After Wildfire

Section 2

Management Strategies for Beef Cattle after Drought or Wildfire

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Drought develops progressively over time—wildfire is more immediate. However, many of the decisions a rancher must make are similar, whether the situation is caused by drought or by results of a wildfire. Management of a ranch during either drought or after a fire depends on the balance between stocking density and the availability of feed and water. In the long run, you can help protect your interests by planning to make your ranch decisions less sensitive to these challenges. Early decisions need to be based on what relief measures are potentially available on the ranch. Among the important factors are guessing the expected duration of the drought or effects of the fire, the current water and feed inventories, the body condition of the cowherd and the financial resources available. During drought or after wildfire, decisions may be based on emotion rather than logic. The main goal is to make objective decisions and get skilled help when necessary from your extension agent, beef specialist, range specialist or agricultural consultant.

Effects of drought on range plants and management

Drought or fire is a serious obstacle to successful range livestock management. Producers must understand how these impacts affect plants, grazing animals and livestock management, and what options exist. Forage production is decreased dramatically, but on range in good or excellent ecological condition, reductions are less dramatic. The ability of perennial plants to recover after drought is closely related to their vigor before and during the drought. Fire is like overuse all at once, and recovery can be rather fast. Drought, if it is prolonged, can deplete root reserves and inhibit root growth.

Excessive grazing (more than 60 percent of current year's growth) decreases the ability of some plants to recover. Moderate use (25 - 55 percent) does not seem to affect the recovery rate. A drought or fire may require that livestock numbers be reduced according to forage supply. Retaining a rotational grazing system during these impacts is recommended over continuous grazing because periodic rest helps plants maintain vigor. Concentrating more animals into a single herd is recommended over having several smaller herds because by having more animals in a pasture, the entire pasture will be grazed more uniformly, and more use will be made of the less-preferred plants. Other options include grazing crested wheat grass earlier and longer than normal, because it is one of the plants most tolerant of grazing.

Another option is keeping cattle on irrigated or sub-irrigated sites longer than usual. Fertilizer could be used to increase forage production on many of these sites. However, fertilizer is a cash cost, and soils should be tested before fertilizer is applied. Fertilizer needs moisture to be available to the plant, and in times of extreme drought this may not happen.

Initial questions

The producers who survive best during drought or after a fire are those who adopt sound management and financial plans and review them regularly. They make firm decisions and act quickly and early. Keep alert for opportunities such as leasing land instead of buying feed. Four factors which affect risk management include: 1) the total population of cattle in relation to feed availability, 2) how widespread the drought or fire area is, 3) the time of year and the likelihood of rain and reestablishment of adequate feed supplies in your area and, 4) evaluation of cash flow needs. Borrowing your way through a drought to maintain traditional herd size may inhibit long-term profitability. Borrowing may be a viable option after a fire.

Questions to answer when facing a situation of reduced forage supplies

- Are my animals losing weight or not performing adequately?
- What is the body condition score of my cows?
- Will I have to start to provide supplements?

- If the lack of forage continues, should I cull the least productive or "at risk" animals?
- What feeds are available to the ranch?
- Assuming that I will have to purchase supplemental feeds, are they available, and at what cost?
- Is one option to sell hay and buy back grain for limit feeding?
- Do I have the feed resources to allow for full feeding vs. supplementary feeding only vs. limit feeding of grain?

Several options to consider include

- Doing nothing.
- Selectively reducing of the cow herd, especially the least productive cows.
- Weaning calves early to reduce nutritional demands on cows.
- Leasing additional grazing ground vs. purchasing supplemental feeds.
- Purchasing supplemental feedstuffs.
- Moving the cow herd to a dry lot for full feeding.
- Limit feeding grain to meet nutrient requirements.
- Selling all the livestock.

Keep the following in mind with regard to cow management

- Fertility of cows may decline when their body condition score (BSC) drops below a 4, especially at time of calving and when they go into the breeding season in poor condition. Without sufficient nutrients, particularly energy, cows lose considerable weight. When such weight losses occur, milk production decreases and reproductive activity may cease. The end result is lightweight calves and open cows. To prevent such undesirable effects, cows either must be provided sufficient nutrients to avoid weight loss and maintain production requirements or they must be relieved totally or partially from body stresses.

Table 1. Estimated water consumption by different classes of beef cattle (North Dakota Extension Service)

Class of beef cattle	Estimated water consumption at 88 °F, gallons/day
Cows	
Dry	14
Lactating	17
Bulls	18
Growing cattle	
400 lbs	9
600 lbs	12
800 lbs	14
Finishing cattle	
600 lbs	14
800 lbs	17
1000 lbs	20
1200 lbs	23

- Early weaning of calves is one option that allows cows to rebuild body reserves and rebreed the next year.
- Money and diminishing feed reserves are too valuable to waste on cows that are unproductive, not pregnant or are unsound. These animals are candidates for culling at any time and especially during drought conditions.

Considerations for water during a drought or after a wildfire

Water requirements of cattle may double during hot weather. If cattle don't have enough water, they may refuse to eat, experience lower production and become sick. The following table provides estimates of water consumption for cattle. (See Table 1)

In some areas you may be able to develop a spring or seep (a flow of 1/2 gallon per minute amounts to 720 gallons per day). Consider the possibility of installing a larger storage tank and piping water to troughs. You may need to install high-pressure plastic pipe to carry water from a central source. Although expensive initially, pipelines will prove useful for many years. Hauling stock water is expensive. However, it may be a viable strategy in some situations.

One concern about cattle drinking stagnant pond water during hot, dry weather is that animals can die if the water contains certain species of blue-green algae. Toxic blue green algae blooms occur on or near the water surface under conditions including hot, sunny days and warm, nutrient-rich water. Poisoning by the algae is characterized by convulsions, bloody diarrhea, and sudden death. Clinical signs in blue green algae poisoning include nervous derangement, staggering, tremors, and severe abdominal pain. Affected animals rarely range far from the water source.

Toxic blooms of algae are unpredictable. Not all blue green algae are poisonous, and the blue green algae that can generate poisonous toxins don't always do so. Presence of

potentially poisonous blue green algae may be determined by microscopic examination, but the presence of algae does not mean the water is toxic. If you suspect blue green algae, contact your veterinarian or county agent to determine which samples would be appropriate for your situation. If concentrations of blue green algae are suspected, walk around to the windy side of the water body. If any dead animals such as mice, muskrats, birds, snakes or fish are present, assume a poisonous condition exists.

Supplementing cattle on affected pastures and ranges.

Producers generally have two options for meeting the nutrient requirements of cattle on burnt-over or drought-affected pastures and ranges. The first is to provide supplemental feed to ensure the herd has adequate energy, protein, vitamins and minerals. The second is to reduce the nutrient requirements of the cow to a point where they can be met with available forage.

Drought-affected or burned pastures and native range generally do not produce adequate forage to maintain normal stocking rates, so producers must provide supplemental energy to meet the needs of the herd. If forage is plentiful, protein often is the choice of a supplement.

If you supplement hay on rangeland, try not to buy or harvest weed-infested hay. The future cost of feeding weed-infested hay far outweighs its feed value in the short-run. If weedy hay must be fed, feed in an area or holding pasture that is removed from streams, riparian areas and wooded areas. Be sure to keep cattle confined for several days after feeding the weedy hay to prevent them from spreading viable seed from their digestive tract. Observe holding pastures and feeding areas closely, and treat weed infestations.

Try to take advantage of areas dominated with annual species. They should be grazed early in the season when their nutrient value is high. This will allow grazing deferment on the higher-condition range dominated with perennial plants.

Available crop residues such as small grain straws and other byproducts of crop production can stretch tight feed supplies during drought conditions.

Pastures and native range that are dormant due to drought conditions may be low in vitamin A, phosphorus and protein. Meeting the need for these nutrients is important in maintaining herd productivity.

Reductions in stocking rate will reduce stress on range plants and provide more forage for remaining cattle. When stocking rates are reduced in accordance with production, lesser effects on weaning weight may occur. If stocking rate is not reduced, supplemental feeding is necessary to maintain herd productivity and alleviate grazing pressure.

Two Options

When pasture is spare and poor quality: If only slightly limited, the feeding of range cubes (minimum 20 percent crude protein) or mixtures of grain and cottonseed or soybean meal at rates of 3 to 5 pounds per cow daily may work for a while. Cubes with a more natural protein and less crude fiber (less than 10 percent) are better.

When pasture becomes extremely short, consider purchasing hay or replacing feed for the pasture as well as selling stock. Remember that most grass hay has only 50 - 65 percent of the energy content of grain so that one pound of grain can replace 1.5 - 2.0 pounds of hay. A pound of grain will only replace 1.2 - 1.4 pounds of alfalfa hay. It doesn't make sense to pay $105 per ton for poor quality grass hay when grain would cost very little more. It is necessary to start cows on grain slowly and feed it so that all cows have opportunity for their share of the feed. It is possible to feed up to 80 percent grain in a maintenance diet for British bred cows. Grain-based supplements should be fed daily to reduce the risk of acidosis. All cattle need some forage in the diet to minimize digestive problems.

General recommendations

Minerals

Provide the same salt and mineral mixture during drought or after wildfire as you would during normal conditions. However, during drought, phosphorus supplementation is even more critical. A complete mineral supplement containing 12 percent calcium, 12 percent phosphorus, 5 percent magnesium, 0.4 percent zinc (4000 ppm), and 0.2 percent copper (2000 ppm) has worked well in many areas.

Vitamin A

Lack of vitamin A may become a problem during the fall and winter for cows that grazed drought-affected pastures during the summer. Vitamin A is lacking in forages that grow under drought conditions and hay produced from drought-affected forages. Cows should receive vitamin A and D booster shots approximately 30 days prior to calving if they have not been previously supplemented with vitamins.

Protein

Pastures dormant due to drought conditions are usually deficient in protein. If these conditions occur during the breeding season, reductions in pregnancy rate can occur. Provide dry cows with approximately 0.5 - 0.75 pounds of supplemental crude protein and lactating cows with 0.9 - 1.2 pounds of supplemental crude protein per day. This can be fed as approximately 1.0 - 1.5 pounds of soybean meal for dry cows and 2.0 - 2.5 pounds of soybean meal for lactating cows. Feed 1 to 2 pounds per day of a high protein supplement to dry cows and as much as 2 to 3 pounds to lactating cows to maintain forage intake and efficient utilization of the forage.

You may need to supplement protein for optimum breeding rates. Protein based supplements (cottonseed meal, soybean meal and canola meal), commercial protein blocks, liquids and tubs would also be appropriate. Alfalfa hay, sunflower

meal, safflower meal and other protein meals may also be used as protein supplements.

Energy

During drought conditions, energy may be the most limiting nutrient for grazing cattle. Several options are available for supplying energy to cattle on drought stressed pasture. Hay, grain and crop processing byproducts can all be used to supply energy to grazing cattle. Low-quality forages can also be ammoniated to increase digestibility and protein content.

Supplementing grain on pasture can result in a "Catch 22" problem. Too much supplemental grain can reduce forage intake and digestibility, resulting in less energy available to the animal from available forage. The reduction in forage intake may not be undesirable during a drought. As a general rule of thumb, up to 0.2 percent of body weight of supplemental grain per head per day will not result in large decreases in forage intake and digestion. For example, a 1,200-pound cow could receive 2.4 pounds of grain per day without drastically reducing forage utilization. For some grains, processing may be necessary for optimum use by cattle. Corn and oats can be fed whole but may be utilized better if coarsely rolled before feeding. However, barley and wheat should be coarsely rolled. Avoid fine grinding and rolling, which results in fines and dust. These can result in increased incidence of acidosis and founder. In addition, dusty supplements are unpalatable.

The producer must weigh the additional costs of processing vs. the value of the grain. Grain processing coproducts such as wheat midds, soybean hulls and corn gluten feed, which contain highly digestible fiber, provide energy while alleviating much of the negative impact that grain supplementation has on fiber digestibility. These byproducts also provide protein, which may be limited in drought stressed forages. When using by-product feedstuffs, make sure that the mineral program is balanced. These feeds are typically high in phosphorous and potentially high in sulfur, which may lead to mineral imbalances. The trace mineral levels may be somewhat low as well.

Drylot Feeding. If pasture conditions are extremely poor, producers may consider feeding cows in drylot. This may be more cost effective than supplementation on range if large amounts of supplement must be transported and fed to cows daily. In addition, it may allow pastures a much needed rest period to begin recovering from the drought or wildfire.

Reducing nutrient requirements of the cow herd

Lactation represents the greatest nutrient demand for cows during a yearlong production cycle. It increases demand for energy, protein, water and other nutrients. One of the simplest ways to reduce nutrient requirements is to wean the calf. This practice can cut nutrient requirements by one-third to one-half depending on milk production of the cow. Early weaned calves can achieve adequate rates of growth if given access to a high quality ration. Dry cows will eat less forage and usually travel further distances for forages than lactating cows, further reducing demand on the pasture. By removing the demands of lactation, acceptable pregnancy rates and calving season length can usually be maintained.

Producers may consider weaning only a portion of the herd early. In this case, logical candidates for early weaning are cows nursing their first and second calves. These animals have nutrient requirements for growth in addition to maintenance and lactation. The nutrient requirements for lactation and growth are given higher priority than the need to reproduce. By removing the demands of lactation on nutrient requirements, growth and reproduction will receive a greater proportion of the nutrients available.

Unavailability of feeds or unusually high cost often prohibits feeding lactating cows the nutrients necessary for lactation and rebreeding. Mature cows need nutrients for body maintenance, lactation and rebreeding. First-calf heifers and young cows must have additional nutrients for growth. To reduce stress and lessen the total feed necessary, the only production requirement that can be removed is lactation. Lactation stress may be removed from cows or heifers by weaning calves after 60 to 80 days of age, or partially removed by creep feeding.

Feeding management options

- Design your feeding program to get the most mileage from the available feeds on your ranch or in your area.
- Supplement low quality feeds correctly. Your Extension agent or nutrition consultant can help you determine if you are meeting the cow and calf nutrient requirements.
- Underfeeding nutrients lowers production. Overfeeding nutrients increases feed expense and reduces the net return over feed expense.
- Make every effort to reduce feed waste.
- Feed the highest quality feeds to animals that have the highest nutrient requirements, (replacement heifers, growing calves, lactating cows).
- Feed the lowest quality feeds to cows in the middle-stage of pregnancy.
- Save the better quality feeds for those periods just before and after calving.
- Consider substituting grains for hay when these substitutions can balance the ration more adequately at a lower price (see section on substituting grain for hay).
- Consider ammoniating crop residues such as wheat and barley straw to improve digestibility and intake.

Table 2. Summary of results using ammoniated wheat straw

Source	Cattle type	Untreated	Treated	Daily gain, lbs Response
Oklahoma	Yearlings	.60	1.25	+.65
Oklahoma	Open Cows	.09	.40	+.31
Nebraska	Preg. Cows	.26	.88	+.62
Purdue	Preg. Cows	-1.00	-.18	+.82

Increased digestibility and intake were the cause of the improved gain. Two to three pounds of supplement or alfalfa hay were fed along with free choice ammoniated wheat straw. Ammoniation alone does not make wheat straw a complete feed. A good mineral/vitamin supplement is essential and 1 to 2 pounds of natural protein is needed along with the non-protein nitrogen added by ammoniation. Toxicity problems, involving calf losses and wild irrational cattle behavior, have been reported when ammoniating high-quality forages. Toxicity problems have not been observed with ammoniation of wheat straw or similar products.

Ammoniated straw

Ammoniated straw may be an option. Ammoniation of straw with 60 pounds of anhydrous ammonia per ton of straw will increase cattle performance and make it possible to utilize wheat straw as the only roughage in the diet, something not recommended for untreated straw. A summary of four trials is presented in Table 2 indicating that actual daily gain was improved by .31 to .82 pounds daily.

Stay alert for potential problems:

- The use of ***salt*** to limit supplement intake may increase water intake 50 to 75 percent. Water must not be limited in any way or salt toxicity may result.
- Overconsumption of urea-containing supplements by cattle on forage-scarce ranges may result in ammonia toxicity. Generally, cattle performance on urea-type supplements can be lower than expected when energy or forage is in short supply.
- Hay cut under moisture stressed conditions, especially grain type hays, may contain high levels of nitrate. It is recommended to test for nitrate before feeding such hays, especially before feeding large amounts. Be sure to take a good representative sample for analysis.
- Prussic acid or cyanide poisoning can also be a problem in grazing drought-stunted plants such as sorghum, sorghum hybrids and sudan grass. If forage for hay is allowed to sun cure thoroughly for three to five days, bleaching out any bright green color, prussic acid problems should be lessened.
- Cattle grazing short pasture are more likely to consume poisonous plants. Poisonous plants may grow faster after wildfire.
- Infrequent feeding (from alternate day to once per week feeding) of protein supplements (less than 30 percent crude protein) like oil-seed meal cubes, has been recommended to save labor. The practice is still good for high protein supplements but is not to be used for grain type supplements. High-energy supplements (grain, breeder cubes, etc.) should be fed daily, especially where ≥ .5 percent of body weight may be fed daily. High-energy acid-producing feeds tend to decrease rumen pH and fiber digestion and alternate day feeding of large amounts magnifies the decrease in rumen pH. Unadapted cows should be started on grain feeding slowly or the problems of acidosis, founder and even death may result.
- Rumen impaction may result where cattle receive inadequate protein (less than 7 percent to 8 percent CP in total diet) and too much of a low quality/high fiber forage such as drought affected pasture or wheat straw only. Lack of adequate water will aggravate the impaction problem.
- Hardware disease. Hay harvested from vacant city lots, roadsides etc., may contain nails, wire or foreign objects which can pierce the rumen wall resulting in death of the animal. Close observation of feeds and the use of magnets in grinder/mixers can help to reduce the potential consumption of problem materials by animals.

Sources:

The sources of information for this section are: Montana State University, North Dakota State University, Texas A&M University, Penn State University, Queensland Beef Industry Institute, and NSW Agriculture.

AFTER WILDFIRE — Information for landowners coping with the aftermath of wildfire

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This book provides information to help landowners cope with the aftermath of future wildfires in Montana and in other states. Each section can be copied and distributed as needed. To obtain a copy of this publication or any of the following sections, please contact your local Montana State University Extension agent or download a PDF file at www.montana.edu/publications.