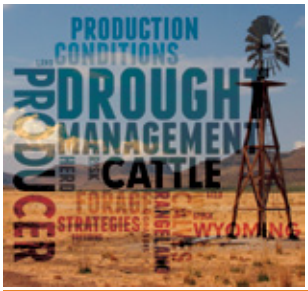


Two Common Drought Management Strategies and Some Considerations for Wyoming Cattle Producers

B-1218
June 2011

John P. Ritten, Assistant Professor and Agricultural Systems Specialist, Department of Agricultural and Applied Economics, stationed at the James C. Hageman Sustainable Agriculture Research and Extension Center (SAREC), University of Wyoming

Christopher T. Bastian, Associate Professor, Department of Agricultural and Applied Economics, University of Wyoming

W. Marshall Frasier, Professor, Department of Agricultural and Resource Economics, Colorado State University

Steven I. Paisley, Associate Professor and Beef Cattle Specialist, Department of Animal Sciences, stationed at SAREC, University of Wyoming

Michael A. Smith, Professor and Range Specialist, Department of Renewable Resources, University of Wyoming

University of Wyoming
Cooperative Extension Service

Drought in Wyoming

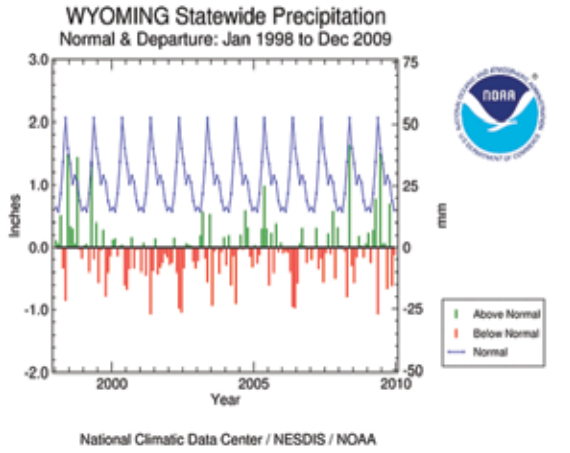
Wyoming has recently experienced one of the worst droughts in the state's recorded history. As we begin to recover, producers need to understand drought is a recurring phenomenon in this region (see Figure 1). Any management plan needs to have a course of action for dealing with recurring decreases in forage production. Keeping recent events in mind can help producers prepare for future drought. This publication explores the implications of the two most common drought management strategies used by cattle producers.

Drought Impacts on Cattle Producers

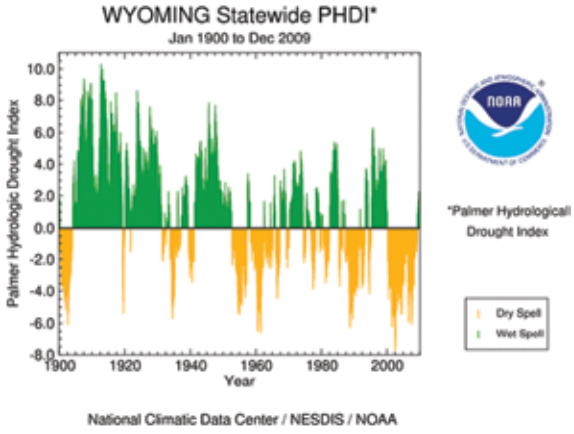
Drought directly affects cattle producers through reduced forage production. This decrease in available forage often results in lower calf and cull cow sale weights and lower revenues, which can ultimately impact rancher profits and equity. Cattle producers have few options when faced with drought. Some choose to do nothing different. However, this option is most likely not desirable as the reduction in forage produced will likely not allow animals to gain as much weight as desired. A second problem with this option is the long-term effect of reduced native rangeland resilience. Range in poor health requires more time to recover following a drought. Overuse of range during drought can also provide an opportunity

Figure 1. Wyoming weather a. Monthly precipitation compared to normal, b. Wyoming Palmer Hydrological Drought Index, c. Wyoming Z Index (Monthly)

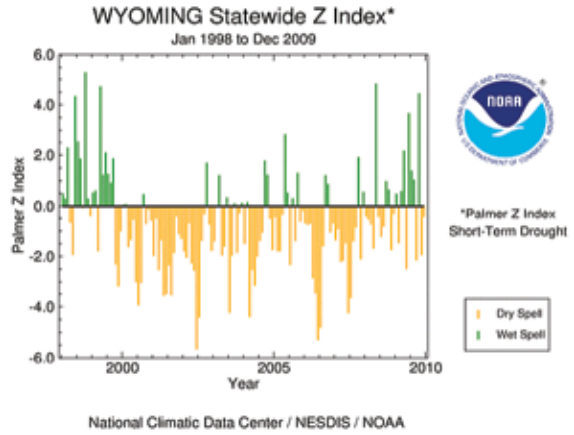
a.



b.



c.



Available at: http://www.ncdc.noaa.gov/oa/climate/research/2009/dec/st048dv00pcp200912.html

for invasive species. Weeds tend to outperform native plants during drought-stressed times. Therefore, a producer concerned with long-term rangeland health will choose to be proactive in the face of drought.

Two common options used by Wyoming producers is to either purchase additional forage or feed and/or reduce the nutritional demands of the herd to match actual forage production. When deciding if either or both of these options are optimal, producers must weigh the costs and benefits of each.

Alternative Responses to Drought

Purchase Additional Feed as a Substitute for Reduced Forage Production

This option addresses reduced forage production caused by drought conditions by purchasing additional feed. The first step in this strategy is to properly analyze existing range forage and predict actual forage production and the likely shortfall. One option for overcoming reduced forage production is feeding additional hay. However, the cost of hay must be considered, especially if the drought is widespread and hay prices increase dramatically. Another option is the feeding of grain to correct for reduced forage production. Again, special attention needs to be given to costs. An option available to some producers is to take advantage of local crop residues, such as corn stalks, or byproducts from local breweries or ethanol plants. If other local producers are liquidating their herds, leasing additional grazing ground could also be an option. Anytime the substitution strategy is taken, producers need to ensure nutritional requirements are accounted for with the added feed. A reduced plane of nutrition, even with increased feed, can lead to lower productivity of the herd. The option of meeting minimum nutritional requirements at the lowest cost should be utilized. If any of these options are to be chosen, a producer needs to fully account for the increased expenses and be able to justify the added expenditures by offsetting increases in receipts to cover those expenses as compared to not obtaining additional feed. The additional costs are those needed to acquire the feed (including any transportation/storage costs) and any additional labor needed to obtain and provide the feed. The revenues associated with feeding include any revenues from the ability to carry more or heavier animals as compared to not purchasing additional feed. However, some research suggests this strategy should only be employed if prices are expected to hold constant or rise. Otherwise, it may be more profitable to sell animals during periods of higher prices and rebuild breeding stock when prices are lower (see *Managing Your Ranch During Drought: Implications from Long- and Short-Run Analyses*).

Reduce Nutritional Demands of the Herd

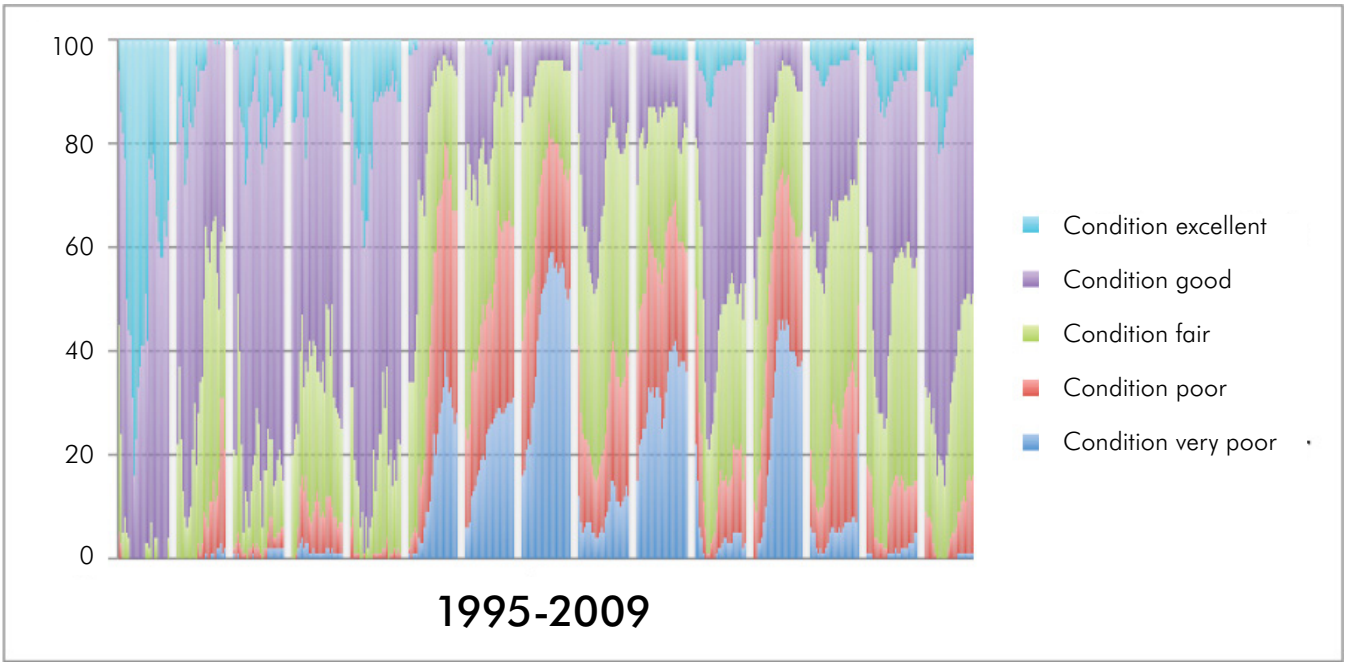
Reducing the nutritional demands of a herd can be accomplished many ways. One option is to liquidate some/all of the herd. However, full liquidation is usually not the best option unless the producer is ready to leave the industry because replacement costs of the entire herd and potential cash flow issues may make this option unfeasible. Partial liquidation is an attractive option as it reduces pressure on the range allowing pasture to recover quicker once the drought is over. This option also will allow for some immediate revenues from culling activities but will again either increase future costs of replacements or decrease future revenues as more replacements must be retained to restore the herd to initial levels. Another option available to producers is early weaning of calves. This lowers nutritional requirements of the herd as lactating cows have the highest nutritional requirements. This option alleviates some pressure later in the grazing season when forage production is usually at its lowest of the season (see Figure 2). One benefit of reducing nutrient requirements over substituting feed is there are no increased expenses needed to secure feed. However, this option will most likely result in either fewer or lighter-weight animals to sell. Another potential option is to utilize a cow/calf/yearling strategy. This option may require a decrease in breeding stock but allows producers to sell yearlings early in the year if forage production is low. This adjustment to forage shortages results in less disruption to breeding livestock numbers and herd genetics.

Long-Term Implications of Drought Management

Costs and Benefits of Drought Mitigation Strategies Must be Weighed over Long-Term Horizon

One unique aspect of drought management is how drought evolves over time, and management strategies must do likewise. For example, if a producer decides to feed to supplement the reduced forage production, they must continue to do so, perhaps for quite some time, depending on the length of the drought. This strategy is very dependent on a producer's financial situation, especially in regard to the ability to pay for additional feed over numerous years. However, if the drought is of short duration, feeding may be more desirable than liquidation. The reason is that, immediately following a drought event, a producer with a larger herd can sell more calves than a producer who needs to retain heifers to replace breeding stock. This producer also has the benefit of retained genetics, often a major factor in liquidation decisions of producers. However, if the drought is prolonged, a producer who reduces herd size will probably put less pressure on the range throughout the drought, and leaving it in better condition following the drought, both in terms of better forage production and lack of invasive species. The best option

Figure 2. Wyoming pasture condition 1995-2009, May through November, weekly observations



Available at: http://www.nass.usda.gov/Statistics_by_State/Wyoming/index.asp#.html

for producers is most likely a combination of these two strategies. Either way, a producer needs to adapt to changing range conditions. Awareness of conditions, flexibility in management, and the ability to make logical, rather than emotional, decisions will help producers cope with reduced forage productivity during drought.

Increased Risk of Invasive Species Due to Drought

Drought can increase risk of weed invasion in a variety of ways. Improper management of rangelands during drought can lead to invasive species increases at a higher rate than properly maintained rangeland. As weeds are often heartier than native species, they often recover quicker than desirable species after drought conditions cease. Another possible explanation of increases in invasive species during drought events can be related to feeding hay that is not certified weed-free. Use caution when feeding hay as a substitute for reduced forage production to prevent this common source of weed seed. The introduction and further dominance of invasive species is another long-term cost that should be considered when managing for drought situations. Proper management must consider these long-term effects in conjunction with short-term effects of herd management during adverse conditions. Rangelands infested with invasive species or lower-productivity grasses generally produce less useable forage, thus lowering the carrying capacity of the land. This translates into lower revenues for producers. Management decisions must take into account these potential issues.

For more drought-related work, see the other fact sheets in this series:

- *Considerations for Preparing a Drought Management Plan for Livestock Producers, B-1220.*
- *Price or Weather – Which Signal Should Livestock Producers Follow?, B-1221*
- *Comparison of Alternative Cattle Management Strategies Under Long-Term Drought, B-1219.*

Additional Resources

- *Multiple Impacts – Multiple Strategies. How Wyoming Cattle Producers Are Surviving a Prolonged Drought,* B-1178, April 2007, University of Wyoming Cooperative Extension Service, available at: http://www.wyomingextension.org/agpubs/pubs/B1178.pdf.

- *Managing Your Ranch During Drought: Implications from Long- and Short-Run Analyses*, B-1205, University of Wyoming Cooperative Extension Service, available at: http://www.wyomingextension.org/agpubs/pubs/B1205.pdf.

- *Recognizing and Responding to Drought on Rangelands,* MP-111.09, University of Wyoming Cooperative Extension Service, available at: http://www.wyomingextension.org/agpubs/pubs/MP111_09.pdf.

- *Monitoring: A Tool for Effective Rangeland Management*, MP-111.02, University of Wyoming Cooperative Extension Service, available at: http://www.wyomingextension.org/agpubs/pubs/MP111_02.pdf.

- *Livestock Grazing Distribution*, MP-111.05, University of Wyoming Cooperative Extension Service, available at: http://www.wyomingextension.org/agpubs/pubs/MP111_05.pdf.

- *Flexible Grazing Livestock Management Systems for Good and Bad Times*, MP-111.03, University of Wyoming Cooperative Extension Service, available at: http://www.wyomingextension.org/agpubs/pubs/MP111_03.pdf.

- *Tax Implications of Selected Drought Management Strategies*, B-1195, University of Wyoming Cooperative Extension Service, available at: http://www.wyomingextension.org/agpubs/pubs/B1195.pdf.

- *Alternative Feeds for Cattle during Drought*, Fact sheet 1.626, Colorado State University Extension, available at: http://www.ext.colostate.edu/pubs/livestk/01626.html.

- *Managing Small Acreage Pastures During and After Drought*, Fact sheet 6.112, Colorado State University Extension, available at: http://www.ext.colostate.edu/pubs/natres/06112.html.

- *Crop Residues for Livestock Feed*, Fact sheet 0.551, Colorado State University Extension, available at: http://www.cheboygancoop.com/animalscience/general/551.pdf.

- *Weed Management for Small Rural Acreages*, Fact sheet 3.106, Colorado State University Extension, available at: http://www.ext.colostate.edu/pubs/natres/03106.html.

- *Alternative Feeding Strategies for Cows and Calves Due to Drought Related Forage Shortages*, Colorado State University Extension, available at: http://www.ext.colostate.edu/drought/altfeed.html.

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Glen Whipple, Director, Cooperative Extension Service, University of Wyoming, Laramie, Wyoming 82071.

Be aware that due to the dynamic nature of the World Wide Web, Internet sources may be difficult to find. Addresses change and pages can disappear over time. If you find problems with any of the listed Web sites in this publication, please contact the author.