing of cereals during the winter.

Figure 2. Newly planted forage crop.

Perennial tame forages

Species such as crested wheatgrass can also be valuable components of a drought management plan. Crested wheatgrass is drought tolerant and, depending upon moisture availability, can also exhibit regrowth in the fall. This allows it to be grazed in spring and fall thus alleviating grazing pressure on less tolerant forages including native forages. Other perennials including smooth or meadow bromegrass and alfalfa, due to their growth characteristics, also have the ability to provide forage during short dry periods.

Other options include irrigating hay and silage fields (if water is available), grazing crop stubble after harvest, and using livestock to harvest light or poor hay and annual crops.

Native forages

When managing native rangelands drought management options are limited. While many native plants express some degree of drought tolerance, they are typically less able to withstand overgrazing than most tame species. In fact, even moderate grazing during a drought year may cause a reduction in plant vigour for many years following a drought.

When grazing native range, it is extremely important to:

Allow native plants to complete their lifecycle (set seed).

Maintain at least 10 cm (4 inches) of stubble at the end of the growing season. This increases the capture of snow and reduces the potential for erosion. By increasing the amount of snow captured, more water remains on the land, increasing the likelihood of water developments being filled.

Always assume that drought will continue into the next year. Don't overgraze native rangelands with the expectation that the drought will subside next year. Overgrazing often leads to the loss of key forage species, more bare ground, and increased 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, increase the use of these areas while reducing use on riparian, wetland or grassland ranges. Overall, combining tame forages—both annuals and perennials—with native rangelands provides the greatest flexibility during 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 irrigation allows more acres to be irrigated without lowering crop yields. Avoid irrigating during the hottest part of the day and water only when the forage actually needs 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 harvest. Also, minimize early-season irrigation and eliminate late-season irrigation. The Drought in Agriculture page lists resources for irrigation management during drought. An additional resource that can be useful is the B.C. Irrigation Management Guide.

Forage selection – 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 you are forced to cut back on the amount you irrigate during the active growing season, lower stocking rates and 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 maintain plant vigour and assist in the capturing of snow, both of which will hopefully give the pasture a head start next year

Grazing management

When faced with drought, 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.) – these attractants/supplements 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 improve pasture utilization.

Maintain Stubble

Overall, when managing grazing lands, it is important to maintain at least some plant stubble (residue). These materials are extremely important before, during, and after a drought since they break down to form a litter layer on the soil surface. This litter layer insulates both 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, root development is often encouraged below the soil surface. This root development can be especially crucial during dry years as it allows plants that have be conservatively managed to access an additional amount of water from lower depths within the soil profile.

Drought Tolerance

It is also important to note that for the most part, native forages which are not over-grazed tend to be more drought tolerant than tame forages. The main exception is crested wheatgrass, which is highly tolerant of both drought and grazing. It can be grazed earlier and for longer during drought, as long as you avoid the temptation to regraze it in late summer or fall.

Additional information

To learn more about developing a grazing management plan, please refer to *Factsheet 4* of the ***Grazing Management Guide***.

Also, refer to the Drought Management series of Factsheets.

Figure 3. Cattle grazing in late summer.

Summary

Herd management – options to match herd to available feed

Forage management – fertilization and forage diversification

Grazing management – livestock distribution tools

Maintain stubble – for the future health of the grazing area

Find more information:

Drought in Agriculture:

https://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/agricultural-land-and-environment/water/drought-in-agriculture

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B.C. Irrigation Management Guide:

https://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/agricultural-land-and-environment/water/irrigation/irrigation-management-guide

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