USDA United States Department of Agriculture

# Drought Resilience through Conservation

Minnesota Natural Resources Conservation Service

nrcs.usda.gov/mn

## Farming through Drought

NRCS is here to support resilience in agriculture by addressing priority resource concerns with conservation practices.

### Technical Assistance

NRCS professionals can help farmers and ranchers understand options for their particular water situation, soil type, and production goals to develop a plan to get through the drought.

**Three Priorities:**

1. *Building resiliency through soil health*
2. *Protecting drought-impacted crop, range, and forestland*
3. *Stretching every drop of irrigation water using improved hardware and management*

### Saving Soil

Farmers without access to adequate water may find themselves thrust from a water crisis to a dust crisis. Options for protecting fields vulnerable to wind erosion include cover crops, surface roughening, residue management, converting to crops that use less water, mulching, or other practices.

### Conserving Land

Working on cropland, range, or forestland without rain is challenging. For some, managing crops, livestock, or forests, means taking advantage of available grass and protecting areas from overuse. It may be easier with tools such as efficient watering systems, piping, troughs, and fencing. NRCS and landowners can work together to develop management plans to make the best use of resources remaining on the land.

### Stretching Every Drop

Farmers who have access to water and want to make every drop count should develop irrigation water management plans with their NRCS conservationists or

## Impacts of Drought

- Soil erosion
- Loss of plant cover
- Degraded soil quality
- Water quantity - Limited irrigation supply and reduction in water use
- Wind erosion
- Degraded air quality - increased dust due to wind and soil erosion
- Increased fire risk
- Increased plant stress
- Reduction in animal food/ cover/shelter
- Increased animal stress
- Reduced stream levels for aquatic habitat

other consultants. Assistance to improve irrigation systems is available to help farmers working to produce a crop with a smaller allocation of water.

## Minimize the effects of drought on your land

***Common practices for protecting vulnerable farmland from drought are:***

**Tillage and Residue Management -** Leaving residues from the previous crop undisturbed on the soil surface can help reduce wind and water erosion.

**Cover Crops -** Planting or maintaining vegetation will provide cover on the soil surface and reduce erosion. Low-water using plants like barley are typically used as cover crops during droughts.

**Surface Roughening and Cross Wind Ridges -** By disking heavier soils into a rough, cloddy surface, the soil can be protected from wind erosion.

**Mulching -** Covering bare soil with wood chips, straw or other plants material can help to hold the soil in place.

**Conservation Crop Rotation -** Switching to crops that require less water can allow a field to remain productive and provide erosion protection.

## Minimize the effects of drought on your irrigated cropland

***Common practices for protecting irrigated cropland from drought are:***

**Irrigation System Improvement -** Evaluating irrigation systems, improving management of existing systems, replacing poorly performing components or converting to pressurized irrigation systems will improve the uniformity of water application. It takes less water to irrigate when the irrigation is uniform.

**Irrigation Scheduling** - Irrigating at the optimum time and applying the amount the soil can hold minimizes undesirable water loss below the root zone of the crop. Good scheduling or "Irrigation Water Management" will help stretch limited water supplies.

**Vegetative Practices & Mulching -** Growing certain crops, either interplanted in or in sequence with cash crops can increase infiltration and retention of valuable rainfall and reduce evaporation loss from the soil surface. Mulching by covering the soil surface with wood chips, straw or other plant materials can also reduce water loss to evaporation.

**Residue and Tillage Management -** Modifying tillage to retain residues from a previous crop left on the soil surface can help reduce water loss to evaporation.

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## Resources for up-to-date water supply information and drought maps:

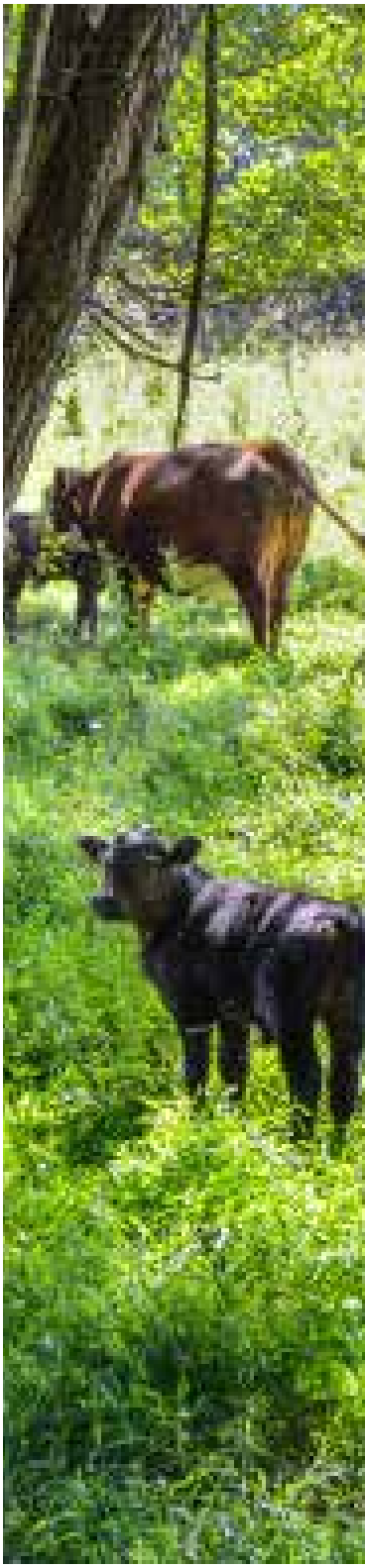
Minnesota Department of Natural Resources
Drought Conditions Overview:
https://www.dnr.state.mn.us/climate/journal/drought_monitor.html

Drought.gov for Minnesota
Produced by NOAA and NIDIS (National Integrated Drought Information System:
https://www.drought.gov/states/minnesota

U.S. Drought Monitor
Produced by USDA, the University of Nebraska-Lincoln and the National Oceanic and Atmospheric Administration:
https://droughtmonitor.unl.edu/

University of Minnesota Extension
Extreme Weather Resources:
https://extension.umn.edu/news/extreme-weather-resources

Minnesota Department of Agriculture
Drought Resources:
https://www.mda.state.mn.us/drought-resources



**Contact Minnesota NRCS**
For assistance with any NRCS conservation practice, contact your local field office.

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