



Reviewed June 2010

# Potatoes in the Garden

*Dan Drost*

## Summary

Potatoes prefer a sunny location, long growing season, and fertile, well drained soil for best yields. Plant potato seed pieces directly in the garden 14-21 days before the last frost date. For earlier maturity, plant potatoes through a black plastic mulch. Side dress with additional nitrogen fertilizer to help grow a large plant. Irrigation should be deep and frequent. Organic mulches help conserve water, reduce weeding, and keep the soil cool during tuber growth. Control insect and diseases throughout the year. Harvest potatoes as soon as tubers begin forming (new potatoes) or as they mature. Dig storage potatoes after the vines have died, cure them for 2-3 weeks, and then store the tubers in the dark at 40-45°F.



## Recommended Varieties

Potatoes can be categorized by maturity class (early, mid-season or late), use (baking, frying, boiling), or tuber skin characteristics (russet, smooth, or colored). When selecting varieties, consider your growing environment, primary use, and how much space you have available to grow the plants. Most varieties grow well in Utah but all are not available. Most garden centers and nurseries carry varieties that produce high quality, productive seed tubers adapted to local conditions.

| Skin Type | Suggested Varieties  |
|-----------|--|
| Russet    | Butte, Gem Russet, Ranger Russet, Russet Burbank                                     |
| Smooth    | Chipeta, Katahdin, Kennebec, Yukon Gold  |
| Colored   | All Blue, Caribe (blue), Cranberry Red, Red Norland, Red Pontiac, Rose Finn, Viking, |

## How to Grow

**Soil:** Potatoes prefer organic, rich, well-drained, sandy soil for best growth. Most soils in Utah will grow potatoes provided they are well drained and fertile.

**Soil Preparation:** Before planting, incorporate up to 2-4 inches of well-composted organic matter and 1.5 pounds of all-purpose fertilizer (16-16-8 or 10-10-10) per 100 square feet before planting. Work this into the top 6 inches of soil.

**Plants:** Potatoes are grown primarily from whole or partial seed tubers. When buying seed tubers, ask for certified seed as this will help reduce the potential for introducing disease into the garden. If the seed tuber is particularly large, it can be cut into smaller pieces. When cutting, make sure the seed piece weighs

at least 2 ounces and has one or more “eyes.” You will need 8-10 pounds of seed potatoes for every 100 feet of planted row. Tubers should be planted in the garden 2-3 weeks before the last frost.

**Planting and Spacing:** Plant potato seed pieces 4-6 inches deep and 10-12 inches apart in the row. Space the rows 30-36 inches apart. Potato should be planted when soils are at least 50°F. Generally, soil is hilled or mounded around the plants as they grow. Hills provide room for the tubers to develop, provide added soil drainage, and minimize tuber greening later in the year. It is best to hill around the plants within 4 weeks of planting.

**Mulches:** For very early potatoes, some gardeners grow potatoes under black plastic mulch. Plastic mulches warm the soil, reduce weeding, allow earlier planting and maturity, and help conserve water. You can also apply a thick layer of organic mulch such as grass clippings, straw, or newspapers around the plants. These “mulched” potatoes are planted 10-12 inches apart in the row with rows 30-36 inches apart but are planted only 1-2 inches deep. After planting, cover with 4-6 inches of mulch, adding additional mulch throughout the year as settling or decomposition occurs. Organic mulches also help conserve water, control weeds, and maintain a more uniform temperature. Tubers are easy to harvest since many are above the soil.

**Water:** Potatoes require good soil moisture levels throughout the year, so apply 1-2 inches per week. Most of the water used by the plants is taken up from the top foot of soil. Use drip irrigation if possible. Mulch around the plant will conserve soil moisture. Irrigate so that moisture goes deeply into the soil. Irregular watering (over or under) can cause abnormal tuber growth like knobs and cracks. Near the end of summer when the plants begin to yellow and the leaves start dying, reduce the amount of water applied. Wet conditions late in the year contribute to tuber rot in storage.

**Fertilization:** Avoid heavy fertilization of potatoes which encourages excessive foliage growth and delays tuber growth. In addition to the pre-plant fertilizer, side dress with nitrogen (21-0-0) applying 0.5 pounds per 100 square feet of planted area 6 weeks after they emerge. Place the fertilizer to the side of the plants and irrigate it into the soil.

## Problems

**Weeds:** Plastic and organic mulches effectively control weeds. Higher density plant spacing and good plant growth will also smother weeds. Regularly mounding soil around the plants buries small weeds, loosens and aerates the soil, and reduces tuber greening. Shallow cultivation will help avoid root and tuber damage.

### Insects and Diseases:

| Insects                | Identification   | Control  |
|------------------------|--|--|
| Colorado Potato Beetle | Yellow and black striped beetle, about ½ inch long and ¼ inch wide. Larvae are reddish orange, with rows of black spots on each side. Yellow egg clusters are found on the undersides of leaves. Larval feeding defoliates the plants. | Hand pick adults from the plants and rub out egg masses as they appear. Beetles have a high degree of resistance to insecticides so use chemicals sparingly. |
| Flea Beetles           | Small, shiny black beetles that feed on seedlings. Adults chew tiny holes in leaves of young plants. Beetle feeding reduces plant vigor and decreases yield.   | Control beetles with appropriate insecticides at planting or after seedlings have emerged from the soil.   |
| Aphids                 | Green or black soft-bodied insects that feed on underside of leaves. Aphids transmit virus diseases that affect the plant growth. Leaves become crinkled and curled.   | Use insecticidal soaps, appropriate insecticides, or strong water stream to dislodge insects.  |

| <b>Diseases</b>                        | <b>Symptoms</b>   | <b>Control</b>  |
|--|---|---|
| Early Blight                           | Brown to black “target” spots on leaves. Dark area fades to a normal green giving it a bull’s eye look. Lower, older leaves are infected first. They droop and dry as the disease progresses. If spots are numerous, leaves will die. | Maintain good fertility and water management. Avoid watering late in the day and let the soil dry between irrigations. Apply appropriate fungicide after proper disease identification. |
| Late Blight                            | Brown or black water-soaked spots on leaves and stems that enlarge rapidly. Under wet conditions, a white mold may appear at the lesion edge. Cool, wet conditions favor disease development and spread.                              | Use certified disease-free seed. Irrigate early in the day to allow leaf drying. Apply appropriate fungicide after proper disease identification.                                       |
| Fusarium or Verticillium Wilt Diseases | Leaves wilt from the bottom of the plant and plants often die. Look for vascular discoloration, slime formation, or gummy exudates visible on or in stems. Diseases are caused by different pathogens.                                | Identify the causal disease. Plant resistant varieties if available. Crop rotation and soil solarization can help reduce wilt diseases.   |
| <b>Disorders</b>                       | <b>Symptoms</b>   | <b>Control</b>  |
| Tuber Greening                         | Exposure of potato tubers to light in the garden or storage will induce the formation of green pigments on the tuber surface. The chemicals produced (solanin) tastes bitter after being cooked.                                      | Keep tubers covered with soil in garden. Store in a dark, cool place. A small amount of green can be cut away but discard very green tubers.  |
| Tuber Disorders                        | Rough skins; cracking; small, irregular tuber shapes. Primarily caused by wet/dry soils or high soil temperatures.  | Maintain uniform moisture conditions. Mulch heavily to regulate soil water and temperature.   |

## Harvest and Storage

Potatoes can be harvested as soon as they begin forming (new potatoes) or as they mature. Determine the size of the tubers by digging into the side of the hills. Consume new potatoes quickly as they have thin skins and dry out rapidly. For storage potatoes, dig them after the vines have died, the tubers are full sized, and the skins are mature. Mature potato skins are difficult to remove when rubbed. Allow the soil to dry, brush it off, and do not wash the tubers until ready to use. Cure the tubers at 55-60°F with high humidity for 2-3 weeks after harvest. Curing helps heal any bruises or wounds that occur during harvest. After curing, store tubers in the dark at 40-45°F throughout the winter. Good air circulation will reduce rotting and sprouting. Do not store potatoes with apples or pears as the ethylene fruit produces will cause the tubers to sprout.

## Productivity

Plant 50 feet of row per person for fresh use and an additional 50 feet for storage. Expect about 75-100 lbs of tubers per 100 feet of row.

## Nutrition

Potatoes are very nutritious, low in calories with many different minerals and vitamins, and are an excellent source of starch.

## Frequently Asked Questions

***I generally have low yields with lots of small, odd-shaped tubers. What is the problem?*** It is most likely due to unfavorable weather conditions (soils above 90°F). Tuber set and fill is inhibited by high temperatures. Heavy mulching and good water management can help reduce soil temperatures and thus increase tuberization.

***On some of my potato plants, the leaves are turning yellow and the plants are no longer growing. What is wrong?*** Potatoes with these symptoms may be infected with one of several wilt diseases. Potatoes can be infected with a variety of diseases so proper identification is critical. Practice crop rotation, use certified seed, make sure you are not over-watering, maintain proper soil fertility, and plant a few more plants if you have had problems in the past.

***I have a bunch of tubers from last year that are sprouting. Can I plant these in place of buying new seed potatoes?*** No, saving your own seed potatoes leads to a buildup of viruses and diseases that eventually will cause serious problems in the garden. Whenever possible, purchase and plant certified seed to help control many of the problem diseases potatoes experience. The only exception would be if the variety is an heirloom that is not available from some other source.

---

Utah State University is committed to providing an environment free from harassment and other forms of illegal discrimination based on race, color, religion, sex, national origin, age (40 and older), disability, and veteran's status. USU's policy also prohibits discrimination on the basis of sexual orientation in employment and academic related practices and decisions.

Utah State University employees and students cannot, because of race, color, religion, sex, national origin, age, disability, or veteran's status, refuse to hire; discharge; promote; demote; terminate; discriminate in compensation; or discriminate regarding terms, privileges, or conditions of employment, against any person otherwise qualified. Employees and students also cannot discriminate in the classroom, residence halls, or in on/off campus, USU-sponsored events and activities.

This publication is issued in furtherance of Cooperative Extension work. Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Noelle E. Cockett, Vice President for Extension and Agriculture, Utah State University. (HG/Garden/2005-13pr)