

# Systemic Pesticides on Walnut

## preliminary studies promising for control of European red mite and walnut aphid in southern California

J. C. Ortega

**European red mite and walnut aphid** in the cool coastal regions of southern California may cause a premature dropping of walnut leaves, predisposing the nuts to sunburn injury and lowering the quality of the nut meats.

In addition, tremendous numbers of leaves on the ground at harvest time make hand picking difficult and sometimes costly, and curtail the efficiency of mechanical harvesters. The defoliation also interferes with the normal physiological processes of the tree. A second growth cycle may be started which may be killed back by frost in late fall or winter and result in a considerable amount of dead wood the following spring.

The experimental European red mite control program conducted during the 1952 season included the use of all the materials which showed promise in the 1951 trials. In addition, two systemic insecticides—O, O-diethyl-S-(beta-mercapto-ethyl) ethyl phosphate—known by the trademark name of Systox, and octamethyl pyrophos-phoramide—Pestox 3—were given preliminary field trials. Systemic insecticides—when applied to a plant as a spray or to soil containing roots of a plant—are translocated to all parts of the plant and are toxic to certain insects and mites feeding upon the plant.

Most treatments for the control of the European red mite were applied early in the season when the mite populations were very low. One program of treatments was applied on May 13, 1952, when it was difficult to find any live mites present, and the other on May 28, 1952, when there was an average of 1.9 mites per leaflet. At that time, only very minor leaf injury was manifested as a result of their feeding. In both programs the miticides were added to the regular DDT codling moth treatment. This type of a preventive mite control program had been promising in the previous season.

Materials evaluated in field studies but not included in tables were: EPN, malathion, NPD, Dimite and Sulphenone.

The systemic pesticides applied on May 13 were very effective at the dosages used in controlling both the European red mite and the walnut aphid for at least 12 weeks. Ovotran and Aramite were effective in controlling the European red mite. No additional treatment

The effect of certain materials in controlling the walnut aphid and/or the European red mite on walnuts. Treatments applied on May 13, 1952. All materials added to the DDT-codling moth treatment. Finished sprays applied by air carrier sprayer at the rate of 400 g.p.a. One pound of parathion—25% wettable powder—per acre added to the Ovotran, Aramite, and standard treatments for the control of the walnut aphid. European red mite and walnut aphid infestation rated as "trace" prior to treatment. Columns 1 and 2 represent the numbers of mites and aphids, respectively, found on 100 leaflets.

Material	Amt./A	June 13		July 1		July 11		July 28		August 11	
		1	2	1	2	1	2	1	2	1	2
<b>Systox 50%</b>											
emulsifiable . . .	2 qts.	0	0	0	0	1	0	0	2	0	6
<b>Systox 50%</b>											
emulsifiable . . .	1½ qts.	0	0	0	0	1	0	10	1	13	10
<b>Systox 50%</b>											
emulsifiable . . .	1 qt.	0	0	2	0	0	0	0	2	0	6
<b>Pestox 3 50%</b>											
emulsifiable . . .	4 qts.	1	0	7	0	1	0	4	0	2	4
<b>Pestox 3 50%</b>											
emulsifiable . . .	2 qts.	0	0	2	0	4	0	19	3	3	1
<b>Ovotran 50%</b>											
wettable powder . . . . .	6 lbs.	0	0	9	0	8	0	13	30	4	231
<b>Aramite 15%</b>											
wettable powder . . . . .	12 lbs.	1	0	2	0	5	0	9	375	8	2058
<b>DDT 50%</b>											
wettable powder . . . . .	12 lbs.	7	1	54	0	193	0	1628	221	534	1453
(Standard treatment)											

The effect of certain materials in controlling the walnut aphid and/or the European red mite on walnuts. Treatments applied on May 28, 1952. All materials added to the DDT-codling moth treatment. Finished sprays applied by air carrier sprayer at the rate of 500 g.p.a. One pound of parathion—25% wettable powder—per acre added to the Ovotran, Aramite, and standard treatment to control the walnut aphid. Pretreatment counts showed 1.9 European red mites per leaflet. Columns 1 and 2 represent the number of mites and aphids, respectively, on 100 leaflets.

Material	Amt./A	June 23		July 14		July 30		August 18		September 2	
		1	2	1	2	1	2	1	2	1	2
<b>Systox 50%</b>											
emulsifiable . . . . .	½ pt.	1	6	0	64	0	57	0	1503	..	..
<b>Systox 50%</b>											
emulsifiable . . . . .	1 pt.	2	5	0	12	0	20	0	839	..	4443
<b>Systox 50%</b>											
emulsifiable . . . . .	1 qt.	0	0	0	0	0	0	1	132	..	1536
<b>Pestox 3 50%</b>											
emulsifiable . . . . .	1 qt.	1266	1967 <sup>1</sup>	0	0	0	0	0	0	..	34
<b>Genite 50%</b>											
emulsifiable . . . . .	1½ gals.	2	18	0	1323	0	167	0	2302	..	..
<b>Ovotran 50%</b>											
wettable powder . . . . .	6 lbs.	4	1223 <sup>2</sup>	0	280	0	232	0	3498	..	..
<b>Aramite 15%</b>											
wettable powder . . . . .	12 lbs.	7	462 <sup>2</sup>	0	643	8	313	115	3285	..	..
<b>DDT 50%</b>											
wettable powder . . . . .	12 lbs.	131	210 <sup>2</sup>	5	365	312	747	1833	2901	..	..
(Standard treatment)											

<sup>1</sup> Re-treated on July 3 using 2 quarts of Systox 50% emulsifiable per acre.

<sup>2</sup> Re-treated on July 3 using 1 pound of 25% parathion wettable powder per acre.

# Zutano Avocado Cuttings Rooted

leafy-twigg cuttings of vigorous Mexican variety readily rooted without special procedures or hormone treatments

A. R. C. Haas and Joseph N. Brusca

**Leafy-twigg cuttings** from the Zutano avocado—a vigorously growing Mexican variety—readily rooted, without special procedures or hormone treatment, in propagation trials at the Riverside Citrus Experiment Station.

Previous trials by research workers at Riverside—and elsewhere—to propagate avocado trees by stem cuttings of Fuerte, Nabal and certain Mexican and Guatemalan varieties met with little if any success without special treatment or procedures.

The Zutano avocado cuttings were collected on July 30, 1952, without regard to the season of the year, although the most desirable time for obtaining citrus cuttings is considered to be in autumn during a somewhat dormant period—or just prior to the production of a new cycle of growth.

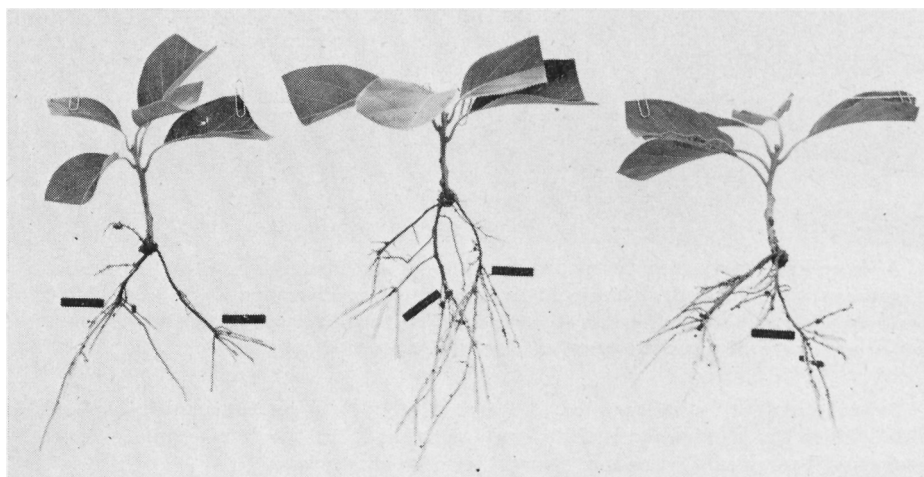
The Zutano cuttings were quickly transferred from wet burlap sacks to the propagation chamber with five to seven dark green mature leaves attached which had been cut back transversely to, roughly, slightly more than half their original length.

The propagation medium consisted of a mixture of half plaster sand and half peat. The chamber, situated in the glasshouse, was thoroughly plugged in order to maintain a high humidity and to cut

down the frequency of sprinkling with distilled water—any good quality water would probably have served the same purpose. The glass panes in the lid of the chamber were allowed to remain in need of washing and the glass was covered for some time with a cheese-cloth frame. The glass sash covering the chamber sloped so the high end was westerly

and the low end easterly, in order not to expose the chamber to the effects of the hot afternoon sun. By means of bottom heat, the temperature of the soil-peat mixture was held to a minimum of 75° F. During the late summer and early autumn the soil temperature undoubtedly was considerably higher, be-

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**Improvement in the root system of Zutano leafy-twigg cuttings brought about by the early replanting in the propagation chamber and later hardening of the cuttings once the short roots have been produced, or by pruning lengthy roots and replanting as above mentioned. Note the numerous rootlets produced where the original roots were cut as indicated in part by black lines.**

for mites was applied during the season within the experimental area. Plantings adjacent to the experimental area were treated for the European red mite and the walnut aphid on July 15. At that time the mite population had caused considerable silvering on the upper leaf surfaces by their feeding.

Some materials such as wettable powder formulations of EPN and malathon that have not given satisfactory results in the past when used to control moderate or heavy infestations of mites, performed fairly well in this type of control program. While they were not as effective as those listed in the upper table on page 10, the mite build-up was not excessive on those plots, consequently damage to the foliage was not enough to cause any appreciable leaf drop.

Relatively heavy dosages of organic phosphate materials such as malathon

and EPN were more effective in controlling the European red mite than the walnut aphid in this instance.

The lower table on page 10 contains a portion of the results of an experiment conducted in an area where the European red mite and the walnut aphid have been serious problems in past years.

In this instance, Systox, Genite and Ovotran were very effective in controlling the European red mite for a complete season. Pestox 3 used at the dosage indicated was not effective on either mites or aphids. At higher dosages it has given satisfactory control but it is questionable whether it would be economically feasible to utilize such amounts. The use of the lower dosages of Systox resulted in adequate aphid control for about eight weeks, which is substantially better than can be expected with any of the presently available materials.

None of the materials tested in 1952 produced any injurious effects on the foliage or fruit. Samples were collected at harvest time and processed in the normal manner. Crack tests showed that the materials evaluated for the control of the European red mite and the walnut aphid had no apparent effect on the quality of the nut meats. In addition, the systemic insecticides and standard treatments were given flavor evaluation tests. No significant effect on the flavor of the walnuts could be determined by these trials. At present the systemic insecticides are not registered for use on walnuts as adequate methods for determining the presence or absence of deleterious residues have not been developed.

*J. C. Ortega is Associate Specialist in Entomology, University of California, Riverside.*

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