

Home Vegetable Garden Management During a Drought in Colorado

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In vegetable production, an adequate supply of water during the growing season is directly related to produce quality and yields. Unlike bluegrass and other landscape plants, vegetables can't go dormant when the water supply is inadequate. However, there are several techniques that will significantly reduce the water requirements of the home vegetable garden.

Always Follow Efficient Irrigation Practices

The following practices will allow you to have a productive vegetable garden and still reduce water consumption.

Amend the garden soil with coarse, decomposed organic matter

In the vegetable garden, the routine addition of soil amendments such as compost will optimize potential yields and produce quality vegetables. Woody materials such as bark or wood chips may result in soil nitrogen depletion and should be avoided.

The addition of manure or compost made from manure should be made at least 4 months prior to harvest of any edible crops. If manure or compost made from manure is to be added within four months of planting, the manure or compost must be at least six months old.

Manure and compost made from manure may be high in salts that will interfere with crop growth. Do not add more than 1 inch of manure or compost made with manure without a soil test to evaluate potential salt build-up.

Incorporate organic mulches into the vegetable garden soil after the season is over to add organic matter and improve soil moisture retention. Cover this newly tilled soil with a mulch to preserve water in the soil through the winter months.

Replant your fall garden with a green manure crop such as winter rye or Austrian peas as a source of organic matter.

Practice efficient irrigation

Apply water slowly to the base of plants. This will reduce water usage by about 50%. The soaker hose or "leaky pipe" is a hose that allows water to seep out all along its length at a slow rate. They typically run at low pressure and for only 10 to 15 minutes per irrigation. One disadvantage to this tool is that it will often get plugged with debris if it is present in the water (such as irrigation water). In this case, a hose-end attachment called a 'hose bubbler' can be used. Apply irrigation under the mulch if possible.

Use a timer with a drip hose. Water timers added to the hose at the faucet help reduce overwatering by shutting off the flow of water from the tap after a certain length of time. Timers may be simple, requiring the gardener to set the length of time the water will flow, or more complex timers can be set to turn on and off the water based on number of hours or days between watering. If rain has fallen, timers should be adjusted so that they will not deliver water on top of natural precipitation.

Check soil moisture regularly. Squeeze the soil in your hand; if it sticks together, it is moist and should not be irrigated. If it does not stick together, then it is time to irrigate.

Irrigate in the morning when temperatures are cool but rising.

Mulching minimizes evaporation of water from the soil surface, reducing irrigation need by around 50%. Use an organic mulch to a depth of 1 to 3 inches, depending upon the particle size of the mulching material. The larger the particle, the deeper the mulch should be applied. Mulch in early summer after the soil has warmed sufficiently. Do not use wood or bark chips in the garden, since they will interfere with future seedbed preparation.

Grass clippings make excellent mulch for the vegetable garden. Apply fresh clippings in thin layers (up to 1/4 inch thick) and allow each layer to dry before adding more. The clippings quickly dry down and additional layers can be added weekly. Do not place fresh clippings in thick piles, as they will mat, decay and cause odors. Do not use clippings from lawns that have been treated with herbicides or other pesticides in the past month. A couple of sheets of newspaper may be used under the clippings to help control weeds. Do not apply newspapers more than a couple of sheets thick, or a soil carbon to nitrogen imbalance may occur. Do not use glossy print materials, their inks may not be soy based like newspapers.

Black or colored plastic mulch conserves moisture and also increases soil temperatures. They are used on tomatoes, peppers, eggplants and the vine crops in cooler areas. Lay down plastic early in the season so plant growth shades the plastic from extreme summer temperatures. Do not apply plastic in mid summer. Do not use plastic on other crops.

Plant in blocks, rather than rows. This creates shade for roots and reduces evaporation. Control weeds, as they are competing with the vegetables for water. Group plants with similar water needs on the same section of irrigation. Cucumber and zucchinis and squash, for example, require similar water applications. Check the soil for moisture before you water. Irrigate when the top 2 to 4 inches of soil is dry to the touch. This is especially important if using mulch, where water can be held in the soil for longer periods of time. Protect plants and soil from wind to reduce evaporation.

Vegetable Gardening when irrigation interval is restricted

Restrictions limiting irrigation to every 2 or 3 days should not have a major impact on the vegetable garden. With good soil organic content, a standard in vegetable production, the garden should be able to go 2 to 7 days between irrigations. Follow recommendations listed above.

Avoid heavy water use crops such as beans and sweet corn and crops that have fruit on the ground, such as melons squash and cucumbers. Grow only what you need. Consider that one tomato plant can yield over 20 pounds of fruit.

Care for the vegetable garden when no watering is allowed

Don't plant a vegetable garden. Vegetables do not go dormant like a Kentucky bluegrass lawn. Consider planting a couple of containers with vegetables and growing non-irrigated cover crops instead.

Critical watering periods for vegetables. You can target the timing and amount of water to add. As a rule of thumb, water is most critical during the first few weeks of development, immediately after transplanting, and during flowering and fruit production. The critical watering periods for selected vegetables follow:

- *Asparagus* needs water most during spear production and fern development.
- *Broccoli, cabbage, Brussels sprouts, kohlrabi and cauliflower* need consistent moisture during their entire life span, especially during head or root development. Water use is highest and most critical during head development.
- *Beans* have the highest water use of any common garden vegetable, using $\frac{1}{4}$ to over $\frac{1}{2}$ inches of water per day. Beans need water most when they are blooming and setting fruit. When moisture levels are adequate the bean plant is a bright, dark grass green. As plants experience water stress, leaves take on a slight grayish cast.
- *Carrot and other root crops* require consistent moisture. Cracking, knobby and hot flavor root crops are symptoms of water stress.
- *Corn* needs water most during tasseling, silking, and ear development. Yield is directly related to quantities of water, nitrogen and spacing.
- *Lettuce and other leaf vegetables* need water most during head development. For quality produce these crops require a consistent supply of moisture.
- *Onion* family crops require consistent moisture and frequent irrigation due to their small, inefficient root system.
- *Peas* need water most during pod filling.
- *Potato* tubers will be knobby if they become overly dry during tuber development.
- *Tomatoes, peppers and eggplant* need water most during flowering and fruiting. Blossom-end-rot (a black sunken area on the bottom of the fruit) is often a symptom of too much or too little water. Watch for overwatering.
- *Cucumbers, summer and winter squash, and other vine crops* need water most during flowering and fruiting. Watch for overwatering.

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