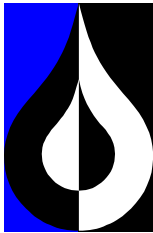


# Tips for stretching short water supplies

Crops and Soils...Irrigation...Pasture and Range...Wildlife...Yards and Gardens



## Crops and Soils

The threat of water shortages means that many irrigators will have to make some difficult pre-planting decisions.

The acreage you normally plant and the type of crops you plant may need to be adjusted. Some crops use more water than others do. Some crops need water later in the growing season when water may no longer be available.

Research has proven that fertile soils make more efficient use of irrigation water. So if you cut back on the acreage you normally plant, make certain you plant your most fertile acres. Concentrate available water on those acres rather than trying to stretch it over your entire farm.

Knowing your soil type is important—it's your guide to rate and frequency of irrigation.

Here's a checklist of things to consider during this year's cropping season:

- √ Know precisely how fast your soil can accept water and its total water-holding capacity. This will allow you to decide how much water to apply at any given time.
- √ Know how much water is being delivered to the field. This will give you an indication of how long to irrigate.
- √ Determine the need for irrigation by shovel, auger, moisture meter, or the feel methods.

## When irrigation is needed, soil will feel and act this way

<u>Soil Texture</u>	<u>A handful of soil will:</u>
Coarse	Tend to stick together slightly but will not form a ball
Medium	Be crumbly but will form a ball
Fine	Be pliable and will form a ball

Plant drought-tolerant cover crops on unplanted fields to protect them from wind erosion.

Consider conservation tillage methods. Every trip over the field with equipment results in moisture loss. Leaving some residue on the surface will reduce this loss.

Use chemicals rather than tillage to control water using weeds.

Alfalfa and some cool-season grasses can survive with minimal water. But the stand will suffer, particularly if grazed heavily.

Decide whether you will have a little water all season or more in the spring and none later on. Vary crops accordingly. For instance, alfalfa, cool-season grasses, corn, and sugar beets need water all season. Wheat, barley or rye need water early in the season.

**All plants have critical water need times. Make sure you can provide your crops with water during their critical growth stages.**

**Examples of critical water need periods**

<u>Crop</u>	<u>Critical water need</u>
Alfalfa	Just after cutting for hay At the start of flowering for seed production
Corn	Early ear formation From tasseling to silking stage
Potatoes	Need high soil moisture levels until potatoes are well formed
Small grains	Boot to heading stage
Sorghum	From boot to grain formation
Soybeans	Flowering and fruiting stage
Sugarbeets	First month after emergence



**Irrigation water**

Soil can absorb irrigation water only at a given rate that varies for each soil type.

Water requirements vary for different crops.

Make sure you apply water to your crops only when needed. Check soil moisture by spade, probe or soil moisture meter and make careful visual checks of your crops.

If you have a conservation plan for your farm or ranch, or if the soil in your area has been mapped, the Natural Resources Conservation Service can cross-check soil type and irrigation data and provide you with the water holding capacity of your soil for a given crop.

Don't know if your soil has been mapped? Check with your local NRCS office. Even if it hasn't been mapped, NRCS can give you general information.

Analyze your irrigation system so you can use your available water in the most productive way possible:

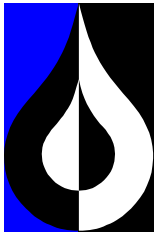
- Inspect your system **before** water starts to flow.
- Make sure ditches are clean and free from weeds; sediment or other debris that can slow water velocity, affect delivery rate and increase evaporation.
- Consider lining ditches with concrete or plastic. This could avoid the 10 to 90 percent losses that often occur in ditches.
- Make sure ditch structures like headgates, drop structures and pipe inlets are strong and functional. A washed-out ditch could mean a lot of water lost.
- Make sure ditchbanks are firm and not burrowed into by rodents. Rodent holes could cause leakage or failure.
- Make sure your pump is operating at peak efficiency. Regular maintenance will improve efficiency, guard against water loss and avoid shutdowns.

**Sprinkler systems**

- Make sure nozzles aren't worn and leaky.
- Check pipe connections and valves to prevent leaks.
- Operate sprinklers at recommended pressure. Use application rate, efficiency factor and time of application to figure how much to apply.
- Consider trickle and drip systems for orchards, vineyards, etc. Operate at recommended design values and maintain the filter system.

## Irrigation management

- Measure the amount of water applied to the field. This can indicate when and how much to irrigate.
- Consider alternate row irrigation for crops planted in furrows. But remember to alternate the “alternate” row in later irrigations.
- Consider shorter runs if you furrow irrigate. Match stream size and velocity to soil intake rate and capacity.
- Consider catching and re-using tail water by pumping it back to the head of the system or re-using elsewhere.
- Irrigate most crops when soil moisture reaches about 50 percent of capacity.



## Pasture and range

Roots transport moisture and nutrients to growing plants. When plants are overgrazed, root growth stops. When root growth stops, leaf growth stops too.

### Irrigated pasture

Irrigated pasture management practices that encourage root and leaf growth are the same practices that allow plants to make the best use of soil moisture. They include:

- Rotation grazing with adequate rest and regrowth periods
- Leave 4 to 6 inches of top growth at the end of each grazing period
- Fertilize properly
- Apply irrigation water in the right amount at the right time

## Range and dry pasture

Range and dry pasture forage production depends entirely on natural moisture. Overgrazing during a drought does more damage to perennial plants than during a season of normal moisture. Overgrazing can:

- \* Reduce plant vigor
- \* Stop root and leaf growth
- \* Reduce ground cover
- \* Invite accelerated erosion

Once erosion begins, it tends to get worse each year, further reducing plant vigor and forage production. This process is difficult to reverse

### Rather than risk permanent damage to grazing resources, follow these tips:

Reduce livestock numbers to balance with forage supply and cull herds more than normal. Sell calves and lambs early.

Determine forage needs and buy needed supplements early.

Grow small grains or sorghums for hay or pasture. These need less water than conventional forage crops.

Defer planting perennial pasture, hay or range seedlings until a year with more favorable water supplies.

Keep spring developments, stock tanks, float valves and pipelines in good working order so water isn't wasted.

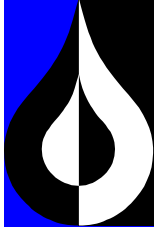
Prepare to haul stock water.

Give spring development high priority. Even a mediocre spring will be helpful.

Don't overgraze or otherwise disturb streambank vegetation. It will be needed to prevent erosion, reduce sediment and provide food and cover for wildlife.

Consider late season use in rest pastures.

**Remember:** If a pasture unit must be abused, well-established seedlings can tolerate overgrazing better than native range.

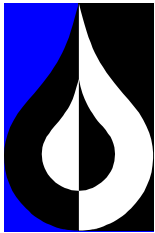


## Wildlife

Wildlife will suffer during a drought as much or more than domestic livestock. The wildlife that shares your land is a valuable natural resource.

To help wildlife:

- Include additional features at stock water developments that will allow small animals and birds safe access to water. These are usually not expensive and are easily installed.
- Fence ponds and springs and install collector pipes to deliver water to a tank or trough. This will save the water source from damage by livestock trampling, as well as allow access by small animals and birds to lush vegetation that grows close to wet areas.



## Yards and gardens

Soils differ in how fast they absorb moisture, how they store, and how long they retain it.

A rule of thumb says 1 inch of moisture will penetrate 12 inches deep in sandy soil, 7 inches in loam, and 4 to 5 inches in clay.

Don't apply water faster than the soil can absorb it.

Water early in the day to reduce evaporation loss.

Apply deep and less often. Shallow, frequent watering encourages shallow roots and more evaporation loss and reduces the moisture reservoir in the soil.

Don't let water run off into street or driveway.

Many perennials can do without water better than annuals can. Don't plant annuals when a water shortage is imminent.

Mulch around trees and shrubs and between garden rows to hold in moisture and discourage weeds that will compete for moisture.

Aerate your lawn to permit better water penetration.

Set your lawn mower blade to leave 2 or more inches of grass after mowing. Food is manufactured in the leaves and stored in the roots. Cutting grass too short keeps it from manufacturing food.

Fertilize adequately but not excessively. A sick-looking lawn or garden may need more fertilizer, not more water. Apply fertilizer before regular watering.

Hold up on new landscaping or consider using desert or native plants.

If you were planning to remove any lawn, trees, or shrubs in the future, this would be the year to do the work before you start watering.

Save water for plants that can't survive without it. Reduce watering of other plants and lawns to subsistence level.

Improve your lawn and garden watering system. Try automatic, drip or different sprinkler heads for better efficiency.

If it rains, reduce watering time accordingly. Measure how much rain has fallen and adjust your watering schedule and duration accordingly.

## For more information

For more information or assistance with water conservation, contact your local NRCS office, your local USDA Service Center, and County Extension Office.

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