

# Use of Demeton on Citrus Trees

## effective control of citrus red mite and green citrus aphid obtained with systemic insecticide

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**Demeton** has shown most outstanding promise for control of aphids and red spider mites on citrus.

Demeton, an insecticide which may be absorbed by the plant and translocated to other parts of the plant, is a brown liquid of low viscosity, insoluble in water but soluble in organic solvents. The commercial demeton—Systox—formulations contain 21.2% or two pounds of active material per gallon. The extender is an emulsifier which makes the resulting product the consistency of molasses. When added to a spray tank containing water under high agitation, excessive foaming results which may be lessened by reducing the agitation or by using a defoaming agent.

Demeton should not be applied within 21 days of fruit harvest; otherwise treatments may be made at any time of the year suitable for spray practice. Soil applications—either directly or in the irrigation water—have not been sufficiently effective for practical use under field conditions. Applications of the current commercial formulations to the trunks of orange trees have resulted in some bark-injury where applications were made.

### Citrus Red Mite

Control of citrus red mite—as effective as that obtained by acaricides in general use—has been achieved by thorough coverage applications of the type normally used for applying petroleum oil. The spray should have not less than four ounces of the two-pound-per-gallon—

21.2%—formulation per 100 gallons. With spray blower equipment, 2½ to five pints per acre should be applied. The lower dosage should be utilized only on relatively small orange trees or lemon trees that would require 1,000 gallons of spray per acre for the thorough coverage type of application. For larger trees or when less volume of spray per unit area is applied, the amount per 100 gallons of spray should be proportionately higher.

### Green Citrus Aphid

Experimental evidence has shown that demeton is considerably more effective in controlling the citrus red mite than the green citrus aphid. Dosages which will control the citrus red mite will give an excellent initial kill of the aphids attacking citrus. However, the residual effect is much shorter. Consequently, more than one treatment may be necessary for adequate control of the aphids during any one season.

Spray coverage is important. A uniform distribution of the finished spray is necessary because at economic dosage levels sufficient demeton is not translocated to cause mortality of the green citrus aphid on unsprayed portions of the tree.

When a thorough outside spray coverage is applied to mature trees with a conventional high-pressure spray rig or the oscillating boom type, not less than four ounces of demeton—21.2%—per 100 gallons should be used.

If the spray is applied by air carrier equipment, 2½ pints—or more—of demeton per acre should be applied at not less than 200 gallons per acre.

Experimental evidence further indicates that longer residual effectiveness is achieved as the dosage per tree unit is increased. In protecting replants or young nonbearing trees interplanted with other crops, it is often desirable to obtain maximum residual control of aphids and mites. Because of their small size and, therefore, the low volume of spray required, it may be economically feasible to increase the spray concentration to one-to-two pints per 100 gallons in order to lengthen the residual action and thus minimize the number of applications required. However, not more than one pint per 100 gallons may be used on trees

bearing fruit when demeton is applied as a full coverage spray.

### Other Insects and Mites

In a limited number of tests, demeton—at the dosage for control of citrus red mite—resulted in effective control of the six-spotted mite—*Eotetranychus sexmaculatus* (Riley); the Yuma mite—*Eotetranychus yumensis* (McG.); and the Lewis mite—*Eotetranychus lewisi* (McG.). At the dosages for citrus red mite control, demeton can not be depended on for control of citrus bud mite—*Aceria sheldoni* (Ewing); citrus rust mite—*Phyllocoptata oleivora* (Ash.); or citrus flat mite—*Brevipalpus lewisi* (McG.); or other pests of citrus.

Sufficient information is not available to ascertain the effects of demeton applications on insect and mite predators and parasites of citrus pests. However—at the dosage used—it is unlikely that all stages of the parasites or predators would be eliminated. As demeton is readily absorbed by the plant, the residual toxicity to natural enemies of the citrus pests should be minimal.

Insufficient information is available to specify compatibilities of demeton with materials currently used on citrus. Demeton is relatively unstable in an alkaline medium, and any additions that tend to make the spray mixture more alkaline should not be used until further information is available.

### Special Warning

Demeton, like certain other organic phosphate insecticides, is extremely toxic to human beings. No warning symptoms are apparent in advance of a dangerous degree of poisoning and the imminent possibility of death. Exposure to any dilution of this material in any form must be rigidly minimized. Precautionary recommendations on manufacturer's label must be followed without exception or modification. Antidotal treatments should be available without delay.

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### TOMATOES

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resistant lines will be tested in 1954 for solids and for viscosity.

The San Marzano was chosen as suitable—for working out the basic principles of mechanical harvesting—because of the amount of labor in manual harvesting and because it can withstand comparatively rough handling. It is planned to have a mechanical harvester in the field to check the development of the basic principles on these new resistant strains.

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