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Potato Vine Killing or Desiccation[1]

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Proper tuber maturity at harvest is an important factor in producing high quality Florida fresh market potatoes. A mature tuber has improved skin-set, bruise resistance, and storage life. Vine killing not only benefits tuber appearance but can also limit tuber size and improve tuber release from the vine at harvest. Tubers naturally mature as the potato plant senesces. However, improved production methods cause potato vines to remain healthy and green longer into the season. Tuber maturation can be artificially induced by killing the potato vines. The three traditional methods for vine killing are mechanical, chemical, and combinations of the mechanical and chemical methods.

Mechanical Vine Killing

Flail mowing and rolling are the prominent mechanical methods used to kill potato vines. Vines should be mowed or rolled 14 to 21 days prior to harvest to insure ample time for tubers to mature. Care should be taken when using mechanical methods to avoid disturbing the soil so that tubers are not sunburned or mechanically damaged.

Chemical Vine Killing

Chemical vine killing (desiccation) methods consist of applying agricultural chemicals to desiccate the potato vines over a varying number of days (Table 1). Application of chemical vine desiccants should not be made during cool and damp or hot and dry weather. The use of spray adjuvants is advised when recommended on the label. To insure adequate vine desiccation and tuber safety, labels should be read thoroughly prior to applying any agricultural chemical.

Improved vine kill on actively growing plants may be achieved by splitting the chemical desiccant application. If the chemical desiccant label permits, an application of desiccant at less than full rate followed by a second application several days later may improve vine desiccation and tuber skin-set.

Other Considerations When Vine Killing

A combination of mechanical and chemical methods can increase the effectiveness of vine desiccation and, in turn, shorten the tuber maturation process. A roller can be used to bend the vines while

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Table 1. Potato vine desiccants.

Active Ingredient	Common Name	Manufacturer	Product Application Rate	Preharvest Interval[1]	Relative Vine Desiccation Rate
Carfentrazone	AIM	FMC	3.2 to 5.8 fl. oz/A	7 days	Fast
Diquat	Reglone	Syngenta	1-2 pts/A	7 days	Fast
Endothal	Desicate II	Cerexagri	1.5-2 qts/A	10 days	Slow
Gulfosinate	Rely	Bayer	3 pints/A	9 days	Slow
Pelargonic Acid	Scythe	Dow	7-10% solution	1 day	Fast
Pyraflufen	ET	Nichino	2.75 to 5.5 fl. oz/A	14 days	Slow

[1] Preharvest interval is the minimum time between application and harvest. It is not necessarily the time required to achieve tuber maturity and good skin-set.

spraying a chemical desiccant. This can improve stem coverage with the desiccant. Vine rolling may also close cracks in the potato row reducing the incidence of tuber sunburning after vine desiccation.

Two to three weeks are needed between vine kill and harvest to achieve proper tuber maturity and skin-set. However, this time is dependent on the potato variety planted, maturity of the plant when the vines were sprayed, and the environmental conditions after desiccant application. Potato vines from naturally senescing plants are usually more easily killed than vines of actively growing, late maturing plants. High soil moisture and cool or cloudy weather are also factors that can increase the time between vine kill and proper maturity.

Vine killing can have detrimental side effects. It can be an expensive production practice that results in varying degrees of success. The internal quality of the tuber can also be adversely affected. Stem-end browning of the vascular ring can occur if the vines are killed quickly under unfavorable environmental conditions. This discoloration makes for an unattractive tuber which may result in a lower fresh market tuber grade and/or value.

To limit the potential for vascular ring discoloration from vine killing, the following production practices should be followed. First, the use of chemical vine killers should be avoided in hot, dry weather. If application is made, the rate of the material used should be reduced to achieve a slower vine kill. Secondly, roll or mow vines prior to chemical application. Lastly, bring soil moisture to an adequate level with irrigation, if available, prior to chemical application.

Conclusion

Vine killing or desiccation can improve tuber maturation and skin-set which can add to the value of the crop. Potatoes with proper skin-set maintain better skin color, lose less weight in storage, and are more resistant to bruising and soft rot. Following label guidelines for all chemical desiccants will improve vine kill success and, in turn, tuber quality.

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