

## WEEDING WITH OIL

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Weeds, the "prime antipathy" of all nurserymen, have lost their sting in southern nurseries. Now, we wave a magic wand over the seedbeds and presto! most of them wither and die, leaving the pine seedlings in complete control.

That magic wand is the proper dosage of Stoddard Solvent, applied when temperature, humidity, soil moisture, seedling age and vigor are optimum. Within an hour the weeds begin to wilt and turn black, and the next morning the leaves begin to curl in the hot sun.

Sounds wonderful! It is. But there is an element of danger in using Stoddard Solvent, because, under some conditions, pine seedlings are either killed outright or are seriously injured. We do not know yet just why or how this happens, but unless the nurseryman is very careful he can wipe out a whole block in a few hours. Thus, a very useful tool can become a two-edged sword with disastrous results.

When mineral spirits was first used we thought that great Quantities had to be applied to make it effective. As our knowledge increased we found that more consistent results were obtained by spraying at more frequent intervals and using less chemical. Originally 40-50 and up to 80 gallons an acre were applied at intervals of 10 days to two weeks. Such heavy applications could not be employed on seedlings less than a month old. Now emerging seedlings can be sprayed with 6 to 8 gallons an acre without any resulting damage. As the season advances, heavier **applications** can be used, if needed, to kill more advanced weed growth. As a rule the dosage is kept to about 15-20 gallons an acre.

Unfortunately some weed species are immune to oil applications; others can be killed only if sprayed when extremely small. All weeds increase in oil tolerance with age. The general practice **now is** to spray frequently, especially during the active spring growing season. Some nurserymen make it a routine practice to apply oil twice and sometimes three times a week, **using** 10-15 gallons an acre. Under this system the weeds are killed as they emerge **at** the most susceptible stages, and . with a minimum of potential danger to the tree seedlings. There is also some evidence that a high proportion of the immune weeds can be killed, in addition to the resistant and susceptible ones, by spraying just when they are emerging.

Soil moisture should be high when the oil is applied to avoid damage to the seedlings. Generally the area is watered just prior to spraying

with Stoddard Solvent. Weak, chlorotic seedlings are sometimes more susceptible to damage than the weed growth on the same seedbed. Then the whole process is reversed--seedlings are killed and the weeds remain when sprayed at the normal rate.

Damage to seedlings sometimes occurs late in the season when secondary needles are fully developed. It is this damage in the form of a needle and growing-tip burn which may cause arrested growth and weakened stock.

It is best to spray the seedlings when the foliage is dry, especially if secondary needles are common. Severe needle droop resulted from needle burning near the fascicles where droplets of water had collected.

It is important that the oil be applied evenly and at a predetermined rate. This can be done only with a power sprayer traveling at a uniform rate of speed. Hand applications proved to be very unsatisfactory because it is not possible to make an even distribution of the oil over the surface of the seedbed.

#### THE USE OF GIL SPRAYS FOR THE CONTROL OF WEEDS IN CONIFEROUS NURSERIES IN NEW YORK

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The annual production of the two New York State Nurseries is 40 million seedlings. This requires that one hundred thousand 4 X 12 seedbeds, or about 85 acres, are in nursery trees at any one time. The use of oil sprays is the routine manner of weed control, supplemented with some hand weeding. In the 4 years, 1947-1950 inclusive, large quantities of oil spray have been used -- approximately 15,000 gallons per year.

The year 1946 was one of experimentation, and relatively few beds were treated. The results were so favorable that large scale operations were used in 1947 and subsequent years. While some risk was taken in such large scale use, it seemed necessary in light of the unusual population of weed seed in the ground, due to the necessary neglect during the war period.

The results of these early tests and experience through 1948, have been published in mimeograph form and distributed widely throughout this and other countries. In addition two papers were published by the Northeastern Weed Control Conference, in 1949 and 1950 on the subject. The most complete paper published under date of March 1, 1949, is still available for distribution.