

of vascular discoloration from vine killing:

1. During hot weather, use chemical vine killers only when soil moisture is adequate.
2. When unable to control soil moisture during hot weather, use lower rates of the material or use a chemical known to kill the vines slowly.
3. Mow the tops before applying the vine killer.

Harvesting. Most Florida potatoes are mechanically harvested directly into bulk trucks or trailers that transport the tubers to packinghouses. Growers may lose 20 percent of their potential income through potato injury at harvest. Losses can be minimized by management attention to the following points:

1. All equipment should be available and operational to avoid delays in harvesting.
2. Precautions should be taken before harvest to anticipate and minimize problems caused by clods, weeds and vines.
3. Apron pitch (length of each individual link from hinge point to hinge point) should be as wide as possible, consistent with the size and shape of the potatoes being harvested. Tubers of round cultivars are more adaptable to wide-pitch aprons than tubers of long cultivars.
4. Only an alert, capable person should operate the harvester. The crew should be trained to work as a team, with each person assigned clearly defined responsibilities.
5. The harvester/operator needs to insure: (a) that the blade of the harvester is set deep enough to prevent cutting of the tubers but not so deep to create a soil overload for the apron capacity; and (b) that forward travel and apron speeds are consistent with good soil and tuber separation without using severe, tuber-damaging agitation.
6. Drops should be kept to six inches or less if possible. Padding should be used wherever potato bruising might occur. Rubber-covered apron links are advisable. Padding should be placed in areas of bulk trucks where loading begins. Operators should build the load to full height in the padded areas first, then continue loading on previously built mounds to reduce tuber damage.

Bruise detection. Different methods are used to detect blackspot and shatter, the two major types of potato bruises. A proper check for total bruise damage must include both blackspot and shatter bruises.

Blackspot appears as relatively uniform, discolored areas beneath the skin. A blackspot bruise generally does not penetrate deeper than one-quarter inch and usually does not rupture the skin. Bruised potato tissue begins to discolor six to twelve hours

after the injury occurs and may require 24 hours to develop fully. Blackspot bruises are detected by peeling tubers after allowing 24 hours for discoloration to develop.

Shatter bruises appear as cracks or fissures with the flesh discoloring at the edges. Unlike blackspot, shatter bruises usually break the skin and may penetrate deeply into the tuber. Shatter bruises and other defects that break the tuber skin can easily be detected within a few minutes with a catechol chemical treatment applied to the outer surface of the potato. The short delay for results makes the catechol method ideal for helping harvester operators check harvester performance and make necessary adjustments to minimize tuber injury. It is also useful for isolating equipment or handling steps causing damage during packing operations.

Packing. Generally, potatoes are unloaded from bulk trucks into water flumes for conveyance to the packing lines. Where ample water is available, fluming has the handling advantages of cushioning potatoes as they are unloaded and removing loose dirt. Care should be taken to insure that the potatoes drop directly into water as they are unloaded and not off the metal, wood, or concrete sides of the flume.

From the flume, potatoes are elevated to the grading lines. Graders should be stationed at this elevator to remove badly decayed or injured tubers and other foreign objects. To do a good job of grading, it is essential that graders are provided with adequate lighting.

From this elevator, potatoes generally pass through a washer to remove any remaining soil. Addition of chlorine to the wash water at 100-150 ppm free chlorine may help in preventing the spread of decay-causing organisms. If the water is recycled or reused, chlorine should be added to prevent the buildup of disease-causing organisms and inoculation of healthy tubers. For more information on chlorination, see Vegetable Crops Fact Sheet, VC-1, "Water Chlorination for Vegetable Packinghouses."

After washing, potatoes pass over a sizer to remove undersized tubers. Following this step, potatoes usually pass over sponge-rubber drying rolls to remove some of the water. Further drying may be required to minimize decay problems. At high temperatures, a thin film of water on tubers can rapidly lead to anaerobic internal conditions, making them especially susceptible to soft rot bacteria. However, if supplemental heating is used for drying, it should be one of the last steps just prior to packaging, whenever possible. This practice minimizes energy consumption because all culls have