

Beef and Forage Technical Bulletin



Forages - Considerations and planning for dry conditions on pasture.

As a producer, during dry conditions, you'll often need to make some tough management decisions related to your short and long-term business success. Pre-planning is very important to be able to make decisions quickly, rather than get to the point where you feel there are no alternatives. When you make a decision about a part of your forage system, consider how this will affect the other parts (e.g. animals, plants, land, people and finances). Never lose sight of the whole picture or the whole operation. Dry conditions are cumulative, so they do not happen overnight. This is why it's a good idea to plan continuously for your operation. It's important to have a drought plan and be willing to act on it when necessary.

There is no recipe for everything, but here are some points to consider as you assess your pastures and winter feed supplies:

- Do an inventory on paper of your pasture and hay land conditions early in the season and project your yields. Balance this with animal numbers and your desired length of the grazing season.
- Estimate the length of your past grazing seasons and the percentage of shortfall. Be conservative and reasonable.
- 150 animals grazing for 130 days (from May 25 to October 1) is 19,500 Animal Days of Grazing.
- If this coming year, your grazing will be 40 per cent less, you have estimated 11,700 days of grazing this year.
- Balance the new number shortfall by, perhaps, renting extra pasture, selling cull animals, having a later spring turnout, grazing hay fields in the fall or buying extra feed for an earlier start to the winter feeding period.
- It is not profitable to summer feed out of dry conditions. But if you do, take extra precautions in the spring and early summer to allow your forage to grow and produce greater yields, and give pastures a longer rest between grazing's.
- One day in the spring turned out later will give you three days extra in the fall. If there is no grass left, use that as the sacrifice pasture or have a plan B in place to move the cattle elsewhere. Do not let your animals start losing body condition before the winter feeding period.
- You cannot overgraze perennial pastures in a drought without damaging the long-term forage stand productivity. Overgrazing is a function of time. And if you allow the animals to come back to those same plants, without allowing adequate rest and recovery, the sugar or carbohydrate root reserves will be lost from the re-grazing. You will not enable those plants to survive the winter.
- Well managed and time controlled grazing in dry conditions allows for the longer time a plant needs to recover from grazing, when growth is slowed or stopped because of plant water shortages. If you allow the plant to rest and recover, it will regrow faster when a moisture event does occur.
- Remember, spring and early summer are crucial times for perennial plants to grow. Those plants have survived by using their carbohydrate root reserves, so they need time to go through photosynthesis to accumulate those reserves again and use them for elongation. Animals also need to be kept off pasture longer than normal, and two to three weeks is recommended.
- Do not turn your animals out when the grass turns green. Monitor the grass for plant stage development. The general rule of thumb is that it's safe to graze when the majority of grass plants in a stand reach the three or four-leaf stage.
- Fertilizing a vigorous stand of pastures will give you a one to two week earlier start to plant grazing readiness.
- **REST** is the best kind of rejuvenation for overgrazed pastures. If plants are overgrazed, it is essential for them to have longer rest periods to recover from grazing. Subdividing pastures in paddocks is one way to help.
- Seed annuals for forage shortfalls and consider all of your options. Graze or harvest forage cereals or second cut hay fields.
- Cut your alfalfa at 10 per cent bloom for higher quality. This way, you can blend it off with poorer quality feeds like straw to supplement your winter feeding rations. This is the best balance of quality and quantity.



Flexible Stocking Rates- matching forage resources and livestock requirements

When dry conditions reduce your pasture forage production, you need to adjust your stocking rates. This needs to happen so that your forage grown equals your livestock requirements, without causing overgrazing. You can do this by either reducing your livestock numbers or increasing your forages that are available for grazing.

There are several ways to increase your forage supply, including:

- finding more pasture acres for grazing (renting)
- improving your forage production through rotational grazing
- using fertilizer to increase your yields
- growing annuals for grazing

Annual cereals can be grazed four to six weeks after seeding. A spring cereal (e.g. oats or barley) seeded with a winter cereal (e.g. wheat, fall rye or triticale) can be cut for greenfeed, and the winter cereal will regrow for fall grazing. Annuals can be swath grazed in late summer to fall or corn can be grazed in late fall to early winter. Cover crops or Italian rye grass can also be seeded with cereals for summer and fall grazing. Annuals are more moisture efficient than perennial forages and are a good strategy for managing dry conditions.

If your forage supply can't be increased, then your stocking rate has to be lowered. The classes of cattle that you can sell will depend on your operation. During the middle of the grazing season, yearling cattle (grassers) are the easiest to reduce or sell, followed by the replacement heifers. In a cow and calf operation, earlier weaning and culling cows sooner is an option. Culling animals is a difficult decision and isn't taken lightly. The sooner you make adjustments so your livestock requirements match your forage resources, the more flexibility you'll have to manage your farm through challenging conditions.

Water on Pasture

Water on pasture can be one of the most pressing issues for livestock producers during periods of dry weather. Water requirements of cattle, ways to get the water to the livestock and potential water quality issues are all considerations for producers.

Water Requirements of Cattle on Pasture

Livestock require water in sufficient quantities and of sufficient quality for optimum health and growth. The total water needs of livestock are met through a combination of the water contained in feed and drinking water obtained separately from feed.

Intake of water depends on several physiological and environmental factors, including:

- size and type of animal
- physiological state
- activity level
- diet
- weather
- water quality
- ease of access



The adjacent table lists typical consumption requirements for cattle on pasture. All other factors being equal, the primary variable affecting water consumption is temperature. As temperatures increase, so does consumption.

Pasture Watering System Considerations

- Consider the use of a portable water supply. For smaller operations, a stock tank on a portable vehicle may be an excellent way to improve livestock distribution across a pasture.
- Fence off your low water supply areas. Pumping water from a remote site will improve water quality and reduce water loss.
- Consider purchasing portable electric fencing and poly pipe for remote watering systems
- Regularly monitor your watering equipment to make sure it's working.
- For more information, visit www.manitoba.ca/agriculture/livestock/beef/pubs/pasture-watering-systems.pdf.

Potential Water Quality Issues

Livestock, when given high quality water, will drink more, eat more and ultimately gain weight more quickly. Although livestock can tolerate poor water quality better than humans, elevated levels of some salts, blue-green algae and bacteria can result in severe illness and even death.

As summer progresses and temperatures increase, livestock will increase their consumption. As well, water evaporates and without rain to replenish the water source, contaminants can become concentrated. Some of the most common contaminants that decrease intake include:

- blue-green algae (cyanobacteria)
- bacteria
- viruses and parasites
- sulphates
- total dissolved solids
- nitrates
- alkalinity
- taste
- odour
- water temperature

For more information, visit www.gov.mb.ca/agriculture/livestock/dairy/water-quality-and-quantity-is-critical.html.

For those who are considering digging new dugouts or cleaning out old ones, Alberta Agriculture and Forestry has an excellent decision making tool available here: [Agriculture and Forestry : Decision Making Tools \(gov.ab.ca\)](http://www.ab.ca/agriculture-and-forestry/decision-making-tools). It will provide you with the necessary information about what to consider for the measurements and capacity of the dugout.

Dugout / Lagoon Volume Calculator

Measure length and width at the top of the dugout.

Length must be equal to or greater than the width.

Water depth must be equal to or less than depth of dugout.

Slope is the number of feet in the horizontal (run) direction for each foot in the vertical (rise) direction (eg. run/rise = 4 ft./1 ft.).

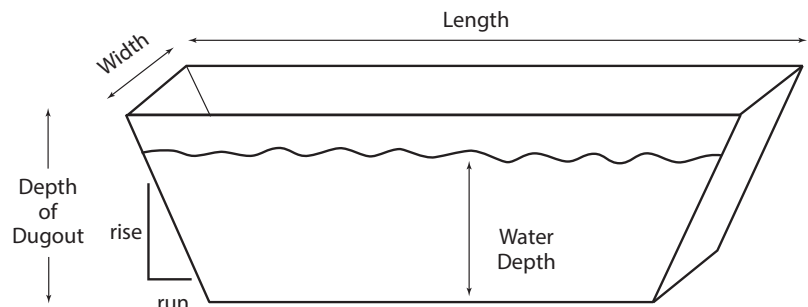
By entering the above information, this calculator will give you the capacity of the dugout and its contents in cubic feet, cubic yards, cubic meters, litres, Imperial and U.S. gallons. This is useful in determining the size of dugout necessary, estimating construction costs, and volumes remaining in the dugout.

Top of Form

Units :

- Length of dugout:
- Width of dugout:
- Depth of dugout:
- Water depth (optional) :
- End Slope (run/rise) :
- Side Slope (run/rise) :

Bottom of Form



Typical daily water requirement for range livestock

Type of Livestock	Winter		Summer	
	Litres per day	Imperial gallons per day	Litres per day	Imperial gallons per day
Milking Cows	77	17	95	21
Cow-Calf Pairs	50	11	68	15
Dry Cows	36	8	55	12
Calves	23	5	36	8
Growing Cattle (400-800 lbs; 180-360 kg)	23-36	5-8	36-55	8-12
Finishing (600-1200 lbs; 270-540 kg)	55	12	86	19
Bulls	36	8	55	12

Source: The Stockman's Guide to Range Livestock Watering From Surface Water Sources

The dugout calculator uses the following formula for a prismoid to calculate the volume.

$$V = (d/6) \times (A_t + A_b + 4 A_m)$$

where

$$A_t = L \times W$$

$$A_b = (L - 2 \times ES \times d) (W - 2 \times SS \times d)$$

$$A_m = (L - ES \times d)(W - SS \times d)$$

definitions

V = Volume

d = depth of the dugout

A_t = Area of the top of the dugout

A_b = Area of the bottom of the dugout

A_m = Area of the midsection of the dugout

SS = slope of the sides of the dugout

ES = slope of the ends of the dugout

L = Length of the top of the dugout

W = Width of the top of the dugout



Agriculture and Forestry : Decision Making Tools (www.agric.gov.ab.ca/app19/calc/volume/dugout.jsp)

You may want to get your pasture water source tested, as the cost of the test far outweighs the potential risks. Information on how to test and water testing kits are available at one of the ARD and MASC Service Centres listed below.

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Farm Business Management - The Economics of Creep Feeding

Creep feeding beef calves on pasture is an option you may want to consider. In the past, the costs of creep feeding, including labour, management and purchasing creep feed, made the process questionable. This scenario has changed. With fall calf prices at the levels they are today, and feed price volatility, the economics of creep feeding are constantly changing, so be sure to figure out what kind of benefit creep feeding would give you before going ahead with it.

The benefits of creep feeding will be the greatest for heifers or poor milk producers. If you consider the mathematics of creep feeding, the situation should pay back the cost of feed and the extra work required. Before you embark on creep feeding, consider all your costs, such as the initial cost and depreciation of the feeder, the cost of keeping the feeder full of grain or pellets, and the time required to monitor the feeder during the typically busy months of August through October.



Pure grain or pellets? Either product can work. Pellets designed for creep feeders are very effective and offer a good balance of energy, protein and fibre. As an added benefit, monensin can be included in the pellet for acidosis and coccidiosis prevention.

Oats are the primary pure grain suggestion, as they have higher fibre levels, so they are less likely to cause acidosis or bloat. Pure oats can be mixed with a mineral medicated with monensin, and should produce similar results to medicated pellets.

Usually, a creep feeding setting is thought of as a steel feeder with steel creep panels, but other methods can be equally effective. A small pen, with fence posts 16 to 18 inches apart, can allow calves into an area with grain in troughs. The same small pen can also be used to feed high quality dry hay, such as vegetative alfalfa or grass hay, which will add additional economic growth to the calves.

A good nutritional foundation: Creep fed calves are more prepared for the health risks involved in weaning because of the additional fat cover. They are also more familiar with dry feeds and go on to new rations much quicker, causing fewer days with no growth or weight loss. Creep fed calves sold directly at weaning will have a less stressed appearance at auction yards. They will also likely withstand the rigors of transport and co-mingling better than cohorts that are not creep fed.

One further benefit of creep feeding calves is to give the mother cows a break and possibly extend the grazing season slightly. Calves on creep will allow the cows to hold their condition better during times of minimal forage resource. The cows will end the summer growing season with more condition and will require less winter feed for maintenance through a Manitoba winter. There are a lot of reasons to consider creep feeding calves. You should do the calculation before you start creep feeding to make sure the economics make sense with the variables on calf pricing and feed input costs. The Manitoba Farm Management Team has a creep feed calculator that can help you make your decision. The calculator can be found at:

www.manitoba.ca/agriculture/farm-management/production-economics/pubs/calculator-calfcreepfeed.xlsx

Livestock - Creep feeding to support your calves, cows and pastures

Creep feeding calves will help meet their nutritional needs and conserve forage in late summer when forage quality declines, and when your pastures are drier than normal and not as productive. A beef cow's milk yield peaks about two months after calving. By the third or fourth month, milk alone does not usually meet the calf's requirements to support its full growth potential. Creep feeding can provide for the hungry calf gap, the shortfall of protein and energy no longer provided solely by milk from the cow. With dry pasture conditions, creep feeding your calves may be a good way to conserve pasture for your cows and help put weight on the calves for weaning.

The optimum energy and protein content of the creep ration will depend on the following factors:

- Type of feeding system - free-choice or limit-fed, by daily hand feeding or by using a limiting agent such as coarse salt
- Calf weight - lighter calves require a higher protein
- Frame size - smaller framed calves will tend to over condition on high energy rations
- Quality and quantity of other available feedstuffs -milk, pasture, supplemental feed for cows

You may decide to purchase a commercial creep ration from a feed company or mix your own using home grown grains and purchased supplements (see the table below). In general, the creep should contain 13 to 16 per cent crude protein (%CP) on a dry matter (DM) basis and 65 to 75 per cent total digestible nutrients (%TDN, DM basis). The higher %CP and %TDN creep rations would be used for light weight calves (less than 400 pounds) and the lower range CP and TDN rations would be used for heavier calves (over 400 pounds).

Helpful Hints: Starting calves on creep can sometimes be difficult. Feeding their dams small amounts of feed on the ground a few days before creep feeding can help get them started. Calves quickly learn to eat new feed with their mothers.

- Provide fresh feed to appetite. When first starting to creep feed, clean up the leftover feed each day.
- To encourage the calves to eat, add some molasses and/or bran.
- To prevent grain dust or fines, roll or coarsely grind the grain.
- The feeder should be in a sheltered or shady spot where the herd gathers. If the pasture is large, pick more than one creep site.
- Allow four to five inches of bunk space per calf when free-choice feeding and eight to 12 inches bunk space when limit-feeding.

In cases when your pasture is limited because of drought or overstocking, an energy-based creep is recommended. This type of creep is grain-based, and contains 13 to 16 per cent CP, with cracked oats and barley supplemented with pelleted 32 per cent beef supplement or canola meal. This would be most economical when intake is limited to less than 3.5 lb/d and could be limited with about 10 to 15 per cent coarse white salt (Alberta Agriculture and Food 2008. Agdex 420/10). The feed conversion of this type of creep would commonly be 8:1 to 10:1 lb creep to lb of calf gain. In this scenario, the creep feed must provide both the energy and protein needs of the calf not fulfilled by the cow and pasture.

Example creep rations for beef calves

Ingredient	Ration 1	Ration 2	Ration 3	Ration 4	Ration 5	Ration 6	Ration 7
Oats	92	84	42	23	23	27	27
Barley			42	53.2	53	63	61.6
32% Protein Supplement	8	16	16		24.0	10	
Canola meal				22			9.1
2:1 Mineral (2 parts Ca: 1 part P)							0.6
Limestone				1.3			1.2
Trace mineral salt				0.4			0.4
Vitamin ADE premix				0.1			0.1
Total	100	100	100	100	100	100	100
%TDN, %CP in 1 lb of creep ration*	75, 13	75, 14	78, 15	78, 18	78, 17	80, 14	80, 15

Adapted from Alberta Agriculture and Food 2008. Agdex 420/10. The Beef Cow-Calf Manual, Section 04: Calf Management from Birth to Weaning, pp 91-93., and from Ontario Ministry of Ag, Food and Rural Affairs, Creep Feeding Beef Calves

*TDN and CP estimated in 1 lb of creep feed using COWBYTES 5 v5.32 Alberta Agriculture and Rural Development 2011.

With dry pasture conditions, creep feeding your calves may be a good way to conserve pasture for your cows and help put weight on your calves for weaning. The profitability of creep feeding depends on the ration cost, the price received for the calves, and the conversion of creep to additional gain.

If you would like to be added to our information-sharing list, please email or text Juanita Kopp (Juanita.Kopp@gov.mb.ca, 204-825-4302). Your input or topic ideas are always welcome.