# Potatoes

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**PREPARATION** If you can't plant them immediately, the seed potatoes should be stored loosely in a cool, dark place. Some potatoes may have already begun to sprout when you buy them. This is fine—in fact, some consider it desirable. Handle them carefully, and leave the sprouts on. If you break sprouts off you will delay emergence of the vines; and, you will greatly increase the number of vines that finally do emerge from each potato, reducing the size of the potatoes you will harvest. Tubers the size of a hen's egg (1-3 ounces), may be planted whole. Professional potato growers call these "single drops." If your potato is larger, use a clean, sharp knife and cut it into 2-4 oz pieces with at least 2 strong eyes in each piece just before planting. You may want to dust the cut pieces with powdered sulfur, fungicide to guard against scab or reduce the threat of infection by bacteria or fungus.

**SOIL** Well-drained, compost enriched soil is ideal for potatoes. Adding compost is essential for a good potato crop. It lightens and aerates heavy ground while it increases the moisture holding capacity. And compost adds the organic component of fertility that potatoes need to be truly healthy. You can also add slow release fertilizer to the soil at this point, but keep in mind that potatoes given too much nitrogen grow lots of leafy vines but make few tubers.

**PLANTING** Seed potatoes can rot without sprouting in cold, waterlogged soil, so planting extremely early can be risky. Optimum soil temperature for good growth ranges from 55 deg. F. to 70 deg. F. A small planting of the earliest early potatoes may be attempted by planting 6-8 weeks before the last frost date ( May 15th here in Colorado ). If a late frost burns the vines back to ground level the tubers will make more sprouts, but each time this setback happens the final yield gets later and smaller. Your main crop should be sown so that there is virtually no risk of frost blackening the emerging vines. The width between rows and overall plant spacing is determined by the size of your garden, your method of cultivation and the amount of irrigation you have available (or wish to use).

Form rows somewhere between 2 and 5 feet apart. Dig a shallow trench about 6-8 inches deep. Plant the seed pieces 10-14 inches apart in this trench. Using a rake, cover the seed with 3-4 inches of soil-do not fill the trench completely.

**HILLING** Hilling creates space for the potatoes to develop. Sprouts emerge in around two weeks, depending on the soil temperature. When the stems are about 8 inches high, gently hill the vines up with soil scraped from both sides of the row with a hoe. Doing this simultaneously weeds the area as well. Leave about half of the vine exposed. Hilling puts the root system deeper where the soil is cooler while the just scraped-up soil creates a light fluffy medium for the tubers to develop into. All tubers will form between the seed piece and the surface of the soil. Another hilling will be needed in another 2-3 weeks and yet another as well, 2 weeks after the second. On subsequent hilling, add only an inch or two of soil to the hill, but make sure there is enough soil atop the forming potatoes that they don't push out of the hill and get exposed to light (or they'll turn green). But if you hill up too much soil, you'll cover too many leaves and reduce your final yield.

**HARVESTING** **Early Harvest:** Normally, seven or eight weeks after planting, the earliest varieties are blossoming. This signifies that early potatoes may be ready, so gently poke into a potato hill by hand to see what you can find while making as little disturbance as possible. You may either "rob" a few plants of a potato, or simply harvest an entire plant from the end of the row. "Rob" gently to avoid injuring growing roots and stressing the plant.

**The Main Crop:** The ideal time to harvest is when the vines have been naturally killed off by a heavy frost—Mid to Late October. Dryish soil is definitely an advantage when harvesting; the tubers come up a lot cleaner and with much less effort. After the tops are dead, rest the tubers in the ground, undisturbed for two weeks to "cure," while the skins toughen up, protecting the tubers from scuffing and bruising during harvest and storage. Minor injuries in the skin may heal if allowed to dry. It is better to harvest in the cool morning hours. If hand digging, place your fork outside the hill at first and lift the hill from outside so as to avoid stabbing a potato. If the soil is wet, let the potatoes air-dry on the surface for a few hours before gathering them. If the weather is unsettled and you still must harvest, spread the potatoes out under cover and let them air-dry before storing. Then "field-grade" your harvest. Separate out and discard (or set aside to eat immediately) any blemished, scabby, misshapen, or injured tubers. Do not put cut or damaged tubers (those injured during harvest) into a sack of good ones; they will rot and rot other potatoes with them.

**WATERING** Potatoes can be grown with a significantly small amount of water; and in fact, potatoes grown with less water, although the yield is lower, are less watery and taste better. The skins are also tougher so the tubers store better. If you plan to grow your potatoes with small amounts of water, make sure to give them extra space so they can forage for their water without having to compete with other potato plants-and very importantly, the weeds must all be eliminated so they also don't compete for soil moisture.

**FERTILIZING** After emergence and until blooming ends, we highly recommend foliar spraying every two weeks with fish emulsion and/or a good liquid seaweed extract. You can't beat foliar sprays for ease of application, and the plants really respond with a burst of vine growth that will result in a higher yield. Spray in the morning while it's still cool and the dew lingers on the leaves. The best time to make the first application is the day before you hill up the vines for the first time. Once the vines are in full bloom, they stop making much new vegetative growth and begin to form tubers. Additional fertilization at this stage is virtually pointless and may harm the flavor of the potato.

**AVOIDING PEST AND DISEASES** An ounce of prevention is worth a pound of cure! Here are some tips to help you avoid the worst potato diseases and pests. Soil is everything! Build and maintain a healthy, well-balanced soil and your plants will naturally resist disease and damage from predatory insects.

**Scab:** Avoid un-composted animal manures, alkaline soil, and water-logging on potato ground to avoid scab. Where scab has been a problem before, try acidifying your soil pH by incorporating small amounts of elemental sulfur into the rows several weeks before planting.

**Disease:** Don't grow potatoes in the same ground more than once in three years. Many diseases, like early or late blight and verticulum wilt are soil borne. Insect pest populations can also accumulate in a spot. Other members of the nightshade family (tomatoes, peppers, eggplant) should not precede nor follow potatoes.

**Insects:** The most basic rule: to avoid insect problems have vigorously growing, healthy vines. Healthy plants can generally withstand some predation without a significant loss of yield. Leaf-eating insects can become a much more serious problem once vine growth has stopped and tubers are forming. The tubers store the food made by the leaves; if too many leaves are lost the tubers can't develop properly. The *Colorado Potato Beetle* is the most widespread and destructive potato pest. Both adults and larvae feed on leaves and stems, sometimes defoliating entire plants. Handpicking the beetles off the plants is fine control in a small garden, if you catch the problem early. Drop the beetles into a container and then smash them all at once. Check also for small yellow eggs, in clusters, on the undersides of leaves and crush these immediately. Beetle eggs over-winter in the soil, especially at the edges of the garden. Bacillis

thuringienses (Bt.) is an effective botanical control, but unfortunately, only for the larvae. The adults are not harmed at all. Hours after the "worm" eats a bit of treated leaf, it becomes so sick it can't eat again and dies within a day or two. Then the bacteria multiply within the larvae's decomposing body and are later released into the environmental background to kill still other beetle larvae. Even growers with small gardens should consider Bt. because this bacteria, once established, persists in the area for years and continues to significantly reduce the number of those insects who succumb to it. And if Bt. is sprayed frequently it can virtually eliminate the problem. Start with spraying as soon as there is anything in the garden for the beetles to eat and spray every 10 days to two weeks. That way no larvae get a chance to become adults and your problem may "peter out" before the potato vines are significantly damaged. Bt. is a bacteria not significantly different than the ones that make yogurt. Bt. is entirely nontoxic to humans and other animals and harmless to most insects as well; you can immediately eat food sprayed with it. If adult beetles are causing too much trouble, Bt. will not help until the next cycle has come around. For adults, the organic gardener can use 5% Rotenone dust or a Pyrethrin spray. Flea beetles can also make so many pinholes in leaves that the overall yield suffers greatly. The health of the vines has a great deal to do with how much interest flea beetles have in a plant. So the best prevention is total soil fertility. Sometimes spraying fertilizer like fish emulsion and/or liquid seaweed can lessen the interest flea beetles may have in a potato patch. Rotenone and/or Pyrethrin controls flea beetles, too. If you are having flea beetle problems, you should consider improving your soil's fertility next year.

**ALTERNATIVE PLANTING METHODS**

**Mulching:** If your soil is shallow, rocky or contains so much clay that the forming tubers can't push it aside as they try to swell up, or, if you grow potatoes where the summer's heat is intense, or if you have problems with potato scab in your soil, growing in mulch may be your solution. Prepare your seed bed as deeply as possible and make it fertile, just as you would for growing the potatoes in soil. But instead of making a trench for the seed pieces, plant them on the surface of just below it. Loosely shake mulch over the bed, 6-10 inches deep. The very best mulch to use is loose, seed-free grain straw, Seed-free hay that has been fluffed up, leaves and/or well-dried grass clippings can also be used. As the plants grow, continue to add more loose mulch as though you were hilling up the plants. Be sure to keep the tubers well-covered at all times. The result is excellent weed control, a continuous supply of moisture and reduced stress from heat. At harvest time, pull back the mulch. Your nest of potatoes should be clean, uniform and easy to gather.

**The Cage Method:** Grow a few potato plants, each or in their own wooden box, crib, barrel or wire cage. The container should be about 18x18 inches at the base, about 24-30 inches tall, and able to be gradually filled with soft soil or mulch as the vines grow. Set each container atop a well-prepared fertile soil. Plant one strong seed piece and cover lightly with 4 inches of soil. As the vines grow, gradually fill the container with mellow compost, mulch or soil, but always make sure you don't cover more than one-third of the vine's new growth. This is a great way to grow a lot of potatoes in a very limited space. We recommend doing this with Yellow Finn, Indian Pit, Red Pontiac, or the fingerling types. Watering requirements will be greater with this method however, so check the cages or containers frequently in warm weather.

**STORAGE** Potatoes keep best in the dark at 36 deg. to 40 deg. F., at high enough humidity that they don't dry out, and given enough air circulation that they can respire (don't forget, they're alive). Light and/or warmth promote sprouting and will also turn the potatoes green. But, cold potatoes bruise easily, so handle them gently when moving them around in storage. We recommend burlap sacks, slotted crates or baskets.