

IRISH POTATOES

Vegetable Gardens



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In yields internationally, potatoes outrank all other crops harvested. In the United States where potatoes are second to wheat in total production, the average American annually eats about 120 pounds of potatoes in both fresh and processed form.

Nutrition

Potatoes are less fattening than other foods in the diet, are an excellent source of vitamin C, and a good source of potassium, phosphorus and iron.

The ways potatoes are prepared drastically increase their calories. Using butter and sour cream on potatoes increases their caloric value, and french fries have about five times the calories of mashed potatoes.

Varieties

Potatoes vary in skin color, maturity interval, and disease resistance. Certain varieties are well suited for particular preparation methods. Select one that meets your specific gardening needs.

Dealers who sell seed potatoes purchase them wholesale or from potato seed warehouses, and often purchase only one or two varieties. To get a specific variety, you may need to inquire about its availability early in the season, or request it for next year's planting.

Kennebecs sunburn easily and are good for baking as are the Norgold Russets. The Norlands are a light red.

Using Potatoes

The quality of potatoes is judged by density, which influences how they are used. Density is measured by "specific gravity" of the tubers. Density can vary with the variety, soil type, fertilization, and seasonal conditions. Certain varieties are best for certain uses.

Potatoes grown early in the season and harvested before extreme heat will have a higher specific gravity. Properly fertilized, watered, and cultivated potatoes will, too. In

addition, storing the potatoes in a cool temperature will help them retain high specific gravity. Exceptions are the Norgold Russet and Kennebec which make excellent "mealy fleshed" baking potatoes.

Another important factor in choosing a potato variety is its productivity or yield potential under Kansas growing conditions. The table of varieties shows the average yield for a five-year period for some varieties grown at Kansas State University test locations in Manhattan and Colby.

In any given year, yields may vary based on your particular location and growing practices.

In selecting potato seed, always choose "certified" seed identified by a bright blue tag on the bag. (A red tag is used for USDA #2 grade potatoes.) Ask your dealer to show you the certification tag if it is not displayed prominently. Using certified seed is wise because some seed-borne diseases not only may reduce potato yield and quality during the growing season but also may infest the soil so that a disease could reoccur annually for years.

Soils and Fertilizer

Potatoes thrive in loose, easily tilled soils high in organic matter, if drainage is adequate. Avoid heavy, "sticky" soils and areas where water drains slowly or stands for a long time. Potatoes can be grown in fairly sandy soils if adequate watering is provided during dry periods.

Many years potatoes are planted early in the season when the soil is too wet to till. Therefore, fall tillage is suggested, and a light raking or harrowing in the spring just before planting. In fall tilling, organic matter can be incorporated into the soil easily. Deep tillage is important because it helps develop a good root system for the potato plant.

For most small gardens, 2 to 3 pounds of an all-purpose, balanced fertilizer (such as 10-10-10 or 12-12-12 per 100 square foot of area) broadcast over the plot in the fall

before tilling is adequate. In sandy soils where nutrients may be easily “leached” or washed out of the soil, or in larger plantings, the fertilizer should be “banded” or applied in rows 2 inches below and 2 inches to one side of the seed piece. Use 4 to 5 pounds of a similar fertilizer per 100 feet of row. This “banding” method not only reduces the fertilizer required because it places it near the root system of the plant but also does not fertilize weeds between rows.

In many years when spring rainfall may “leach” or wash nitrogen fertilizer from the soil, potatoes benefit from nitrogen fertilizer as a “side dressing” along the row. That is particularly important in sandy soils. Use ½ to 1 pound of a high nitrogen fertilizer such as ammonium nitrate (33-0-0) or 1 to 2 pounds of all-purpose garden fertilizer per 100 feet of row sprinkled about 4 or 5 inches from the plants along the row.

Potatoes should not be grown in the same location year after year. A three-year rotation reduces pest problems that may accumulate with continual potato crops and uses soil nutrients not used by other garden crops.

Planting

Early Spring Potatoes. Potatoes can be planted as soon as the soil can be worked in the spring. In most of eastern and central Kansas, mid-March is a common planting date. In southeastern Kansas, early March plantings may be possible, and in extreme northwestern Kansas, planting in late March to early April is usually best. Early plantings result in higher yields than late plantings.

After selecting seed potatoes, cut them into seed pieces weighing about 1½ ounces. Smaller seed pieces usually result in weaker plants and reduce “recovering” capabilities when a later frost injures emerging potato vines. There must be at least one eye per seed piece, and on the average there are about 8 to 10 seed pieces per pound. In estimating how much seed to purchase, remember that it takes about 9 to 10 pounds of seed potatoes to plant 100 feet of row. An important practice that usually results in fewer seed pieces rotting is to “heal” the freshly cut seed pieces by storing them at room temperatures (60 to 70°F) with fairly high humidity for five to seven days before planting. That allows the freshly cut surfaces to develop a protective coating that will help prevent seed decay when planted.

Plant seed pieces in rows about 3 feet apart (although rows may be spaced more closely in small garden areas.) In a wet spring and in heavy soils, a slightly mounded row will allow water to drain away from the seed pieces and may reduce decay. Shallow plantings will encourage fast emergence, so plant spring potatoes about 3 to 4 inches deep, then rake off 2 inches of the soil after the seed pieces start to sprout. Form the soil around the seed piece.

Fall Potatoes

Although in most of Kansas potatoes are planted in late March or early April, potatoes also can be grown in the cool fall season. Seed potatoes are not readily available at this time from most dealers; however, check early in the season to see if your local plant dealers will have potatoes for summer planting. Otherwise, you may need to save potatoes from spring-

purchased seed. Seed should be kept in a refrigerator or cool storage until planting time.

Potatoes for a fall crop definitely need to be “healed” because seed pieces rot readily in hot summer soil. If the soil is dry, water regularly to moisten and cool the surface, and plant 3 to 4 inches deep.

Watering is critical to ensure even emergence. In addition, regular watering through August is important, when temperatures are hot, winds strong, and rainfall often deficient. Potatoes planted in June or July should be ready to harvest in early to mid-October or can be stored in the ground until December and dug as needed. Fall-planted potatoes are excellent for winter storage. In addition, fall-grown potatoes are crisper or firmer. Specific gravities are generally 10 percent higher than those from spring-planted crops, but yields are generally lower. Vitamin C content is usually highest after harvest, so fall potatoes should contain more vitamin C through the winter storage period.

As the Crop Grows

Plants will begin to emerge by early to mid-April. In some years a late frost may burn the edges of leaves, but an adequate seed piece will recover quickly.

Potatoes thrive when soils remain fairly cool. The edible portion of the potato is a tuber, a modified underground stem that develops from attachments to the stem above the seed piece. To provide a bearing area along the stem for potatoes to develop, as well as to keep the potatoes covered with loose, cool soil, potato rows are “hilled” or mounded with soil gradually as the potato plants grow. As soon as the vines are 6 to 8 inches tall, you can begin hoeing or cultivating soil to the row. As the vines grow, continue this process until the ridge or “hill” is about 10 to 12 inches high.

Vine Growth

The flowering process in potatoes does not coincide with tuber development. Tubers are set early in the season, usually when the plants are 6 to 8 inches tall. As the plants grow and temperatures remain fairly cool, these tubers expand as starches accumulate in them. For that reason, early planting is stressed, because maximum tuber development occurs during cool weather. In Kansas, high temperatures will reduce tuber size and quality.

When potatoes blossom depends on variety and climate. In some years the blossoms develop into small, round, green fruit similar to small tomatoes, a related crop. These fruit should not be confused with tomatoes because they never enlarge or ripen. They contain a bitter alkaloid, solanine, which may be harmful if eaten.

Controlling Weeds

Weeds compete with the potato crop and must be controlled. During the process of “hilling” or ridging, cultivation is accomplished easily because the small weeds are covered with soil. Cultivation should be shallow (less than 2 inches) to avoid damaging plant roots or small tubers.

The herbicide Dacthal is available in many locations and can be applied after planting or after cultivation. The effect, however, will be lost with later cultivations. Herbicides are

White-skinned Varieties	Maturity	Depth of Eyes	Scab Tolerance	Storage Quality	Approx. Yield* Pounds/100 ft. row	Cooked Texture	Suggested Uses
Superior	early-mid	shallow	moderate	good	133	mealy	baking, mashing
Norchip	midseason	shallow	moderate	good	164	very mealy	baking, french fries
Irish Cobbler	early	deep	poor	good	134	mealy	baking, mashing
Kennebec*	late	shallow	poor	fair	152	mealy	baking, mashing
Red-skinned Varieties							
LaRouge	midseason	shallow	moderate	fair	174	waxy	boiling
LaSoda	early-mid	medium	moderate	good	153	waxy	boiling
Norland	early	shallow	good	good	109	waxy	boiling
Red Pontiac	mid-late	medium	poor	fair	170	soggy to waxy	salads, boiling
Russet-skinned Varieties							
Norgold Russet	early	shallow	good	fair	94	mealy	baking, boiling
Norkotah	midseason	shallow	good	good	130	mealy	baking, boiling

*Based on K-State research trials over 5-10 years.

used most effectively in large gardens, but weeds are controlled best in small areas by hand cultivation and mulching.

Watering

Soil moisture can limit potato growth in many areas of Kansas. The amount of water required will be influenced by soil type, temperatures, wind, and cultural practices. A general “rule of thumb” is to provide 1 inch of water weekly until just before harvest.

Several critical periods need special attention. When the vines are 6 to 8 inches tall and tubers start to develop, watering during dry periods ensures adequate numbers of tubers. The size and quality of potatoes can be improved by a thorough watering one to two weeks before harvest in dry years. Regular watering throughout the season is suggested, however, to avoid problems such as knobiness or second growths, cracking of tubers, and hollow cavities in the center of the tubers.

Harvesting

Potatoes can be dug fresh to use during the spring, especially to enjoy with spring garden peas. For maximum yields, however, digging should not begin until the vines have begun to die. The digging can begin when the vines are about half-dead. Potatoes dug before this time must be handled carefully to prevent sloughing of the tender skins. Digging when vines are completely dead may result in injury or premature sprouting from excessive heat because the vines help shade and cool

the soil in the early summer. Potatoes planted in mid-March should be ready to harvest from early to late July, depending on planting time, earliness of the variety, and growing conditions. In northwestern Kansas, potatoes normally are harvested in late August.

Protect fresh potatoes from heat, direct sun, and wind to prevent sunscald and skin discoloration. Allow potatoes to dry three to four days in a warm, shaded, airy location before storing them. Digging potatoes during the extreme heat of July or August may reduce their storage quality. Do not expose potatoes to direct sunshine for more than 15 minutes on a hot day.

Storage and Sprout Control

Select only the best fall potatoes for storage. Potatoes with injuries or other defects should be used first. Optimum storage conditions for potatoes are 35° to 40°F at moderate humidity. An unheated cellar or basement is suggested. Avoid locations where freezing will occur. Potatoes should be kept in darkness and checked periodically.

Store potatoes dug in early summer in as cool a place as possible, about 55° to 60°F. If sprouts occur, break them off. Store in the dark so tuber surfaces will not turn green.

Potatoes stored at temperatures below 40°F should remain firm for six to eight months without sprouts developing. At temperatures below 40°F starches are converted to sugars and

give potatoes a peculiar sweet taste. That can be reversed by removing a quantity of potatoes and moving them to 70°F or to room temperature about a week before they are used.

Several years ago numerous chemicals were available to control or prevent sprouting. Now, no materials are available to the home gardener to control sprouts after potatoes are dug. The only means of controlling sprouts is to avoid excessive heat periods by early planting and harvest, as well as by cold storage (below 40°F).

Diseases

Potatoes are susceptible to several diseases caused by bacteria, fungi, nematodes, or viruses. For specific chemical recommendations, consult the K-State Research & Extension publication, *Pest Control in Vegetable Gardens*, C-595.

Early Blight. Small circular brown spots with concentric rings on potato foliage sometimes form a “target bond” on potatoes. Usually the blight develops late in the season and can be controlled with foliar fungicide sprays. The blight develops rapidly in warm, damp weather. Because it may overwinter in plant debris, destroy infected crop residues.

Scab. Scab-like lesions on potato tubers are caused by bacteria. It can persist in soils a long time; so rotation is important. If the location has had scab in the past, it may persist. Because the disease is also seed-borne, you should use certified seed. The disease will be worse in nonacid soils, so acid-forming fertilizers will help lower the soil pH below 5.5. This disease is worse during drought.

Blackleg. Blackleg, caused by a bacterial organism, usually appears as blackened stems at or below the soil level, resulting in yellow, wilted plants. A problem only in damp years, adequate drainage at the soil level may provide some control. Use certified seed and rotate.

Virus Diseases. Several virus diseases, including spindle tuber, are common; they generally result in a distorted, upright growing plant. Several types of mosaic may result in spotted or mottled foliage, and may stunt the plants. Although usually no dead or brown areas occur on the foliage, plants appear distorted in some way. Using certified seed is important. In addition, virus diseases may be spread by insects, so controlling insects is important.

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 over cracks in the tubers are caused by dry periods followed by sudden rains. Water uniformly.

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 tubers.

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. Green “flesh” is bitter and should be cut out when preparing potatoes because it may affect the flavor of the cooked potato.

Insects

Potatoes are also susceptible to several insect pests. For specific chemical recommendations consult the K-State Research & Extension publication, *Pest Control in Vegetable Gardens*, C-595.

Colorado Potato Beetle. The adult is a yellow, round beetle with black stripes. It lays eggs on the underside of potato leaves. Pink larvae and adults feed on foliage. Rotating helps reduce populations.

Flea Beetle. These small beetles, with enlarged hind legs for jumping, are usually black and may move into the garden from fields or waste areas. They may carry diseases from plant to plant. Feeding by adults causes a fine, shothole appearance of the leaves. Sanitation around the garden helps in control.

Blister Beetles. These elongated beetles, usually brown, black or gray feed on potato foliage later in the season. They move into gardens from waste areas or fields. Sanitation may help.

Leafhoppers. Leafhoppers, small, green, wedge-shaped flying insects, often move into Kansas late in the season. They feed by sucking plant juices on the undersides of leaves. This results in a “burned” appearance of the leaves, often called “hopperburn.”

Aphids. These small, soft-bodied insects suck juices from plant leaves and stems. They usually are found on stems and leaves near the terminal end of shoots and are often green. They are important pests because they may carry virus diseases.

Grubs. Occasionally grubs are a problem in newly tilled lawns or waste areas. These large, white larvae eat large holes in tubers. They are usually not a problem in well cultivated garden plots and in early planted potatoes.

Wireworms. This insect bores holes about the size of a pencil lead into potato tubers. The slender, jointed, glossy larvae or worms may be found in the soil or boring into tubers. They are more common in freshly tilled grass or waste areas. Insecticides can be applied to the soil before planting.