

Cattle Producer's Handbook

Drought and Other Natural Disasters Section

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Developing a Drought Management Plan

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Drought is a common feature of the western landscape and often results in significant economic, environmental, and social impacts. If we don't plan for drought and we assume instead that every year will be a good one for moisture, we're eventually in for an unpleasant surprise. But if we plan for drought, then we can enjoy the benefits of normal or rainy years and not get caught unprepared in dry years.

Planning ahead is generally seen as more efficient and more effective than measures taken in crisis mode. Drought researchers have found that after-the-fact assistance to farmers, for example, is expensive and doesn't necessarily reach the right people.

A recent study by the Federal Insurance and Mitigation Administration's (FIMA) Multi-hazard Mitigation Council showed that "mitigation"—taking steps ahead of time to prevent known impacts from a natural disaster—saves \$4 for every \$1 expended (FEMA 2012).

The National Drought Mitigation Center (NDMC) at the University of Nebraska-Lincoln (UNL) has developed an excellent publication, *Managing Drought Risk on the Ranch—A Planning Guide for Great Plains Ranchers*, at <http://www.drought.unl.edu/ranchplan>, for assisting ranchers in developing their own drought management plan (Reece 2012).

Due to content limitations, this fact sheet will provide a brief overview of the aforementioned planning guide.

Many ranchers with experience managing drought recommended:

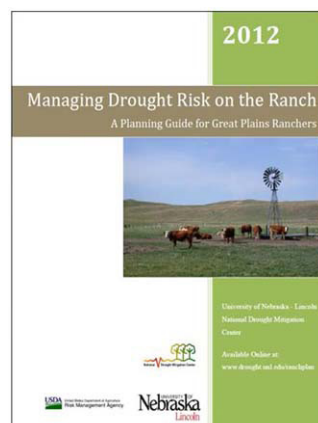
- Prepare for drought by increasing the health of the overall operation and maximizing flexibility in dealing with drought.
- Write a Drought Plan that includes what to do during drought and when to do it.
- When conditions require it, implement the plan and don't second-guess it.
- After drought, have a plan for restoring the health of the ranch operations.
- Monitor how the Drought Plan works and improve it as you learn.

Making decisions about what to do during drought, and when, can be overwhelming. Working through the following components may help you develop a Drought Plan and make decisions that are appropriate for your operation.

Drought Management Components

The following items are critical components to be considered in developing a drought management plan:

- Communication and Planning Partners
- Ranch Vision and Mission Statements
- Understanding of Strengths, Weaknesses, Opportunities, and Threats During Drought
- Inventory of Ranch Resources
- Identify How Drought Impacts Your Operation
- Critical Dates for Making Decisions
- Monitoring Schedule
- Management Strategies: Before, During, and After Drought
- Ongoing Review of Drought Plan



Communication and Planning Partners

Drought affects many aspects of a ranch operation, and there are many strategies that can be implemented to better prepare for and respond to drought. Planning partners can play a critical role in helping to understand the effects of drought and identify strategies that would be most appropriate for a particular situation.

If you have a plan, even if it's in your head, you need to share it with the people that work with you. Whether it's your children or your employees...it needs to be shared information. (Texas Rancher 2010)

Involve key family members, business partners, and your banker, as well as advisers with knowledge of range management, business, and marketing in the planning process.

Ranch Vision and Mission Statements

The longevity of farm and ranch operations can be determined partially by the manager's ability to develop a farm/ranch business plan, implement it, and monitor the outcome. Below are a series of steps or statements of how to give your organization direction.

The first is a statement of vision. It provides a destination for the organization. Next is a statement of mission. This provides direction on how to get to the destination. These are critical statements for the organization and the individuals who run the organization (Hofstrand 2009).

Vision Statement—A mental picture of what you want to accomplish or achieve. For example, your vision may be: "XYZ ranch chooses to raise and market fed cattle through a vertically coordinated alliance that responds to the demands of the consumer."

Mission Statement—A general statement of how the vision will be achieved. The mission statement is an action statement that usually begins with the word "to." An example mission statement: "To provide wholesome and high quality beef to local consumers."

Core Values—How you will behave during the process. Example of core values:

- "Meet the changing needs and desires of clients and consumers."
- "Respect and protect the environment."
- "Practice high ethical standards."

A companion statement often created with the vision and mission is a statement of core values. Core values define the organization in terms of the principles and values the leaders will follow in carrying out the activities of the organization.

Once you have identified what your organization wants to achieve (vision) and generally how the vision will be achieved (mission), the next step is to develop a

Table 1. Examples of goals, objectives, and action plans.

Goal	Objective	Action plan
Increase profit margin	Reduce operating costs by 10 percent in 18 months.	Conduct an in-depth analysis of identifying low-cost suppliers.
Improve employee skills	Conduct a training program in the next 12 months to improve employee skills.	Have all employees attend Beef Quality Assurance training.
Increase profit margin	Increase price received for cull cows.	Develop a marketing plan for selling cull cows.

series of statements specifying how the mission will be utilized to achieve the vision (Table 1):

- **Strategies**—Strategies are one or more ways to use the mission statement in order to achieve the vision statement. Although an organization will have just one vision statement and one mission statement, it may have several strategies.
- **Goals**—These are general statements of what needs to be accomplished to implement a strategy.
- **Objectives**—Objectives provide specific milestones with a specific timeline for achieving a goal.
- **Action Plans**—These are specific implementation plans of how you will achieve an objective.

Developing a ranch vision, mission, and strategic plan makes it possible for the manager to fit drought planning into this larger plan.

The decisions you make before, during, and after drought should help move you closer to the vision and objectives you have for your ranch.

The strategic planning process described in *Strategic and Scenario Planning in Ranching: Managing Risk in Dynamic Times*, published by South Dakota State University (<https://igrow.org/up/resources/02-2001-2012.pdf>), outlines how to develop a vision statement and objectives, develop scenarios and strategies, implement the plan, and measure success.

Worksheet 1 can be used to document your ranch vision and strategic objectives.

WORKSHEET 1: RANCH VISION AND STRATEGIC OBJECTIVES

Date _____ Form Completed by _____

RANCH VISION:

STRATEGIC OBJECTIVES	GOAL	ACTUAL
NATURAL RESOURCES (Range Health, Water Resources) 1. 2. 3. 4.		
PRODUCTION 1. 2. 3. 4.		
FINANCIAL 1. 2. 3. 4.		
CUSTOMER 1. 2. 3. 4.		
RANCH LIFESTYLE, LEARNING, AND GROWTH 1. 2. 3. 4.		

Source: "Strategic and Scenario Planning in Ranching: Managing Risk in Dynamic Times" (Gates, Dunn et al 2007).

Understanding of Strengths, Weaknesses, Opportunities, and Threats (SWOT) During Drought

A SWOT analysis is another tool that can be beneficial for helping you to understand potential drought risks and benefits. You will do an analysis of strengths, weaknesses, opportunities, and threats posed by drought. The strengths (S) and weaknesses (W) originate from within the operation; they are internal factors that influence ranch or farm performance. The opportunities (O) and threats (T) originate from outside the operation; they are external factors. If you've already conducted a SWOT analysis as part of whole-ranch planning, you may want to review it from the perspective of drought readiness (Gates et al. 2007).

Example of SWOT

Strengths

- Pasture health is good
- Core herd is profitable
- Purchase of south place increases AUMs
- Custom grazing cattle on south place

Weaknesses

- Water holes on south place dry up frequently
- South place somewhat over-grazed
- Ranch debt/asset ratio too high

Opportunities

- Two calls asking for hunting leases
- New EQIP program
- Custom grazing partner interested in increasing cattle numbers

Threats

- High fuel prices raise cost of shipping hay
- "Above average" likelihood of drought this year

You should understand the threats and benefits drought presents to your operation in order to identify appropriate management strategies.

Inventory of Ranch Resources

An inventory of your resources can help you and your partners know what you have to work with. Below are some recommended items to include in your inventory that are relevant to drought planning.

Resources to be Considered

Precipitation

- Precipitation extremes
- Average precipitation and timing

Range and Forage

- Plant composition and growth period
- Pasture health/condition

- Pasture forage production potential
- Other feed supplies

Herd

- Number and class of livestock
- AUs throughout the year
- Feed needs
- Current stocking rate

Water

- Wells/pipelines
- Capacity
- Water quality

Finances

- Cash flow
- Debt/asset ratio
- Unit cost of production
- Market alternatives

Human Resources

- Family members' interests/abilities
- Hired labor resources

Worksheet 2 can be used to complete your ranch inventory.

Identify How Drought Impacts Your Operation

Droughts may have direct consequences, such as reduced crop yields, livestock losses, or water supply depletion. These direct impacts may then lead to secondary consequences such as physical and emotional stress or financial insecurity.

Based on the impacts you see on your operation, you can begin to plan the areas that will take priority in your Drought Plan.

Some of the more common types of drought impacts are listed on Worksheet 3.

Worksheet 3 can be used to identify how drought can impact your operation.

Critical Dates for Making Decisions

Identifying "critical" dates when management decisions will need to be made is another important part of drought planning. **Critical dates** are also timely monitoring points in annual management cycles. On critical dates, current and predicted forage resources should be compared to current and predicted forage demand (**target points**), and balancing steps taken (**action plans**).

Critical dates may be based upon midpoints of rapid-growth windows for dominant grass species. Precipitation and soil moisture reserves are most important just

WORKSHEET 2: INVENTORY OF RANCH RESOURCES—SHEET 1

Date: _____ Inventory Completed by: _____
 (Attach additional pages as necessary)

CATEGORY	RANCH INVENTORY
<p>PRECIPITATION</p> <ul style="list-style-type: none"> • Historical Frequency of Drought • Range of Annual Precipitation Amounts • Average Precipitation and Timing 	
<p>RANGE & FORAGE RESOURCES</p> <ul style="list-style-type: none"> • Range/Ecological Site • Range Condition • Forage Production Potential of Each Pasture • Other Feed Supplies 	

WORKSHEET 2: INVENTORY OF RANCH RESOURCES - SHEET 2

CATEGORY	RANCH INVENTORY
<p>HERD RESOURCES</p> <ul style="list-style-type: none"> • Number and Class of Livestock • AUs throughout the Year • Feed Needs (AUMs) • Current Stocking Rate 	
<p>WATER RESOURCES</p> <ul style="list-style-type: none"> • Well Capacity and Ability to Pump • Flow Rate • Water Quality 	
<p>FINANCIAL RESOURCES</p> <ul style="list-style-type: none"> • Cash Flow • Debt/Asset Ratio • Unit Cost of Production • Participation in Insurance Programs • Marketing Alternatives 	
<p>HUMAN AND PERSONNEL RESOURCES</p> <ul style="list-style-type: none"> • Family members' interests and abilities • Hired labor resources 	

WORKSHEET 3: IDENTIFY HOW DROUGHT IMPACTS YOUR RANCH OPERATION

Rate the following drought impacts according to how severe each impact has been for your operation during past droughts:

1 = not impacted, 2 = slight impact, 3 = moderate impact, 4 = severe impact, 5 = devastating impact

RANGE/PASTURE

Reduced productivity of rangeland	
Range fires	
Increased weeds	
Disrupted plant communities	
Decrease in desirable forage species	
Wind and water erosion of soils	
Other	

FINANCIAL

Inability to support ranch employees	
Inability to fulfill debt obligations	
Decrease in capital	
Increase in debt/asset ratio	
Borrowing value of land and stock drops	
Tax penalties from sell down	
Future price/income risks	
Watering and feed costs increase	
Other	

WATER

High cost/unavailability of water for livestock	
Reservoir or pond levels dropping	
Reduced flow from springs	
Water quality problems	
Other	

SOCIAL/FAMILY

Mental and physical stress (e.g., anxiety, depression, loss of security, domestic violence)	
Increased respiratory ailments	
Reduction or modification of recreational activities	
Off-farm/ranch employment required at higher levels	
Family Stress	
Other	

HERD

Forced reduction of foundation stock	
Decreased livestock gains	
Greater disease, pests, health issues	
High cost/unavailability of feed	
High livestock mortality rates	
Disruption of reproduction cycles	
Decreased stock weights	
Increased predation	
Other	

WORKSHEET 4: CRITICAL DATES AND TARGET CONDITIONS

Date _____ Form Completed by _____

Critical dates are timely monitoring points in annual management cycles. Current and predicted forage resources are the primary focus of critical dates.

Each **critical date** should have an **action plan** that clearly states **target points** for initiating the plan.

Target points may be based on carrying capacity of current forage or a percentage of average precipitation, i.e., 75%.

See "Identify Critical Dates and Targets" at <http://www.drought.unl.edu/ranchplan> for suggested critical dates by region.



CRITICAL DATE	TARGET CONDITION

before and during the rapid growth windows of dominant forage species.

Target points may be based on carrying capacity of current forage or a prediction of forage growth based upon the percentage of average precipitation received.

In general, drought management plans for semi-arid regions are implemented when cumulative plant-year precipitation is 20 to 25 percent below average on critical dates. Livestock producers in sub-humid regions may select precipitation deficits of 30 to 35 percent because of relatively high yield responses to precipitation. Inventory and monitoring tools/resources can be found here: <http://drought.unl.edu/ranchplan/InventoryMonitor.aspx>.

Worksheet 4 can be used to document your critical dates and target points.

Monitoring Plan and Schedule

It is important to monitor key resources on your critical dates, if not more frequently, so that you have the information you need to make decisions. Maintaining precipitation and grazing records for every pasture are the most critical rangeland monitoring activities every year. Scouting for indicator species and assessing hydrologic condition of rangeland should also be done annually. Below are some examples of key resources that may need to be monitored.

What to Monitor

- **Precipitation**—On critical dates, before forage rapid growth, or monthly.
- **Forage availability**—On critical dates or as needed when rotational grazing.
- **Residual (remaining) forage**—After moving animals out of pasture.
- **Range trend**—Every few years.
- **Livestock grazing records**—Throughout grazing season as animals are moved.
- **Livestock gain**—Beginning and end of grazing season.
- **Body condition**—Critical intervals in production cycle.
- **Financial health**—Annually.
- **Markets**—As needed.
- **Water resources**—Annually.

Grazing management tools/resources can be found here:

National Drought Mitigation Center, Decision Support Tools for Grazing: <http://drought.unl.edu/ranchplan/BeforeDrought/GrazingStrategy/DecisionSupportToolsforGrazing.aspx>.

USDA Natural Resources Conservation Service, Range and Pasture: <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/landuse/rangepasture/>

Worksheet 5 can help you create your own monitoring plan and schedule.

Management Strategies: Before, During, and After Drought

It is important that the decisions you make before, during, and after drought fit into your overall plan. The decisions you make before, during, and after drought should help move you closer to the vision or goals that you have for your ranch.

As you think through best management practices to implement before, during, and after drought, you may want to consider:

- **Does it move you toward your vision or goals?** Drought planning is just one piece of your overall ranch vision and goals, but drought planning can help you achieve your goals if you keep them in mind.
- **Is it feasible?** Reflecting back on your inventory of your ranch resources, and the strengths, weaknesses, opportunities, and threats you identified, is this strategy something you can realistically do?
- **Will it make an impact?** To explore what other producers and advisers have identified as being effective strategies to prepare for drought, seek out examples such as *Drought Management Strategies for Beef Cattle*, Cattle Producer's Handbook fact sheet 930, <http://ucce-plumas-sierra.ucanr.edu/files/180310.pdf>.
- **Do the benefits outweigh costs?** Financial decision making tools may help you identify the costs and benefits of proposed projects and help you see the larger financial implications of your decision. Financial decision making tools can be found at: <http://drought.unl.edu/ranchplan/InventoryMonitor/Finances/FinancialDecisionMakingTools.aspx>.

Many strategies are available to achieve your overall objectives and to reduce the impacts experienced in drought. With a limited amount of money, time, and energy, you must determine what actions you can take now and in the future that are most appropriate for creating a drought resilient operation.

Worksheet 6 may also be useful for documenting your ideas.

WORKSHEET 5: MONITORING PLAN

Date _____ Form Completed by _____

WHAT TO MONITOR	WHEN	TARGET CONDITION
PRECIPITATION	My Dates:	My Targets:
FORAGE AVAILABILITY	My Dates:	My Targets:
RESIDUAL (REMAINING) FORAGE	My Dates:	My Targets:
RANGE CONDITION	My Dates:	My Targets:
LIVESTOCK GRAZING RECORDS	My Dates:	My Targets:
LIVESTOCK GAIN	My Dates:	My Targets:
BODY CONDITION	My Dates:	My Targets:
FINANCIAL HEALTH	My Dates:	My Targets:
MARKETS	My Dates:	My Targets:
WATER RESOURCES	My Dates:	My Targets:

WORKSHEET 6: EVALUATE STRATEGIES TO IMPLEMENT BEFORE DROUGHT

Date _____ Form Completed by _____

STRATEGIES	IS IT FEASIBLE?	WILL IT MAKE AN IMPACT?	GREATER BENEFIT THAN COST?	TO DO?
IMPROVE FORAGE RESOURCES				
MODIFY HERD/ENTERPRISE MIX				
MODIFY GRAZING STRATEGY				
IMPROVE WATER/ INFRASTRUCTURE RESOURCES				
IMPROVE FINANCIAL RESOURCES				
OTHER				

Ongoing Review of Drought Plan

After a drought period is a good time to reflect and assess the performance of your response to drought conditions. This evaluation will help you understand how to prepare and plan for the next drought. The recovery strategy is just as critical as the drought response plan.

These are a few questions you may want to ask after a drought:

- Which part(s) of your operation to keep?
- Are you getting a read on the financial health of your ranch after a drought?
- Can external forces (i.e. markets) alter your drought recovery plan?
- Do you need an inventory reassessment?
- Have your resources changed?

Summary

In the end, range livestock producers are in the business of forage production. A drought management plan/strategy is intended to keep producers in business. Drought management strategies may be divided into several categories, but the key point to remember is that drought management is about taking the “guess work” out of decision-making. A drought management plan should help producers take control of their production and marketing situation. Decisions must be made in a proactive rather than a reactive manner to minimize negative effects on rangeland and/or livestock production during prolonged periods of drought.

Literature Cited

- Federal Insurance and Mitigation Administration. 2012. Mitigation's Value to Society Building Stronger and Safer. Federal Emergency Management Agency.
- Gates, R., B. Dunn, J. Davis, A. Arzeno, and M. Beutler. 2007. Strategic and Scenario Planning in Ranching: Managing Risk in Dynamic Time. South Dakota State Univ. Ext. Ser. and the King Ranch Institute for Ranch Management. Texas A&M Univ.-Kingsville, EC924.
- Hofstrand, D. 2009. Vision and Mission Statements—A Roadmap of Where You Want to Go and How to Get There. Iowa State Univ. Ext. File C5-09, August 2016. www.extension.iastate.edu/agdm.
- Reece, P., 2012. Managing Drought Risk on the Ranch—A Planning Guide for Great Plains Ranchers. Univ. of Nebraska-Lincoln National Drought Mitigation Center.



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