OKLAHOMA COOPERATIVE EXTENSION SERVICE

Drought Management Strategies

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Drought management strategies may be divided into several categories, but the key point to remember is that **drought management is not business as usual.** Changes **must** be made in a proactive, rather than reactive, manner to minimize negative effects on livestock production during prolonged periods of reduced precipitation. Producers should remember that grazing management is the most important factor for livestock producers in any economic or environmental climate, followed closely by proper soil fertility for introduced forages.

Grazing Management

The critical element in successful grazing management is maintaining the proper stocking rate. The proper stocking rate varies from year to year because of changing precipitation patterns. Knowledge of the long-term average stocking rate that achieves a balance between maintenance of the forage base with acceptable livestock performance during wet or dry years is vital. Determining long-term forage production, and thus the proper stocking rate for rangelands or introduced forage pastures, comes from historical records of forage production, precipitation levels, and stocking rates over a period of years. Sound record keeping relative to forage production and grazing management is an important aspect of good ranch management; unfortunately, record keeping is often overlooked by many producers.

Rangeland

When stocking rates are too high, rangelands become over-utilized and are then subject to increased weed problems and reduced animal performance. When stocking rates are too low, rangelands are undergrazed. Under-utilization (low forage harvest efficiency) generally results in good individual animal performance, but net economic return is reduced. At the same stocking rate as a continuous stocking system, rotational stocking will improve harvest efficiency, and thus, forage utilization. Rotational stocking can be important during a drought since forage is used in a more efficient manner than under continuous stocking.

Drought can and should be anticipated to some degree. Stocking rates should be reduced to prevent increased use of purchased hay and supplements and to ensure acceptable animal performance. Signs of forage over-utilization during a drought generally result in an increased use of hay or concentrate feeds during periods when forages should be providing livestock nutrition. Increased use of purchased feeds will reduce the economic performance of the ranch.

Introduced Forage Pasture

Drought reduces forage growth on both rangelands and pastures. It is important, therefore, that stocking rates be reduced at the onset of a drought to a level that will provide acceptable animal performance under the worst circumstances for the given resource base. Again, the use of rotational stocking can improve harvest efficiency, and thus, improve forage utilization during periods of limited precipitation. During a drought, producers can not allow livestock to *patch* or *spot* graze and waste precious forage.

Managing Drought-Prone Areas

During average to wet years, many producers have excess forage and purchase additional cattle to take advantage of the surplus. Demand for additional cattle increases cattle prices and results in producers purchasing cattle at high prices during these periods.

During periods of reduced precipitation, producers who have stocked at maximum carrying capacity during good years are forced to sell cattle. Local markets can become saturated with cattle, thus reducing cattle prices. This up-and-down stocking rate scenario increases risk, decreases ranch liquidity, reduces net profitability of the livestock operation, and raises the anxiety level of management, especially in a long-term drought.

To avoid the stocking rate roller coaster, producers in drought-prone areas have developed alternative grazing management strategies. One strategy for a cow-calf operation is to maintain cattle numbers at approximately 75% of the long-term (>10 years) carrying capacity year-round. This practice will not allow a producer to take advantage of years when excess forage is available; however, during drought years these producers usually do not have to reduce livestock numbers. Gross sales may be less than other ranch enterprises, but net profitability is typically improved.

Another successful strategy is best illustrated by a large ranch in south Texas. The ranch manager maintains a cow herd at 40% of the total carrying capacity. The balance of the livestock is made up of stocker calves. During years of average to good forage production, more calves are used to graze the excess forage. During dry years, fewer or no calves are used. This strategy of using stocker calves as *flex grazers* provides good control over forage harvest efficiency regardless of climatic variables. The result is a fluctuating, but generally positive annual net cash flow from the livestock enterprise.

Fertility

Rangeland

Fertilizers are generally not economical, and thus, not used on rangelands.

Introduced Forage Pasture

If the drought period has been relatively brief (4 to 6 weeks), producers should probably apply 50 to 75 lbs of actual N per acre in anticipation of precipitation. If the drought is prolonged (>2 months), the wisest strategy may be to withhold fertilizer application until conditions improve. During a drought, producers may also decide to withhold P, K, and lime applications until a better year. If conditions improve, additional applications of N, plus the eliminated P and K, can always be made at a later date.

Herbicides

Do not apply herbicides during a drought. Drought tolerance mechanisms prevent adequate entry of herbicides into plants during dry conditions and result in a high-cost application with little control of weed species. If herbicide use is warranted, application should be delayed until more favorable growing conditions are present.

Herbicide use generally indicates poor management practices regarding stocking rate and/or soil fertility. Usually, it is more economical to change management practices that have created the weed problem than to continue to apply herbicides.

Prescribed Fire

Generally, prescribed fire is not used during drought. Standing forage may have to be used for feeding programs if forage production is severely limited during prolonged drought. An exception might be where certain weed or brush species could be significantly reduced when burned during dry conditions. It is important to understand the target species and the specific effects of fire on that species. Forage production on burned sites will typically be reduced or nonexistent until growing conditions become more favorable.

Hay Production

Rangeland

Hay production will be reduced during a drought. The key ingredient in managing native hay meadows is to cut them only once per year and before July 10. Later cutting or double-cutting reduces desirable forage species, encourages weed infestation, and reduces forage nutritive value.

Native meadows that have been cut for many years should periodically be removed from hay production and included in the cow herd rotation. Long-term hay removal without animal impact may reduce the productive capability of certain native hay meadows over time because of nutrient removal.

Introduced Forage Pasture

Although hay may be in short supply, producers may choose to produce hay that is high in nutritive value. The improved nutrient content of good hay will reduce the need for expensive supplements during winter. Critical aspects of good hay production include proper fertilizer use (especially N) and harvest at the appropriate stage of maturity.

An alternative strategy for hay production during drought, however, is to ignore forage nutritive value and concentrate solely on total dry matter production. Under this scenario, forage is allowed to accumulate at the expense of nutritive value. This may be the best strategy if mature animals are being wintered. Growing animal performance, however, will be less than optimal. The addition of a protein and/or energy supplement during the winter will improve growing animal performance when fed hay of low nutritive value. The hay production strategy will depend on the forage base, class of animal, and total number of animals in the winter feeding program.

Summary

During drought, stocking rates ***must*** be reduced on all types of forage. Fertilizer inputs are generally reduced during periods of reduced precipitation, and rotational stocking should be considered to increase harvest efficiency and forage utilization. Herbicides should not be applied during a drought because they are ineffective during dry periods. The use of prescribed fire is not recommended during drought except for very specific circumstances. Finally, producers need to give careful consideration to their winter feeding program to help determine their hay production strategies during periods of drought. Delaying the decision to reduce stocking during a drought accelerates financial losses of the livestock production enterprise.

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