

Potato Production in the Home Garden LIBRARY

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Home-grown potatoes can provide fresh produce from the first part of July until the following spring. This bulletin contains advice for producing a high yielding potato crop in the home garden, as well as a commodity that will store well for future use.

Varieties

Potatoes are diverse in appearance, maturity, and use, and are an excellent source of nutrition. In fact, potatoes have fewer calories and contain more nutrients than rice, pasta, or bread. Potatoes can be boiled, baked, and fried. Red and white-skinned varieties are often preferred for boiling because they have a waxy texture and hold their shape when cooked. This texture is due to low starch content, often called *low specific gravity*. In contrast, russet-skinned varieties may have *high specific gravity*, giving them a more granular or mealy texture, suitable for baking or frying.

Red varieties offer the consumer an aesthetically pleasing color contrast to meat and other vegetables, a multi-purpose use, a somewhat sweet flavor, (particularly after storage), and a unique texture. Several red varieties are available in garden supply stores and seed catalogs.

White-skinned varieties are also multi-purpose. Those with high specific gravity and an ability to accumulate less sugar can be processed into potato chips.

Russet varieties are characterized by their often heavy, dark brown, netted skin. Most are oblong to long and are the epitome of the *perfect* baking potato. Several russet clones are excellent for processing into french fries, mashing, or salads.

Consider exotic potato varieties for some of your garden production. They add color and versatility to meal planning.

Table 1 describes several potato varieties with wide adaptability to Idaho's climate. The chart lists cultivars with different culinary uses and summarizes the strengths and weaknesses of each variety.

Cultural Practices

Planting

It is possible to grow potatoes from true seeds produced in the flower of the potato plant, but home gardeners can obtain better results growing plants from whole tubers, called *seed tubers*, or from pieces of a tuber with at least one lateral bud or *eye*, called *seed pieces*. This practice is called *vegetative propagation*. For best production, seed tubers and seed pieces should weigh at least 1½ ounces.

Unfortunately, plant parts are more likely to accumulate and harbor plant diseases, especially viruses, than are true seeds. To avoid this problem, commercial potato growers usually plant *certified seed*. Certified seed potatoes have been inspected by a certification agency at least twice during the growing season to ensure that any disease present is within strict tolerances. Home gardeners should also plant certified seed in their gardens. Potatoes from the supermarket may carry viral diseases or be treated with a sprout inhibitor that will prevent the tubers from germinating.

Many garden stores carry certified seed potatoes, so seed should not be difficult to find. You may have to consult a local Extension agent to find a source for some exotic varieties. Buy your seed in early spring to be sure you get what you need. You will need 8 to 10 pounds of seed potatoes for each 100 feet of row.

Potatoes germinate and emerge best when soil temperatures are more than 50°F. Plant seed 4 to 5 inches deep in rows about 10 inches apart and 30 to 36 inches wide. Although potatoes can be planted on flat ground, it is better to form a hill up around the plant. Hills provide room for developing tubers to expand and prevent greening by the sun. Hilling is also important for drainage. Potato hills can be formed at planting time by mounding dirt up around the seed piece, or they can be formed after the plants are up. It is best to hill within 4 weeks of planting.

Be sure to have good soil moisture at planting. If soil moisture is inadequate, lightly irrigate before planting to

Table 1.

Variety	Description	Maturity	Use	Comments
Red LaSoda	High yielding. Light red skin. Oval tuber shape. Deep eyes may make peeling difficult.	Late	Fresh Table	Wide adaptability, occasional hollow heart and growth cracks.
Red Norland	Medium yielding. Bright red skin. Round tuber type.	Early	Fresh Table	Common garden variety. Some resistance to scab.
Sangre	High yielding. Dark red skin. Round tuber type.	Medium	Fresh Table	Good cooking quality. Resistant to most internal disorders. Often some erratic emergence. Stores well.
Gemchip	High yielding. White skin. Oval tuber type.	Late	Chipping	Susceptible to scab and early blight. Release of UI and USDA-ARS.
Norchip	Medium yielding. White skin. Round to oval tuber type.	Early	Chipping	Wide adaptability. Resistant to scab and bruising. Occasional development of growth cracks.
Kennebec	Very high yielding. White skin, shallow eyes. Oval to oblong tuber type.	Medium	Fresh Table Chipping French Fries	Susceptible to scab, blackleg, growth cracks, and hollow heart.
Russet Burbank	Medium to high yielding. Medium russet skin. Long tuber type.	Late	Fresh Table French Fries	The famous Idaho Potato. Susceptible to stress induced malformations and diseases. Difficult to grow in the home garden. Stores well.
Frontier Russet	Medium yielding. Medium russet skin. Cylindrical tuber shape.	Early	Baking French Fries	Resistant to bruising. Susceptible to early blight. Release of UI and USDA-ARS.
Norgold Russet	Medium yielding. Medium russet skin. Shallow eyes. Oblong tuber type.	Early	Baking	Occasional hollow heart.
Ranger Russet	High yielding. Medium russet skin. Long tuber type.	Late	French Fries Fresh Table	Resistant to internal defects. Susceptible to scab. Occasional deep eyes. Recent release of UI and USDA-ARS.
Russet Norkotah	Low yielding. Medium russet skin. Long tuber type.	Very early	Baking	Attractive appearance.
All Blue	Dark blue-purple skin. Blue-purple flesh color.		Fresh Table	Exotic.
All Red	Light red skin and light red tuber flesh.		Fresh Table	Exotic.
Yellow Finn	White skin. Yellow flesh color. Oblong tuber type.	Medium-late	Fresh Table	Old garden variety. Wide adaptability.
Yukon Gold	High yielding. Buff colored skin. Yellow flesh color. Oblong tuber shape.	Medium	Baking	Attractive appearance.

ensure rapid, early plant growth. Extremely wet soils, however, will increase the possibilities of seed piece rot.

Rotation

Do not plant potatoes in the same area of the garden each year; it may predispose the crop to disease and insect problems.

Irrigation

Potatoes require good soil moisture at all stages of growth. An uneven water supply can influence the development of knobs or growth cracks on tubers. Potato plants do not use much water early or late in the season, but they need a lot of water when the foliage is fully developed (late June through July).

Potatoes have a relatively shallow, sparse root system. Plants take up most water from the top foot of soil. Irrigate when the soil in this region begins to dry. Check the soil at the plant root zone. If the soil looks and feels moist and forms a wet ball when squeezed by hand, soil moisture is adequate. If the soil forms a fragile ball when squeezed, apply ½ inch of irrigation water. Dry, loose, crumbly or powdery soil at the root zone requires a 1-inch irrigation for coarse-textured soils to 2 inches for fine-textured soils. Heavier soils need furrow irrigation every 5 to 7 days, but more frequent irrigations may be necessary on sandy soils. Sprinkler-irrigated potatoes benefit from light, frequent (3 to 5 days) water applications, especially when temperatures are higher than 80°F. For example, sprinkling a 500-square-foot area for 25 minutes will apply approximately 1 inch of irrigation water. To check the water application, place a measuring can made from a common tin can near the plants.

Once the plants begin to yellow and the lower leaves start dying, reduce the irrigation rate. Too much water late in the season may predispose the tubers to rot. The crop should be dried down to mature the tubers and to set the skin to reduce bruising. The vines should be dead for 2 to 3 weeks prior to harvest. Potatoes cured by withholding water late in the growing season will store better.

Fertilization

Potatoes respond well to optimal levels of soil nutrients. Be careful not to overfertilize, especially with nitrogen (N). Excessive N will cause plants to produce too much foliage, and delay tuber growth. The best method to determine how much fertilizer to apply is to test the soil. (For more information, consult WREP 9, *Principles of Soil Sampling*.)

Broadcast fertilizer when forming hills prior to planting. Apply fertilizer uniformly across the garden area, and incorporate into the top 3 to 4 inches with a rake. Choose a balanced fertilizer, such as 5-10-10, 10-10-10, 16-20-0, or an organic form, such as compost. Potatoes will use about 0.38 pounds of N for every 100 square feet of garden space. If using 16-20-0, for example, the fertilizer contains 16 percent N, 20 percent phosphorous (P_2O_5) and 0 percent potassium (K_2O). Therefore, for a 100 square foot area, apply 2.4 pounds ($0.38 \div 0.16 = 2.4$) of material evenly. It is best to apply about half the fertilizer before planting. Apply the other half about late June. Use only thoroughly decomposed or composted sources of manure because fresh manure can increase common scab occurrence. If leaves begin to turn yellow before mid-season, add a small amount of N fertilizer to the side of the hill and incorporate with a rake or irrigation water.

Pest Control

A number of weed, insect, and disease pests can affect potatoes in a home garden. Examine potato plants

regularly to detect pest outbreaks before they become major problems. Many pests can be controlled without using chemicals, especially if detected early. In most cases, disease control will not be necessary in the home garden.

Weeds — Most potato varieties produce relatively large plants, however, weeds can reduce yields by competing with potatoes for water, nutrients, and light. The most critical period for weed competition is during early growth, from emergence until plants are approximately 12 inches tall. Control common annual weeds such as **redroot pigweed**, **lambsquarters**, and **nightshade** by hoeing or pulling during the hilling operation. Cultivation can actually spread troublesome weeds, such as **thistle** and **quackgrass**. (For more information on weed control, consult EXT 726, *Weed Control in the Home Garden*.) Once plants reach their full size, cultivation must be shallow to avoid pruning potato roots near the soil surface.

Insects — The most troublesome insect in the home garden is the Colorado Potato Beetle (CPB). You will begin to see adult CPB as soon as the potatoes emerge (fig. 1). The adult beetles, which overwintered in the soil, emerge in the spring to lay eggs on susceptible host plants. Adult beetles have round, hard, yellow wings with ten black stripes. The eggs hatch, producing larvae, which do the most damage to potato plants. Larval feeding defoliates the plants. Larvae are brick-red with two rows of black spots on each side (fig. 2).

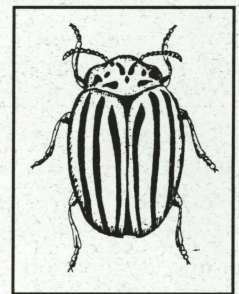


Fig. 1

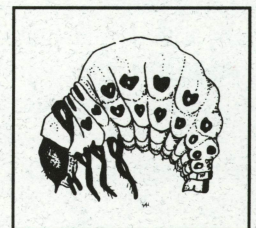


Fig. 2

To control the adult beetles, hand pick them from the potato plants before they lay their eggs on the undersides of the leaves. The eggs are a bright orange-yellow color. If the eggs hatch, pesticides are available to kill the larvae.

Diseases — Potatoes are affected by a long list of disease problems. Fortunately, most of them do not occur in the home garden. Many common seed-borne potato diseases can be avoided simply by purchasing and planting certified seed. Included is a brief description of diseases that home gardeners frequently encounter and suggestions for control. Note that the control measures include management practices to observe for the entire season, even before planting. It is best to avoid conditions that favor disease development.

Common scab can be a problem on tubers harvested from the home garden. This disease is caused by a bacterium and is characterized by small (generally 5 to 8 mm diameter) light-tan to brown lesions resembling small scabs on the tuber skin. Dry conditions enhance

scab development, especially early in the growing season. Proper water management should greatly reduce the potential for scab development. Scab can be particularly severe in soils with a high organic matter content. Avoid planting potatoes in soil recently treated with animal manure. In gardens where scab has been a problem in the past, consider planting a scab-resistant variety. Scab is strictly an appearance problem and does not affect potato quality.

Early blight is caused by a fungus and characterized by circular, brown to black lesions on the leaves. Lesion shape may change from circular to angular if a large leaf vein stops the fungi progression. Early blight lesions have a bullseye appearance. Lesions usually appear on the lower leaves first and may then progress upwards on the plant until all of the foliage is affected and the plant dies prematurely.

Stressed plants are more susceptible to early blight than healthy plants. Maintaining proper soil fertility and good water management will help prevent early blight. Avoid watering practices that dampen foliage; early blight needs free moisture, or water droplets, to infect plant leaves. Early maturing varieties are more susceptible to early blight than later maturing varieties. If a fungicide application becomes necessary, consult your local Extension agent.

Pink rot, often called water rot, is characterized by swollen, waterlogged tubers that may be partially or totally rotted. A fungus causes the flesh of these rotted tubers to turn pink within a half hour or so after they are cut. This characteristic gives the disease its name. Pink rot occurs when plants are overwatered; proper water management, especially late in the growing season, is the best control.

Another common tuber disease is **Rhizoctonia** or **black scurf**. This fungal disease is characterized by small, irregular black patches on the tuber surface. These patches, called "sclerotia," look just like dried-on soil. Unlike soil, however, these patches won't rinse off easily. The best control is purchasing and planting seed free of black scurf. If the disease has been a problem in the past, encourage rapid plant emergence by shallow planting, followed by hilling. Try to avoid watering practices that lead to ponding and soil compaction.

Harvesting and Storage

Potatoes can be harvested during the season and used as *new* potatoes, or in the fall after the plants mature.

Consume new potatoes quickly because the thin skin allows rapid moisture loss and easy disease infection. For storage, dig the potatoes after they are fully mature and the skin is set. Fully mature potatoes have skin that is difficult to remove when rubbed. It will not hurt to water the plants before digging. A light irrigation will soften the ground and help break up clods, which should reduce bruising and tuber damage during harvest. Potatoes dug out of warm soil (50 to 65°F) will not bruise as easily as those dug out of soil less than 45°F.

Store potatoes in a cool and humid place. A dirt-floored storage room is ideal. Be sure no light comes in contact with the potatoes; light causes the tubers to turn green and develop a bitter taste. Store the potatoes at 50 to 60°F with high humidity for 2 to 3 weeks after harvest. This curing period allows any bruises or wounds that occurred during harvest to heal. Continue the curing process by gradually cooling down the storage unit until the temperature reaches approximately 40°F about the first of December, and then hold at this temperature through the winter storage season.

Good air circulation around the potatoes will reduce storage rots and sprouting. Use a slotted bin or other similar container.

Do not store potatoes with fruit. Ripening apples and other fruit give off a plant hormone, ethylene, which can make potatoes sprout prematurely.

Further Reading

To order these or other publications, contact the University of Idaho Extension agent in your county, or write to Ag Publications, University of Idaho, Moscow, Idaho 83844-2240, or call (208) 885-7982.

CIS 897 Herbicides for the Home Garden (35¢)

EXT 726 Weed Control in the Home Garden (50¢)

CIS 755 Vegetable Gardening: Planning and Preparing the Site (35¢)

WREP 9 Principles of Soil Sampling (50¢)

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