



Using Land Wisely

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In the past decade, citrus tristeza virus, low fruit prices, canker, and increasing urbanization have produced “new” available cropland as a result of tree destruction. Vegetable growers are finding it more difficult to find land for rotation crop use or purchase, and are thus watching with interest as these parcels become available. They should also be aware there may be problems associated with planting vegetables on this valuable land, particularly herbicide residues.

The herbicide program may have been a straight post-emergence program using glyphosate or a similar material, in which case the concern would be less. The problem arises when various pre-emergence herbicides were used and sensitive crops are planted too soon after the last application.

The Waiting Game

With many citrus herbicides in Florida soils, a waiting time of one to three years may be sufficient, depending on variables such as application method, frequency of application, and environmental conditions (especially temperature and rainfall) since the last application. Higher temperatures generally mean faster breakdown of herbicides. Increased rainfall means increased herbicide leaching to levels below the root zone. However, the type of irrigation

system used in the vegetable crop may also influence injury. Drip irrigation pushes water down. Seep irrigation brings water up and with it any solubilized chemicals that may have leached down to the spodic layer. Since herbicide breakdown in the soil often occurs by microbial action, and fumigation prior to plant-



Planting vegetables on land that has been quarantined for citrus canker can have great benefits, but herbicide residue in the soil can harm plants — such as this tomato plant grown on grove land in Southwest Florida.

ing a vegetable crop kills microorganisms, fewer are available to help degrade the herbicide.


Residues will often show up in a non-uniform pattern, as most herbicides applied in groves are banded applications; thus, residues may be higher in those banded areas, even after disking operations. Soil compaction may vary and affect water movement, particularly in seep irrigation fields, which may in turn influence the damage pattern from soil residual herbicides. Since weeds also vary in their sensitivity to herbicides, the presence of weeds does not ensure that herbicide residues are gone.

When planting vegetables as rotational crops in citrus groves, be sure to consider the potential problems from herbicide residue in the soil.

Take Your Tests

Herbicide residue testing usually involves soil testing or bioassays. Limitations of soil testing include expense and the lack of guidelines to translate a given amount of residue into potential crop injury. The only really useful information a test can provide is that there is no soil residue.

Bioassays may be done in the field or in pots using field soil, using sensitive plants that will show injury quickly. For triazine herbicides, oat or ryegrass is a good choice. Injury symptoms should be apparent within 10 to 14 days after emergence and will vary depending on the herbicide. If the site of herbicide action is known, a procedure can be developed utilizing this information. The desired rotational crop should also be included, comparing growth of bioassay plants in the suspect soil versus untreated soil of the same type.

One final but very important consideration is that most vegetable crops do not have residue tolerances for citrus herbicides. If a residue is found in a routine residue inspection analysis, the crop may be unmarketable. A potential lessee or buyer needs to take a hard look at the property and ask a number of questions about management of the previous crop in order to make informed decisions. 

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