HS933

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Growing Potatoes in the Florida Home Garden[1]

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The potato is one of America's most popular vegetables. Americans eat an average of 125 lbs of potatoes per person each year. *Solanum tuberosum*, the scientific name for the potato, also called the Irish potato, is a cool season crop. It is grown commercially in Florida in the winter and spring months when the days are warm and the nights are cool. Commercial farms supply much of the country in the winter and spring with what is commonly referred to as "new" potatoes (Fig. 1).

Figure 1. Red and white potatoes are grown commercially in Florida.

The same "new" potato flavor can be achieved in the home garden by following just a few growing recommendations. One cannot truly appreciate the taste of a good potato until you grow and prepare it on your own. A recently grown and harvested potato tastes very different from one that has been in storage or on a grocery shelf for up to 6 months or more, and it is a very satisfying discovery to make.

Growth Cycle

The growth cycle of the potato can roughly be divided into five stages:

1. Sprout development: the eyes of potato develop sprouts which emerge from the soil.
2. Vegetative growth: the plant leaves, stems, and root system form, photosynthesis begins, and the plant prepares for storing nutrients in tubers.
3. Tuber initiation: tubers begin forming on the end of stolons (underground stems), but have not enlarged. This usually happens before the plant flowers.
4. Tuber bulking: tubers enlarge, and sugars and starches accumulate.

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5. Maturation: the tubers are at full size, and the plant top senesces (dries out) and dies. The tuber skin toughens during maturation which extends the storage life.

Varieties

Commercial potato varieties grown in Florida can be quite different than those grown in other parts of the country. Most commercial growers in the US grow a russet type potato, the best known of which is Russet Burbank. However, in Florida this variety does not grow well because it takes a long time to produce tubers (up to 4 months). The late maturity makes it more susceptible to disease and pest pressures as well as inclement weather conditions. The most popular (and successful) varieties grown in Florida are based on factors such as yield, disease resistance, quality, and adaptability. A description of popular potato varieties grown in Florida follows.

White-Skinned Potatoes

LaChipper (Fig. 2): This is the current standard white-skinned potato grown commercially in Florida. It yields well under our winter growing conditions. It has a buff to white skin color and a moderately smooth skin texture. Tubers are mostly round with relatively shallow eyes.

Figure 2. LaChipper

Sebago (Fig. 3): Sebago is a traditional Florida variety with moderate yield, buff to white skin color, and a slightly netted skin texture. Tubers are round to oblong with moderately shallow eyes. Long-time residents of Florida from potato growing areas of the state appreciate the exceptional flavor of this potato variety.

Figure 3. Sebago

Yukon Gold (Fig. 4): This is a relatively new variety that can be found all year round in the produce section of the grocery. It has moderate to high yield with buff to white skin color and a moderately smooth skin texture. Tubers are mostly round with relatively shallow, pink eyes. Yukon Gold potatoes are well known for their yellow flesh and great taste.

Figure 4. Yukon Gold

Red-Skinned Potatoes

Red LaSoda (Fig. 5): This is the current standard red-skinned potato grown commercially in northern Florida. The plant produces well and matures early. The tubers have a bright red moderately smooth, skin and relatively deep eyes.

Figure 5. Red LaSoda

LaRouge (Fig. 6): This is the current standard red-skinned potato grown in southern Florida. It produces a moderate to high yield of tubers. The mostly round tubers have relatively deep eyes and moderately smooth skin texture. The bright red skin color and the good boiling qualities make LaRouge a popular variety across the state.

Figure 6. LaRouge

Russet Potatoes

Florida does not have a standard russet variety for commercial production. When choosing a russet variety for the home garden, select varieties that mature relatively early. This is so the potatoes can be harvested during the cooler months of the year. One relatively short season russet that matures between 100-115 days after planting in Florida is Russet Norkotah (Fig. 7).

This potato produces high yields of brown to dark brown tubers. The tubers have a heavy russet or netted skin texture. Tubers are oblong to long with a shallow to intermediate eye depth. This variety makes an exceptional baking potato.

Figure 7. Russet Norkotah

Other Varieties

Many new and exciting potato varieties are now available through reputable catalog and internet garden supply companies. These varieties include red and blue flesh (Fig. 8) varieties and fingerling types. Part of the fun of home gardening is exploring unusual varieties that cannot be purchased in the supermarket. Do not hesitate to try new varieties and share them with friends. It is important to purchase varieties that mature early so that they can be planted and harvested in the cooler months of the year.

Figure 8. All Blue

At Planting

Soil Preparation

To grow a healthy potato crop, the soil must be properly prepared prior to planting. Since potatoes prefer a loose, well-drained, slightly acidic soil (pH 5-6), little needs to be done in Florida soils except in areas with a high water table where periodic flooding occurs. Potatoes do not grow well in flooded conditions and care must be taken to ensure that excess water in the root zone is drained. To do this, beds should be formed above the level of the soil at least 10 to 12" to ensure that plants are above any standing water. In a well drained soil, the addition of organic matter (compost, rotted-manure, green manure, etc.) aids in water retention and contributes essential nutrients as it decomposes. In Florida, this organic matter should be added each year because it breaks down quickly in the hot and humid climate.

Fertilization

Potato plants are heavy feeders and require adequate nutrition throughout the growing season. In order to determine what kind and quantity of nutrients should be applied to the soil, the nutrient status of the soil should be tested by a qualified laboratory. If you have questions, contact your county extension office personnel for local fertilization recommendations. Your county agent can help you interpret soil test results and determine what nutrients are deficient in the soil. In general in Florida, nitrogen and potassium must be used each potato season. Further, nitrogen and potassium are typically applied in at least two applications during the season. Half of the fertilizer should be applied at planting and the remainder applied during the season. More fertilizer may be necessary during periods of heavy rainfall. Based on University of Florida fertilizer recommendations about 0.75 lbs of nitrogen and about 0.5 lbs of potassium are required per 100 ft of row at planting. This is roughly equivalent to 7.5 lb of a 10-0-10 complete fertilizer at each application. Any recommended phosphorus or other nutrients should be mixed in the soil at planting.

The remaining nitrogen and potassium fertilizer (0.75 lb N and 0.5 lbs K per 100 ft of row) should be placed in a band about four to six inches to either side of the plant approximately three to four weeks after planting. The fertilizer should be buried about two inches deep.

Seed Piece Preparation

The potato tuber is the plant "part" planted to grow a new potato plant. When the tuber is planted it is called a "seed" potato. Only certified seed potatoes should be planted in the home garden. Certification insures that the seed tubers are free of disease. Certified seed can be obtained from a number of reputable garden supply stores. Do not purchase potatoes from the grocery store to plant in the home garden. These may carry harmful potato diseases that will hurt the growth of your crop. Tubers at the grocery store may also be treated with sprout inhibitors that may also hurt the growth of the plant in the garden. In addition, potato types (i.e. red or white-skinned) in the grocery store consist of many different varieties. If you find a variety you like, you may not be able to find it again in future seasons.

Potato tubers have buds known as eyes (Fig. 9) on the skin surface from which new plants grow (or sprout). Tubers are ready to cut into seed pieces when one or more of the eyes begin to sprout. However, they can be cut before the eyes sprout. Cutting the potato into seed will cause more eyes on the seed to sprout.

Figure 9. Eye on a red-skinned potato tuber.

Sprouting at the eyes indicates that the tuber is no longer dormant. Potato tubers are naturally dormant for a period of time after harvesting. Dormant tubers can be stored for a few days in the

light at room temperature to break dormancy. Do not store tubers in direct sunlight.

Seed potatoes should be cut so that each piece is about the size of an egg (2 to 2.5 oz) with at least one eye per seed piece (Fig. 10). Try to make as few cuts as possible when cutting seed. Cut seed pieces should "heal-over" before planting. To heal a cut tuber, leave the tuber in a cool (60-65° F), dark, well-ventilated, humid place for one or two days. Seed pieces can be planted directly after cutting but the risk of rot before sprouting is increased. Typically one pound of potatoes will make about six to eight seed pieces.

Figure 10. LaChipper potatoes demonstrating appropriate seed piece size. Small tubers can be planted without cutting.

Plant Spacing

Plants should be spaced at about 6-8" within the row with at least 36" between rows. Seed pieces should be planted 4" below the soil surface. Seed pieces should be planted with the cut side down and eyes (or sprouts) facing up.

During the Growing Season

Potatoes growing in the garden will need periodic attention. This attention will determine the quality and quantity of tubers at the end of the season.

Hilling

Hilling is the act of adding soil to the top of the potato row. Since the seed piece was only planted 4" below the soil surface, there is the possibility that new potatoes will push up above the soil surface. These exposed tubers turn green in the sun and will be inedible (see nutrition section). To prevent sun-burned tubers from forming, add about two or three inches of additional soil on the potato row when the sprout emerges from the soil. The sprout emerges around ten days to two weeks after planting depending on depth of planting and dormancy of the seed piece. Soil can be moved from the furrows between rows and used for hilling.

Fertilization

About 3 to 4 weeks after planting, the remaining fertilizer should be applied to the potato plants as described above in the *At Planting* section.

Irrigation

In Florida, potatoes are typically grown during the drier season of the year, i.e. winter and spring. As a result, in some years, supplemental irrigation may be required to provide plants with water. Moderate soil moisture levels should be maintained throughout the season. Care must be taken not to over water because potato roots do not grow well in conditions with too much water. Also, fertilizer can be washed out of the root zone and made unavailable to the plant. Small plants have a smaller root zone and require less water than mature plants. Water applications should be adjusted accordingly. Rough skinned and/or knobby tubers can result when soil moisture levels swing from low to high or high to low over a short period of time during the season. Over watering promotes root and tuber decay.

Weeds

Weeds can be a big problem for potatoes because they compete for light, water, and nutrients. They also can be hosts for insects and diseases. Mulches (either plastic or organic) can be used to suppress weeds. However, for potatoes in the home garden, hand cultivation (getting out the hoe) is the most frequent weeding strategy. Care should be taken not to injure the potato plant with its shallow root system or the tubers near the soil surface. If herbicides are used, make sure they are labeled for use in potatoes and always follow the instructions on the label.

Insects

Insect damage can severely reduce tuber yields. Insects that can cause injury to potato plants include Colorado potato beetles (Fig. 11, Fig. 12, Fig. 13), flea beetles, aphids, leafhoppers, and wireworms (tubers). One of the best preventative measures against insect attack is crop rotation. This means that potatoes should only be planted in the same location of the garden every three years.

Figure 11. Colorado Potato Beetle egg mass.

Figure 12. Immature Colorado Potato Beetle.

Removing weeds also helps control insects because pests can live in nearby weeds. For larger insects, picking the insects off the plants by hand can work for smaller plantings. For large plantings, pesticides are available for use in the home garden. If using pesticides in the home garden, follow all label instructions and pay attention to all cautions and warnings.

Figure 13. Mature Colorado Potato Beetle.

Diseases

Plant diseases can injure potato plants and tubers as with any other crop. Some typical fungal diseases that are common on Florida potatoes are early blight, late blight, and rhizoctonia. In Florieda, early and late blight cause the most injury to the plant tissue. Rhizoctonia can attack both the stems and tubers. It can rot the plant at the soil line or cause raised black spots on the tubers. For more detailed information on Early blight, see UF, IFAS Fact Sheet PP-7 at http://edis.ifas.ufl.edu/VH009 and for more information on Late blight, see UF, IFAS Fact Sheet PP-6 http://edis.ifas.ufl.edu/VH008.

Leafroll and mosaic viruses can also injure the potato plant. Symptoms include stunting, leaf curling, and a general yellowing of the plant. Plants suspected of having a virus should be removed from the garden. Corky ringspot is the symptom of the tobacco rattle virus (Fig. 14). This virus is transmitted by the stubby root nematode and causes a lesion on the tuber. Plant parasitic nematodes are microsopic worms that live in the soil and feed on plant roots.

Many fungal diseases are spread by water. Avoid walking through the garden while potato leaves are wet. The garden should be watered in the morning to provide time for leaves to dry before evening. Alternatively, water can be applied in the furrow between raised potato beds. This will reduce the water on the leaves and reduce the chance of disease.

Figure 14. Red potatoes with corky ringspot viral lesions. Virus is transmitted by the stubby-root nematode.

Planting certified clean seed potatoes can also help prevent disease. Destroying piles of rotten potatoes, plants, and other crop residue can help reduce sources harboring diseases. As with weeds and insects, pesticides are available to help control certain diseases. Label instructions and all cautions should be observed when using pesticides.

Inclement Weather

Potato plants should be protected during the season from excessive rain or irrigation. At no time should plants be allowed to grow in standing water. This can cause rot, reduce yields, and if bad enough, plant death. Freezing temperatures can also damage potato plants. Although the potato plant is tolerant of cool weather, it cannot handle temperatures below freezing. Very small plants (3 to 4 inches) can be covered with soil if freezing temperatures are forecasted. Larger plants can be covered with freeze protection fabric when freezing temperatures are forecasted. These materials should be removed as soon as temperatures warm above freezing to prevent injury to the plant.

Harvest and Storage

Vine Killing and Harvest

Most potatoes are ready for harvest between 80-115 days after planting. To harvest, carefully dig potatoes and remove them from the root system of the plant. Discard the seed piece if it is remaining on the plant at the end of the season and any green tubers (Fig. 15). If the potatoes will be stored after harvest, the plant should be allowed to die (mature) before harvest. Harvest the tubers approximately two to three weeks after the plant has died. If a plant has not begun the maturation stage on its own, it can be induced by killing the tops of the plant.

Figure 15. Green tubers should be removed prior to storage and discarded.

For the home gardener, this can be done mechanically by either cutting the plants at the soil surface with pruning shears or a knife. The top of the potato plant can be discarded. Leave the potatoes buried for two to three weeks after removing the tops so that the tubers can mature. Cover any exposed tubers with soil. The mature tuber has a tough skin that cannot be easily removed when rubbed.

A mature tuber will store much longer than an immature tuber. To harvest potatoes, carefully dig below the potatoes with a shovel or spading fork and lift the potatoes (Fig. 16). Shallow digging may damage the tubers and limit their storage life.

Storage

Keep potatoes in a cool (60-65° F), dark, well-ventilated place for 10-14 days after harvest to allow cuts and bruises to heal. Then move potatoes to a final storage location with a high relative humidity, good aeration, and cool temperature (38-40° F). At warmer temperatures, the tubers may sprout. Be sure to remove any damaged or rotten potatoes prior to placing them in long term storage as these will greatly shorten the storage life of the rest (as well as produce a nasty smell!). Washed tubers should be allowed to dry thoroughly before storing. Under proper

Figure 16. Baskets of potatoes showing a potato fork used for harvesting.

conditions, potatoes can store for 3-6 months or more.

Tuber Yield

100 ft of row can produce from 150 to 300 lbs of potatoes depending on the variety and the year.

Nutrition

Potatoes contain an average of 2% protein and 18% starch. They are also a good source of vitamin C. They contain small but useful amounts of vitamin B6, iron, niacin, magnesium, thiamine, folic acid, and potassium. A medium potato contains about 75 calories, slightly higher than that of an apple. Potatoes are low in sodium, essentially fat-free and easy to digest.

One should always avoid eating green tubers. Green tubers have relatively high levels of solanine (glycoalkaloid). Solanine has a bitter taste. The toxin is found throughout the plant but especially in the unripened potato tubers, green tubers, and in the new sprouts. It is toxic at very low levels. Tubers can "green" in the filed, in storage, and at home when exposed to the light.

Additional Information

Further web sites of interest for Florida potato production can be found by going to http://edis.ifas.ufl.edu and typing “potato” into the keyword box.