

Suggested Weed Control Programs for Citrus¹

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Introduction

Weed management is an important component of the total citrus production program. Careful selection and implementation of a weed management program can provide significant economic and environmental returns. For recommendations on herbicide products to be used in Florida citrus groves, please see the annual *Florida Citrus Pest Management Guide* at <http://edis.ifas.ufl.edu/cg013>.

Interior (Ridge) Area

The ridge area is located in the center part of the state running from Clermont to near Lake Placid and is characterized by deep, well-drained sandy soils with trees usually having relatively deep root systems.

Young Groves

Use herbicides in tree rows and avoid the use of mechanical tillage equipment, which might cause physical damage to tree trunks and surface roots. Discs, mowers, or choppers may be used in row middles, but frequent use of disking and chopping has become less commonly practiced due to concern about damaging the very limited root system. Most groves are mechanically mowed to keep the vegetation at a desirable height. Some growers incorporate chemical mowing (the application of low rates of glyphosate to suppress grass and weed regrowth) as a vegetation management method that reduces the need for frequent mowing. A total chemical, non-cultivation program—one in which only herbicides are used to manage weeds in an entire

grove floor or area—is not recommended. Regardless of the vegetation management method chosen (mechanical or chemical), the grove floor area must be maintained with a short vegetation height in the grove during the winter to ensure better heat release on freeze nights. Additionally, vegetation in the row middle will also aid in minimizing soil erosion.

Mature Groves

Where weeds are shaded out under tree canopies and trees are closely spaced in the row, allowing little light penetration, chemical weed control may be reduced. In some cases, however, vines are a problem under tree canopies and chemical weed control is required. Middles may be mechanically or chemically mowed.

Coastal and Flatwoods Areas

The coastal areas along the east coast and flatwoods areas of central and south Florida are characterized by inherently poorly drained soils where soil drainage is improved by ditching and bedding. Trees growing in such soils usually have relatively shallow root systems (18 to 24 inches deep into the soil) limited by the high water table.

Young Groves

Use herbicides in tree rows and mowers or wipers in row middles. Cultivation equipment should not be used in middles because it can cause extensive pruning of surface root systems. Chemical mowing in row middles

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for vegetation control (not elimination) is being widely used with low rates of glyphosate. Vegetation outside the herbicide strips should not be eliminated in bedded groves due to the threat of soil erosion.

Mature Groves

Limited chemical weed control may be required if trees are shading out weed growth in tree rows. This condition, however, is unlikely in most cases due to the presence of climbing vines and missing trees or because of trees with thin canopies, which allow light penetration and subsequent weed growth. In most cases, herbicides are applied in the tree rows, and it is suggested that herbicide strips be maintained somewhat beyond the tree canopy edge. Mowers or a chemical mowing program may be used in the row middles for vegetation control (not elimination). As in young groves, cultivation equipment should not be used in middles due to damage to shallow tree roots.

Weed Control Following Freezes

A good preventative weed control program following freezes is an absolute requirement; however, caution is advised when applying herbicides to trees in poor condition.

When defoliation and wood damage have been sustained following freezes, weed growth is more prolific because defoliated canopies allow more light penetration. It is, therefore, suggested that preemergent herbicides be applied at lower rates before weed emergence.

Repeat applications should be made during the year as necessary to control emerging weeds, particularly annual vines. Studies conducted following past freezes showed that damaged trees did not develop injury symptoms or respond unfavorably in any way to low application rates of herbicides. When herbicide programs were not initiated early, weed (particularly vine) invasion of tree canopies was more serious than the threat of herbicide damage. Herbicide sprays will tend to be intercepted by the large number of fallen leaves under tree canopies following a significant freeze; however, rainfall or irrigation following application will move the preemergence herbicide materials into the soil and provide satisfactory weed control.

Young trees that have been severely injured by a freeze will tend to sprout from the trunk. When using contact and systemic herbicides such as paraquat and glyphosate, avoid contact with the new growth because damage to this regrowth will delay recovery of the tree canopy.

Trees in a generally defoliated and weakened condition are more rapidly invaded by weed growth and less capable of tolerating weed competition for moisture and nutrients. It will also be easier to prune the tree later in the year if the grove floor under tree canopies and in row middles is kept relatively weed free.

Misapplication of Herbicides

Misapplication of herbicides can damage or kill desirable plants and citrus trees, cause undesirable environmental effects, and possibly result in legal proceedings. Problems can arise following the application of herbicides at excessive application rates, too close to desirable vegetation, during unfavorable environmental conditions, and when applied on sloping terrain where heavy rainfall can move the chemical deeper into the soil profile or into the root zones of desirable plants.

If the problem of misapplication is detected, the treated soil surface layers may be removed, although it is a somewhat laborious process. If some time has elapsed, then activated charcoal may be incorporated into the surface soil at the rate of about 7 lbs. per 1000 ft². If damage to desirable plants is already apparent, a trenching machine may have to be employed to sever the root system of the plants that are in contact with the contaminating chemical. Hopefully, this will minimize further absorption of the chemical, although sometimes corrective action is futile. Caution would dictate that no herbicide be used within a distance of three times the canopy radius of desirable plants.

Soil-active herbicides applied to ditchbanks bordering citrus groves can result in tree injury where roots permeate the area. Do not mix or dispose of herbicide mixes in areas near water sources such as wells, ponds, and lakes or in grove locations where tree roots can grow in the area of the discharged material.

In order to reduce the impact of herbicides on the environment outside the immediate target area, efforts should be directed towards:

- minimizing drift by not applying under windy conditions, using low pressures, and, if necessary, using drift control additives;
- minimizing herbicide concentrations within recommended ranges for weed control;
- better irrigation management to reduce herbicide leaching;

- monitoring drainage outflows to determine levels of herbicides in water;
- erosion control to avoid movement of excessive amounts of surface-applied chemicals into ponds, lakes, waterways, and furrows between beds;
- thorough on-site cleanup to avoid tree damage and contamination of adjacent water sources; and
- maintaining crop residue levels within the approved ranges by keeping application rates within recommended ranges and avoiding excessive herbicide spray contact with trees and fruit.