

Spray Weed Seedlings

when small for best control in noncultivation programs

Richard E. Puffer and Burnell E. Yarick

Citrus growers using a noncultivation program can save labor and material costs by accurately timing the application of their weed sprays.

Weeds should be sprayed before they reach two inches in height.

All the efforts of the tiny plant are required to produce the first two leaves. At that stage nearly any weed-killing material on the market—at almost any strength—will kill the plant.

If the weed growth in an orchard is less than two inches in height, it should require approximately 40 gallons per acre of a weed oil. If that same weed is allowed to grow perhaps to a foot in height, it would require 180 gallons of weed oil to do the same job.

Many Weed-Killers Available

There are many different oils and chemicals for weed control on the market, and it may be confusing for the grower to decide which one will do his job efficiently.

There is no single answer that will fit all conditions.

Diesel oil is a good weed killer and the majority of citrus growers are using it with satisfactory results. However, the cost of Diesel oil has been rising and may continue to do so.

Many of the new weed oils are showing acceptable performance. The better oils have done a good job of killing the weeds and can be used at a yearly saving of \$5 to \$10 an acre.

When there is an over-all cover of weeds during the winter it usually will require about 80 gallons of Diesel per acre to do the job. Perhaps 40 gallons of a good weed oil would do as well.

If the weeds are sprayed at the right stage of growth these amounts per acre should be able to do the job. These figures are mentioned not as a final amount which should be applied but rather as a guide to growers.

Fortifiers

Where Diesel has not given satisfactory kills, fortifiers such as the di-nitros and pentachlorophenol will improve kills.

If the majority of the weeds are broad leaves, a cheap mix would be one quart of a di-nitro material plus five gallons of oil to 100 gallons of water. Although this mixture will not kill annual grasses it

burns back the top and checks the growth.

Small patches of perennial grasses such as Bermuda should be sprayed with either Diesel or weed oil. The cheapest weed killer for broad leaves is 2,4-D. At weed killing concentrations it is toxic to the trees and the utmost caution must be taken when used in an orchard.

Costs Vary

The cost of a noncultivation system varies widely from grower to grower. An Orange County noncultivation cost study shows some of these differences.

There are growers whose total cost has been only \$30 per acre for their first—and the most difficult—year in noncultivation. There are other growers who spent up to \$60 per acre for their first year in noncultivation.

There are growers who spent up to \$60 per acre during their second year. Other growers are spending as much as \$45 total cost in the fifth and sixth years of noncultivation.

The reason for these high costs after several years is primarily poor timing. Where growers have controlled the weeds before they went to seed, costs from the first year have decreased regularly.

The following figures are averages of the total cost per acre for the first five years of noncultivation:

First year	\$40
Second year	\$40
Third year	\$20
Fourth year	\$15
Fifth year	\$15

The average of the first five years from this study is \$26. It compares favorably with an average of \$27 per acre for normal cultivation costs in 1947. Thus, if weeds are properly controlled during this first five-year period, costs just about equalize.

Avoid Weed Seeding

Weeds must be controlled before they go to seed.

It is not advisable to use any form of organic matter, such as dairy manure, that introduces more weed seeds. Growers in their fifth and sixth years of noncultivation have been known to use manure that contained seed. Others allowed a few weed plants to go to seed. In both cases

the weed control program was thrown right back into the first year as far as costs were concerned.

Application Methods

Weed spray materials are applied both with hand guns and with booms.

Booms are limited to situations where the weeds are small, even in height, dense, and on flat ground. When these conditions prevail, boom spraying will be cheaper on large acreages because of the saving in labor. The majority of growers who do their own work prefer hand spraying because it is more adaptable. Difficult weeds can be sprayed more heavily.

Weed oils are so toxic that many growers use water to help spread the material at a rate per acre low enough to be economical and still be effective.

Low pressures and small-sized orifices must be used to reduce the rate in the case of Diesel oil.

One grower furnished a good example of weed oil use. He had been using a nozzle with an .078 orifice and spraying with about 60 gallons of oil per acre. Then he switched over to an .059 orifice. With the same weed condition he got just as good a kill with only 40 gallons of oil per acre. Growers have been able to use Diesel or fortified Diesel at extremely low rates. Good kills are obtained with 60 gallons of actual oil per acre by using low pressure with small orifices.

There is increased evidence that light cultivation for a year before entering noncultivation will deplete the weed seed content in the soil enough to decrease the amount of oil required. Several growers in southern counties are using weed knives that skim over the surface barely slicing the soil and cutting the weeds. Although this is a means of greatly reducing the amount of oil that will be required the first year of operation, some spraying will be required.

Growers who are thinking of noncultivation should know in advance that it is going to cost an additional amount of money for the first two years—the weeds must be controlled before they go to seed—but properly planned and carried out, it will pay off with good returns from the third year on.

Richard E. Puffer is Assistant Farm Advisor, Orange County.

Burnell E. Yarick is Assistant Farm Advisor, Los Angeles County.