

Appendix B

PRESCRIBED GRAZING DROUGHT MANAGEMENT CONTINGENCY PLAN¹

The purpose of a drought contingency plan is:

1. Describe the drought indicators and response triggers that will be used to determine if drought response actions are needed.
2. Provide land owners and managers with a range of management options that will allow for a flexible and rapid response to drought.

The timing, intensity and duration of every drought event is unique and will impact the resources of each operation in a unique manner. As a result, the drought contingency plan is meant to be adapted and adjusted in a manner that will ensure livestock management during drought does not impact the natural resources adversely and compromise the land manager's ability to meet the fundamentals of grassland management.

Drought is a constant and normal part of the rangeland environment. It is not a question of whether drought will occur, but when and how severe. In the North Dakota, ranchers are always in some phase of drought management. Ranchers who understand the need to prepare for, endure, and recover rapidly from drought will survive the guaranteed, but unpredictable drought cycles.

There is no special prescription for drought management. **Good grazing land management is good drought management.** This embodies utilizing a good prescribed grazing system which permits control of grazing frequency and intensity and provides proper recovery periods after grazing, proper livestock distribution, season of use, and stocking rate as well as kind and class of livestock. **During a drought, there are no tricks to compensate for past overgrazing.**

A basic understanding of the potential capabilities and limitations of all ranch resources is fundamental to sound management. High levels of plant vigor and range health are critical for the endurance of and rapid recovery from drought. It is equally important to know which practices optimize livestock performance, and minimize risk of financial loss. Drought considerations must be incorporated into each year's management plan.

Management Preparation for Drought

Drought will challenge the mental toughness of even the best of managers. Diverse practices can be used to maintain ownership of cows under drought conditions. Some ranches will liquidate or relocate part or all of their breeding stock. The value of keeping breeding herds on the ranch must be weighed against the additional costs that are probable when drought continues. Recovery of additional production costs will depend upon: (1) productivity of livestock, (2) productivity of grazing lands, and (3) livestock market prices during and following drought. Additional items to consider which may help you determine how much risk you can afford to accept:

- Revisit family and ranch goals.
- Evaluate short- and long-term family needs.
- Re-evaluate current financial position, including financial assets and obligations.
- Evaluate working relationship with your banker.
- Willingness to accept the additional stress of added risk.
- Ability to recover losses incurred during and following drought.

Desperation caused by financial problems can lead to the use of excessive stocking rates that reduce animal performance and cause dramatic reductions in plant vigor. Overgrazed land is also worth less to future buyers or renters. If serious financial problems exist before drought, it

may be best to sell before remaining equity is lost or additional debt is incurred. Even when range livestock operations are solvent, it may be prudent to liquidate or relocate part or all of the breeding herd to avoid additional production costs or to avoid damaging range and pastureland. Under severe or prolonged drought conditions the cost of replacement livestock is almost always less than the cost of long-term reductions in grazing land productivity.

Herd Management

The best alternative for drought management is to reduce total forage requirements. Reducing stocking rates during drought pays dividends in terms of:

- Optimized animal performance
- Reduced supplemental and winter feeding costs
- Minimized damage to forage resources, and
- Enhanced range and pasture recovery following drought

Sell or relocate livestock as soon as shortages in forage and feed resources are anticipated because market value tends to be highest at the beginning of a regional drought. If additional shortages in forage occur, calculate the additional costs associated with keeping cows on the ranch (feed, interest, labor, etc.) or transporting the cows to another location with adequate feed or forage. If your calculations show an unreasonable high cost of producing a weaned calf, it may be prudent to sell or relocate part or the entire cow herd. The following practices can help to minimize liquidation of the breeding herd:

- Early weaning can extend the forage base
- Practice early and heavy culling of less productive cows such as late calving cows and older cattle
- Remove yearlings from summer pastures early
- Consider curtailing production of replacement heifers for one year
- Bulls may need to be supplemented earlier than other classes of livestock to be in acceptable condition when the breeding season begins
- Maintain a percentage of the livestock as a readily marketable class of stock, such as yearlings or stockers

Past and Future Stocking Rates

Grazing management during years proceeding drought is a major factor in range vegetation response to drought. Managers may have assumed that no change in stocking rate has occurred on their ranches because they have not increased livestock numbers. The amount of forage consumed in a pasture depends upon animal size as well as animal numbers and days of grazing. The average size of cows, calves and yearlings has increased on many ranches over the past 10 years. A 10 to 40 percent increase in average animal weight should be equated to 7 to 28 percent increase in stocking rate. Inadvertent increases in stocking rates may lead to overgrazing and reduced plant vigor before drought. All range livestock producers need to critically evaluate their animal weights and use an appropriate animal unit (AU) equivalent when calculating stocking rates. Inadvertent overstocking may reduce animal performance and will damage the forage resource.

Drought Management Plans

A drought plan should minimize financial hardships and hasten vegetation recovery after drought. Plans identify action to be taken at the first sign of drought as well as with continued indications of pending forage shortages. Plans for stocking rate adjustments need to be specific in terms of method and date. The timing of actions should be based upon seasonal check points. Critical evaluation dates at which livestock requirements are balanced with available forage and feed resources are:

April 15 – 30

- Review the previous year's records for pasture condition and adjust the grazing dates accordingly for the upcoming season.
- Assess livestock water quality and quantity, especially recharge in stock ponds. Create an emergency livestock water plan and test water quality.
- Determine soil moisture and precipitation amounts, adjust accordingly (below normal precipitation, <70% of normal, will impact cool season grass production). Grazing days available may be negatively impacted, consider delaying turnout and extending feeding periods to balance estimated forage availability and livestock intake. Develop an emergency feeding plan (sourcing feed and alternative feedstuffs).
- Consider a cool season annual forage to help extend grazing days.

May 1 – 31

- Continue to monitor soil moisture and precipitation amounts, if the precipitation is <70% of normal drought conditions exist, forage production will be reduced by 10% or more.
- Revisit management strategies and consider optional plans to: to remove cattle earlier, reduce stocking rates, weaning calves early, and update emergency feeding plan. Consider moving to tame pastures, post-contract Conservation Reserve Program lands, or moving into heavily invaded bluegrass or smooth brome grass rangeland.
- Check all pastures for grazing readiness prior to turnout (third leaf stage) and have a monitoring plan to measure utilization and prevent overgrazing.
- Revisit the emergency livestock water plan and water sources.

Note: Estimate probable stocking rates and alternative (annual) forages based upon April through May precipitation to compensate for forage production shortfalls on pasture and rangeland.

Cool season grasses produce 30% to 40% of their total annual production during the month of May while warm season grasses produce 10% to 20% of their total annual production during this same period.

June 1 – 30

- Continue to monitor soil moisture and precipitation amounts, if the precipitation is <70% of normal drought conditions exist, forage production will be reduced by 20% or more.
- Revisit management strategies and consider optional plans to: remove cattle earlier, reduce stocking rates, weaning calves early, and culling cows. Assess the establishment and stand quality of summer annual forages and soil moisture conditions.
- Consider grazing those pastures with unreliable water sources during this time, saving those pastures with reliable water sources later in the summer.
- Be on the lookout for algae blooms in water sources. Consider water tests, restricting livestock access, or treating those water sources that are suspected of having toxic conditions.
- Nitrate poisoning can become an issue, refer to NDSU Extension publication "Nitrate Poisoning of Livestock, V839".
- Maintain a monitoring plan to measure utilization and to avoid over use.
- If hayland production is significantly reduced consider grazing those acreages versus harvesting for dry feed.

Note: Most plant growth in North Dakota occurs in June. If drought conditions have occurred in May and continue into June, forage production will be dramatically reduced for the season irrelevant to the amount of moisture received after June 30. Serious consideration should be given to stocking rate reductions and herd management as discussed in the "Herd Management" section.

Cool season grasses produce 70% to 80% of their total annual production during the months of May and June while warm season grasses produce 50% to 60% of their total annual production during this same period.

July 1 – 30

- Continue to monitor soil moisture and precipitation amounts, if the precipitation is <70% of normal drought conditions exist, forage production will be reduced by 30% or more.
- Revisit management strategies and consider optional plans to: remove cattle earlier, culling cows, weaning calves early, or moving them to alternative forages or crop residue earlier than planned.
- Assess establishment and stand quality of late planted summer annual forages and soil moisture conditions.
- Maintain a monitoring plan to measure utilization and to avoid over use.
- Forage quality may become limiting, consider supplementing protein if needed.

Note: Plant production beyond this period will be slight to none, with existing plant production making up the current years forage base.

August 1 – 30

- Continue to monitor soil moisture and precipitation amounts, if the precipitation is <70% of normal drought conditions exist, forage production will be reduced by 40% or more. Plant growth will cease earlier than normal and standing forage will be reduced.
- Maintain a monitoring plan to measure utilization and to avoid over use.
- Assess the current-year and carryover winter feed inventory, source and purchase additional hay if necessary.

Note: The diet quality of annual forages declines dramatically after the soft dough stage. If maximum tonnage is the objective, then harvesting after the soft dough stage may be desirable. If high forage quality is the objective, harvest at the late boot to soft dough stage.

September 1 – 30

- Make a final assessment of yield of annual forages grown for late season grazing.
- Inventory other harvested feed and determine the quantity of crop residue on cropland.
- Estimate amount of forage in winter pastures (if applicable).
- Maintain a monitoring plan to measure utilization and to avoid over use.

October 1 – 30

- Use September through October precipitation to predict stocking rates for the next summer.
 - Maintain a monitoring plan to measure utilization and to avoid over use.
- Note:** Caution must be exercised. The color green can have profound psychological effects on range livestock producers. Even a small amount of spring or fall green-up can cause a false sense of security and delay of prudent management decisions. Premature, aggressive restocking can cause serious economic loss because of long-term reductions in the rate of vegetation recovery. If vegetation recovery is slow or restricted by continued drought, a destocking plan will be needed.

Additional information related to drought management may be found at:
<http://www.ag.ndsu.nodak.edu/drought/drought.htm>

¹ The majority of the information in this section was obtained from "Strategies for Managing Drought in the Northern Plains", North Dakota State University Extension Publication R1819. A copy of this publication can be found at the following web site: <https://www.ag.ndsu.edu/publications/livestock/strategies-for-managing-drought-in-the-northern-plains/r1819.pdf>