Rangeland management during drought

Are You Ready for the Next Drought?

Although we don't know what the future holds, we can be certain there will be droughts and livestock producers will be faced with the painful dilemma of reducing stocking rates (grazing pressure) or damaging their rangeland.

This DROUGHT CHECKLIST examines some of the measures you might consider to reduce the impacts of drought on your livestock operation and the range resource, and hasten recovery when the drought is over.

Effects of Drought on Rangeland

- low soil moisture levels limiting plant growth and reducing forage yields.
- limited root growth, which makes range plants less able to reach scarce soil moisture.
- Over a series of drought or dry years, heavily grazed ranges will show a shift in plant species to weedy, shallow-rooted, less productive species.
- Drought effects may be more rapid on pastures that have coarse textured soils (ie: sands and gravels); be prepared to accept stocking rate reductions on these types of soils during drought.

Effects of Drought on Livestock

Reduced forage yields during drought will mean a declining plane of nutrition for cows and calves. This will have significant adverse effects on livestock production including the following:

- reduced gains due to increased energy expenditure while foraging,
- poor body condition in cows by fall and higher wintering costs,
- more open cows and late conception, which means fewer and smaller calves the subsequent year,
- lower weight gains for calves, and
- disease problems like dust pneumonia.
Range Management During Drought

During drought conditions then, the goals for the manager are to minimize damage to the range and stay in business. Heavy to moderate use of rangeland during drought reduces the production and profit potential for future years. The following practices present a variety of different options that we have seen practised by farmers and ranchers during drought conditions in the past decade. Some of these may be appropriate recommendations for your circumstances:

Native Rangeland:

- Recognize the effect of drought on forage production. If grass growth has started, early grazing during drought will further stress range plants and leave them with lower energy reserves.
- Reduce stocking levels to balance livestock needs with the forage supply.
- Carry-over is a portion of each years plant growth that is left ungrazed. As carry-over breaks down it becomes litter, the dead plant material on the soil surface. Litter insulates rangeland by reducing soil temperatures and water loss. When moisture is scarce, rangelands with adequate litter reserves will produce more forage than those with less litter. Allow light to moderate use of forage to enable plants to maintain their present level of vigour (plant health) and retain litter.
- Rest or defer (delay) grazing in those fields that were heavily grazed in the previous grazing season.
- Graze first those fields rested or deferred in the previous grazing season.
- Take advantage of grazing opportunities in rest, reserve or buffer fields.
- Distribute cattle across more fields in those areas where rangelands are more sensitive to erosion (i.e. sand hills).
- Focus on grazing management tools that will improve livestock distribution such as herding or fencing out stockwater sources.

Cropland and Tame Pasture:

- Consider seeding annuals as an emergency source of forage. In the spring, seed winter annuals for supplementary pasture. Spring-seeded fall rye and winter wheat remain vegetative throughout the summer and will respond with growth to any showers that occur.
- Use your cattle to harvest light or failed hay and annual crops.
- Use last year’s crested wheatgrass litter where present. (Supplementation is usually required to compensate for the poor nutritional status of this litter). However, resist the temptation to regraze crested wheatgrass stands after August 15th (if they regrow), otherwise next spring’s forage production may be reduced proportionally, especially if drought persists.
- Make maximum safe use of current growth of seeded pastures (e.g., crested wheatgrass), which are better adapted to spring grazing than native range.
- Make full use of stubble fields after harvest.
- Fertilization of some tame pastures in good moisture years can take...
pressure off of other pastures, to allow for forage stand condition recovery from drought. Fertilization will improve productivity, increase the root volume of the stand, and make it more drought tolerant.

**Water, Salt, Supplements and Feed:**

- Extend your feeding period.
- Place salt, emergency water supplies or supplements in areas that previously were lightly grazed.
- Use fields that will run out of water first. This will reduce grazing pressure on fields with better water supplies.
- Spread cattle over more fields where water levels are low, and where large herds may foul low dams or dugouts.
- Ensure that cattle have adequate salt. Some poisonous range plants are salt accumulators and be more attractive to livestock during drought.
- Consider use of a portable stockwater supply. For smaller operations, a stock tank on a portable vehicle may also be an excellent way to improve livestock distribution on a pasture during drought.
- Fence off water sources that are low. Pumping water to a remote site will improve water quality for livestock and reduce water losses due to livestock activity in water.
- Have all windmill floats in good repair and inspect seats on valves on a regular basis; investigate use of capped storage tanks to reduce water evaporation and to preserve water quality. Stock tanks for storing water will also help to guarantee livestock access to water during windless days, or when windmills fail.
- Consider the purchase of portable assets such as electric fence and poly pipe so that remote stockwater sites can be set up. These two tools will help you to improve livestock distribution when water is scarce.
- Remember that snowfences for dugouts have proven to be effective for longterm dugout water supply.

**Managing Before and After a Drought**

Once the drought has ended, range managers must give the rangeland a chance to recover so grass production can return to normal and build to the highest level of range condition possible. Proper management after the drought has ended will provide long-term benefits to your livestock operation and provide for a stable forage supply.

- Review your range management plan and the effect drought has had on range condition and vigour.
- Plan and implement a grazing system that will build plant vigour and re-establish litter reserves. Moderate to light rates of stocking and deferral of spring grazing will be important. Some questions you may consider:
  - Can the adverse effects of spring use be minimized by altering the period of spring use among fields?
  - Can a limited amount of marginal cropland be seeded to tame...
pasture to provide complementary grazing for relief of spring grazing on native grassland?

- Can a grazing system like rest-rotation be implemented for badly depleted grasslands (this involves a full year of rest for certain fields to increase litter accumulation, improve plant vigour and hasten range recovery)?

- Do not be hasty in re-grassing deteriorated range. Recovery can be quite rapid with the right management. Proper management is the cheapest long-term approach.

- Rangeland in good to excellent condition provides the best protection against drought. This ensures the best possible mix of drought-adapted, deep-rooted and productive plant species that are naturally present on your rangeland.

Good long-term management means managing for the dry years. This will benefit the range, improve productivity, and provide a more stable, reliable forage supply.

**REFERENCES**


Most of the information for this checklist was adapted from an article written by Barry W. Adams, Public Lands Branch - Southern Region, Alberta Agriculture, Food and Rural Development (Range Note #14, 1992). This Range Note was abridged by Chris Nykoluk, Range Management Section, PFRA, Regina. For more information, please call your local Range Management Specialist, Extension Agrologist, or PFRA at (306)780-5066.