In Georgia, homegrown potatoes can provide fresh produce from the first part of July until the following spring. This publication 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.

Potatoes are diverse in appearance, maturity and use, and are an excellent source of nutrition. In fact, potatoes have fewer calories and 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 creamy 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.

With the skins left on, red varieties offer the consumer an aesthetically pleasing color contrast to meat and other vegetables, multiple uses and unique texture. Several red varieties are available in garden supply stores and seed catalogs.

Many white-skinned varieties are also multipurpose. Those with high specific gravity and low sugar (see “Harvesting and Storage”) content can be processed into potato chips.

Russet varieties, characterized by their often heavy, dark brown netted skin, are great for baking and fries. However, the russets do not grow very well in most areas of Georgia.

Consider exotic potato cultivars, such as those with yellow or even purple skins and flesh, for some of your garden production. They add color and versatility to meal planning.

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

<table>
<thead>
<tr>
<th>Cultivar</th>
<th>Description</th>
<th>Maturity</th>
<th>Use</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red LaSoda</td>
<td>High yielding. Light red skin. Oval tuber shape. Deep eyes may make peeling difficult.</td>
<td>Late</td>
<td>Fresh table</td>
<td>Wide adaptability, occasional hollow heart and growth cracks. Seems to have some tolerance to higher temperatures.</td>
</tr>
<tr>
<td>Kennebec</td>
<td>Very high yielding. White skin, shallow eyes. Oval to oblong shape.</td>
<td>Medium</td>
<td>Fresh table, chipping, French fries</td>
<td>Susceptible to scab blackleg, growth cracks and hollow heart. Cooking quality is excellent.</td>
</tr>
<tr>
<td>Irish Cobbler</td>
<td>Round, white tubers, well adapted.</td>
<td>Early</td>
<td>Fresh table</td>
<td>Good appearance, round. Excellent flavor.</td>
</tr>
</tbody>
</table>
Table 2. New and Unusual Potato Cultivars*

<table>
<thead>
<tr>
<th>Cultivar</th>
<th>Description</th>
<th>Maturity</th>
<th>Use</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cranberry Red</td>
<td>Red skin, pink flesh, round</td>
<td>Medium</td>
<td>Bake, boil</td>
<td>Good appearance, smooth</td>
</tr>
<tr>
<td>Caribe</td>
<td>Purple skin, white flesh, oblong</td>
<td>Early</td>
<td>Bake, boil</td>
<td>Good appearance, smooth</td>
</tr>
<tr>
<td>Keuka Gold</td>
<td>Tan skin, light yellow flesh, oblong to flat</td>
<td>Early</td>
<td>Fair baker, excellent boiler</td>
<td>Very good appearance, slight netting</td>
</tr>
<tr>
<td>Agria</td>
<td>Tan skin, yellow flesh, oblong to flat</td>
<td>Medium</td>
<td>Excellent baker, good boiler</td>
<td>Very good appearance, smooth</td>
</tr>
<tr>
<td>Yukon Gold</td>
<td>Tan skin, yellow flesh, round to oblong</td>
<td>Early to medium</td>
<td>Good baker, excellent boiler</td>
<td>Very good appearance, moderately smooth</td>
</tr>
<tr>
<td>Goldrash</td>
<td>Tan skin, white flesh</td>
<td>Medium</td>
<td>Good baker and boiler</td>
<td>Good appearance, slight netting</td>
</tr>
</tbody>
</table>

* From the 1998 Pennsylvania Potato Extension and Research Report, William J. Lamont Jr. and Terrance W. Simpson

PLANTING

Growing potatoes is possible from true seeds produced in the flower of the plant, but home gardeners can obtain better results growing plants from pieces of a tuber with at least one lateral bud or eye, called seed pieces. This practice is called vegetative propagation.

Unfortunately, plants that are propagated vegetatively 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 pieces (also called 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 pieces in their gardens. Potatoes from the supermarket should not be used because they may carry viral diseases or be treated with a sprout inhibitor that can prevent the tubers from germinating.

PRESPROUTING

Gardeners can get a jump on production by presprouting potatoes. To sprout seed potatoes prior to planting, place them for two to three weeks in a single layer on an enclosed porch or in a warm room where they will get some sun and where the temperature will stay 60°F or warmer.

The potatoes will develop short green sprouts rather than the long white sprouts they produce in the dark. Because the potatoes become green, this sprouting process is called “greening.” Green potatoes should not be eaten, but when you plant them, the crop will be fine.

When planting time comes, cut the potatoes as you would normally, and plant the seed pieces as usual without breaking the tiny sprouts.

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 12 pounds of seed potatoes for each 100 feet of row.

Each seed piece should have at least two eyes.

CUTTING SEED PIECES

Potatoes should be cut so that each seed piece has at least two eyes; each piece should weigh at least 1.5 ounces (about the size of a small egg). Make cuts to expose the least amount of cut surface. During cutting, discard any potatoes that show dark rings or discoloration inside.

Seed pieces should be planted immediately after cutting. If weather delays planting, cut seed may be stored for a few days at 55° to 60°F. High humidity (85 percent) is recommended to promote surface healing of the seed pieces. Gardeners may also see companies
offering potato eyes, but these are not recommended. They do not contain sufficient reserve food to develop healthy, sturdy plants.

**PLANTING DATES AND PLANTING**

Gardeners can plant early potatoes when the soil temperature reaches 45ºF, usually before the danger of the last spring frost has passed. Gardeners in South Georgia can plant potatoes by mid-February during most years, in middle Georgia by March 10 to 15 and in North Georgia by April 1 to 10. Light frost may kill back above-ground stems during some seasons, but new growth takes place at the ground line. When planting fall potatoes, Red LaSoda is the cultivar to plant because of its heat-resistant qualities.

Potatoes germinate and emerge best when soil temperatures are above 50ºF. Plant seed potatoes 4 to 5 inches deep and leave 10 inches between plants in the row. Space rows 30 to 36 inches wide. Although potatoes can be planted on flat ground, forming a hill around the plant is preferable. 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 around the seed piece, or they can be formed after the plants are up. Hill within four weeks of planting.

Be sure to have good soil moisture at planting. If soil moisture is inadequate, lightly irrigate before planting to ensure rapid, early plant growth. Extremely wet soils, however, will increase the possibilities of seed piece rot.

**NONTRADITIONAL POTATO PLANTINGS**

Potatoes are a very hardy crop and can be grown under a wide range of environments. The following will give you unique ways to grow potatoes in addition to the conventional methods.

**Mulch for Potato Growing**

Planting potatoes under mulch (heavy layers of organic matter over the soil) is becoming an increasingly popular way for growing potatoes.

The process is simple. Start by tilling or spading a small area of the garden. Work a light application of 5-10-15 or other fertilizer of choice into the top inch or two of soil. Then plant seed pieces about 10 inches apart in all directions. Put the cut surface face down and push each piece in until the top of the piece is at ground level. Cover the area with about 18 inches of mulch, such as old or spoiled hay, leaves, etc. If you decide to use hay, try to find some that is fairly weed free because seeds attract mice, who may eat the potatoes when they run out of seeds.

Once the mulch is on, your work is almost over. You may have to water once in a while or add some extra mulch in case some tubers start to show through. A side dressing of fertilizer will need to be added when the plants are about six to eight weeks old. It can be applied over the mulch and watered in.

As with potatoes planted normally, you can reach in to harvest some new potatoes any time something is there to pick and eat. Just pull the mulch aside, harvest what you want and replace the mulch.

**Container Potatoes**

Ever think of growing a few potato plants in bushel baskets? Well, you can — it’s easy and fun. You can be a potato grower in the smallest yard or just on the back porch or patio.

Line a bushel basket with plastic, punch a few holes in the bottom and put in a layer of stones for drainage. Stir a few tablespoons of houseplant food or fertilizer into a bucket of moist soil. Put a 4- or 5-inch layer of soil in the basket and lay a few seed pieces 6 to 8 inches apart, then top with 3 or 4 more inches of soil.

Keep the basket in a warm, sunny place. As the plants grow, add more soil around the stems to give the tubers room to expand, and keep the soil well watered.

Potatoes can also be grown using old tires. The tires will add additional warmth early in the season; because they are black, they absorb heat. When the potatoes grow to the top of the tire, place another tire on top and add soil or mulch over the plants, leaving 5 to 6 inches of growth out of the mix. Repeat up to four or five tires high.

**ROTATION**

Crop rotation is a must with potatoes. Do not plant potatoes in the same area of the garden each year; it may predispose the crop to disease and insect problems. Tomatoes, potatoes, peppers and eggplant are in the same family and tend to get the same disease and
insect problems. Rotate with a crop such as beans, squash or corn. Such a rotation will help control diseases, insects and weeds. Potato yield and quality will be improved with rotation.

**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 May through July in Georgia).

Potatoes have a relatively shallow, sparse root system. Plants take up the 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 1/2 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 irrigation every five to seven days, but more frequent irrigations may be necessary on sandy soils. Sprinkler-irrigated potatoes benefit from light, frequent (three to five days) water applications, especially when temperatures are higher than 80°F. To check the water application, you can place a common tin can marked at half-inch intervals 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 skins to reduce bruising. The vines should be dead for one week prior to harvest. Withholding water late in the growing season will help potatoes store better.

**SOIL**

The potato is adapted to a wide variety of soils. It performs best, however, on a sandy loam well supplied with organic matter and plant food. Heavy fine-textured soils are satisfactory if their structure is improved with organic matter.

Potatoes do not grow in soils that are boggy or wet. Because potatoes are tubers and grow underground, they will grow better and have an easier time expanding in loose, loamy soil than in heavy, clay soil that compacts and keeps plant roots from having the air, water and growing room that they need.

Applying organic matter in the form of well-rotted manure, compost or similar materials will improve the structure for better air-holding capacity as well as water-holding capacity. Apply it to the top of the soil in early spring at the rate of 3 to 4 bushels per 100 square feet of area. With a rotary tiller or spading fork, incorporate it thoroughly into the soil to make a uniform tilth or structure. This practice binds together coarse-textured sandy soils and breaks up fine-textured, heavy clay soils.

The best soil acidity range for potatoes is between 4.8 and 5.4 pH. On soils with a pH of 5.5 to 7.0, the potatoes can be infected with a disease called scab. Lime should not be used unless a soil test indicates a pH below 4.8. Potatoes are the only vegetable for which this pH is recommended.

**FERTILIZATION**

Potatoes respond well to optimal levels of soil nutrients. Be careful not to over-fertilize, 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.

Broadcast fertilizer when forming hills before planting. Apply fertilizer uniformly across the planting area and incorporate it into the top 6 to 8 inches. Choose a balanced fertilizer, such as 5-10-15, or an organic form. If using 5-10-15, for example, the fertilizer contains 5 percent N, 10 percent phosphorous (P₂O₅) and 15 percent potassium (K₂O). Apply about half the fertilizer before planting. Apply the other half about six weeks after the plant germinates, usually in mid-May in most of Georgia, when the plants are 4 to 6 inches high.

Some gardeners prefer to place the fertilizer in bands below and slightly to the side of seed pieces. Use approximately two-thirds of the regular fertilizer rate in an open trench 4 inches deep and 6 inches away from where the seed pieces are to be planted. Spread the fertilizer one week before setting the seed pieces.
Local county Extension offices will have more specific recommendations for your area.

If you are using manure as part of your fertilizer program, use only thoroughly decomposed or composted sources of manure; 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.

**HILLING**

Hilling is pulling soil up around potato plants. Hilling potatoes once or twice during the season will greatly improve production:
1. The additional loose soil allows the developing tubers to expand easily up into the growing areas.
2. Hilling helps keep the potatoes covered and from emerging through the soil and becoming green from the sun (see “Environmental Problems”).
3. Hilling buries and kills weeds around the plants before they become a serious and time-consuming problem.
4. Because rain collects in gardens with heavy soils, blocking the flow of air to the plant roots, a hilled row of potatoes will shed water. Hilling keeps them better drained and more productive because the earth will not pack around the plants.

**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. 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. You may begin to see adult beetles as soon as the potatoes emerge. The adult beetles, which overwinter in the soil, emerge in the spring to lay eggs on susceptible host plants. Adult beetles have round, hard, yellow wings with 10 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.

To control the adult beetles, hand pick them from the potato plants before they lay their eggs on the underside of the leaves. The eggs are a bright orange-yellow color. They are usually placed on the underside of the leaves in groups of 10 to 20; they also can be removed or destroyed to prevent the eggs from hatching. If the eggs hatch, pesticides are available to kill the larvae.

Other insects that damage potatoes are cutworms, grubs and wireworms. Cutworms are caterpillars that are active mainly at night. During the day they usually hide in soil cracks, under clods or in debris on the ground. Cutworms feed mostly on the foliage, but they may also chew shallow holes in exposed tubers or cut off stems of small plants near the soil surface.

White grubs are found in the soil curled up in a C shape. Most of the body consists of the whitish translucent abdomen; a dull gray portion is at the tip. The head and the prominent legs are brown. Most of its life is spent in the larval stage. White grubs chew large, shallow gouges in the tuber. Grubs are particularly prevalent where new turf has been turned under for a garden.

Wireworms are the larval stage of the click beetle, and they bore into seed pieces as well as tubers, causing both internal and external damage. The wireworm has a slender, elongated, yellowish to brown body with smooth, tough skin. The six short legs are close together near the head, and the tip of the abdomen bears a flattened plate with a pair of short hooks.
Diseases

Potatoes are affected by a long list of disease problems. Fortunately, most of them do not occur in the home garden. Many common seedborne 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. Avoid conditions that favor disease development.

Common Scab

Scab (Streptomyces spp) appears as shallow or deep corky blemishes that disfigure the potato skin and necessitate excessive peeling. Scab is a soilborne disease found throughout the world, particularly in soils with a pH of 6.0 to 7.5. Scab, caused by a bacterium, 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.

Where practical, follow a three- or four-year rotation, avoiding susceptible crops such as radishes, beets, turnips and carrots.

Scab can be particularly severe in soils with a high organic matter content. Avoid planting potatoes in soil recently treated with animal manure. Do not raise soil pH with fresh barnyard manure, wood ashes or limestone. Use acid-forming fertilizers such as 10-10-10, ammonium sulfate or diammonium phosphate to help lower the pH. Currently, no chemical control is available to home gardeners to prevent scab, so use resistant varieties.

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 and Late Blight

Early blight (Alternaria solani) and late blight (Phytophthora infestans) are fungal diseases that affect stems and leaves of the potatoes themselves.

Early blight (Alternaria solani) is caused by a fungus and is 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. Research has shown that the disease is most severe under alternately wet and dry conditions. 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.

Late blight (Phytophthora infestans) is probably the most important disease of potatoes worldwide — it caused the Irish potato famine. Late blight occurs mainly during cool, wet weather. Lesions appear on leaves as small, water-soaked spots, usually at the tips or margins. Under the cool, moist conditions that favor late blight development, lesions grow into large brown to purplish black lesions with pale green halos of water-soaked tissue at their margins. The undersurface of infected leaves often has a white fungal mass. Greasy, dark lesions may appear on stems, causing severe wilting and killing the plant.

If a fungicide application seems necessary, consult your local Extension agent.

Fusarium and Verticillium Wilts

Fusarium and Verticillium wilt diseases are caused by soilborne fungi and can remain in the soil for several years. General symptoms are yellowing of lower leaves that progresses up the plant, rapid wilting and premature death. Tuber rot (usually a wrinkled dry rot) is also associated with wilt infections. The fungi invade the vascular system of the plant and clog the conductive tissue, thereby interfering with the transport of water.

Because wilts are difficult to control, plant only disease-free certified seed; rotate to an area that has not recently contained susceptible crops (tomatoes,
eggplant, peppers, potatoes); plant resistant varieties; and maintain adequate soil moisture during the growing season.

**Rhizoctonia**

Another common tuber disease is *Rhizoctonia*, or black scurf. Small, irregular black patches on the tuber surface characterize this fungal disease. 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 planting shallowly; follow with hilling. Try to avoid watering practices that lead to ponding and soil compaction.

**ENVIRONMENTAL PROBLEMS**

**Heat Necrosis**

Potatoes exposed to high temperatures may have blackened streaks in the vascular system about 1/8 to 1/4 inch below the skin of the tubers. Harvest early and avoid high-temperature storage.

**Blackheart**

A darkening close to the center of the tubers; it can be reduced by cool-temperature storage.

**Growth Cracks**

Healed cracks in the tubers are caused by dry periods followed by sudden rains. Water uniformly with about 1 inch per week.

**Second Growth or Knobs**

As vines begin a second growth after a dry period or late fertilization, potatoes may be deformed with strange growths or knobs on the tuber.

**Heat Sprouts**

In extreme heat periods, late-harvested potatoes may have natural dormancy broken by this stress and begin to sprout in the ground. Storage quality may be reduced.

**Greening**

Green tubers are caused by exposure to light either in the field or in storage. Keep tubers well covered with soil in the field, and store them in the dark. Certain varieties will turn green more readily than others. When potatoes are exposed to light, even in a grocery store, their skins start to turn green. This greening is a sign that a substance called glycoalkaloids is developing. Because glycoalkaloids are slightly toxic, you can become ill if you eat much of the green potato. Peeling or cutting away these sections prior to cooking will usually eliminate the chance of illness because most of the glycoalkaloids are located in the skin or just below the skin. Green flesh is bitter and should be cut out when preparing potatoes because it may affect the flavor of the cooked potato. Also, certain people may be allergic to the greening.

**HARVESTING AND STORAGE**

Potatoes can be harvested during the season and used as new potatoes or late in the season after the plants mature and the vines have died back. 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. Watering the plants before digging will not hurt. 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 will not bruise as easily as those dug out of cooler soils.

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 (see “Greening” in “Environmental Problems”).

Store the potatoes at 50º to 60ºF with high humidity for two to three weeks after harvest. This curing period allows any bruises or wounds that occurred during harvest to heal. Continue the curing process by keeping the storage area as cool as possible.
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.

Some potatoes will get sweet in storage. Potatoes have a certain amount of starch in them that will convert to sugar when they are stored. This sugar is used to sustain the potato in storage. However, many times the sugar is not used up and imparts a sweet taste to the potato. If potatoes are taken out of storage and allowed to recondition (convert sugar back into starch), the sweetness will be lost. If potatoes are taken out and fried without reconditioning, the sugar will caramelize and browning will occur, especially on chips.

REFERENCES


Western Region IPM Project. 1986 Integrated Pest Management for Potatoes in the Western United States. University of California, Division of Agriculture and Natural Resources Publication 3316.