

Walnut Pest Studies

studies in southern California compare a new spray material with DDT for codling moth control

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A new material, diethyl diphenyl dichloroethane—compound Q-137—was tested for control of codling moth in southern California.

A preliminary evaluation of the compound—which is closely related chemically to DDD and DDT—showed that Q-137 was not as effective as DDT, but a satisfactory degree of control was obtained.

Sprays were applied at the rate of 40 gallons per tree, with conventional high pressure spray rig. When Q-137 as 25% wettable powder was applied at either three or 1½ pounds per 100 gallons, 3.3% and 2.4% respectively of the total walnut crop—including preharvest drop—were wormy. Compound Q-137, as emulsifiable concentrate, at 0.4 pounds per gallon, resulted in 2.6% wormy nuts.

In comparison, DDT 50% wettable powder, applied at 1½ pounds per 100 gallons, resulted in 1.2% wormy nuts. DDD was approximately as effective as DDT. Nontreated trees contained 9.3% wormy nuts.

The grove in which the experiment was conducted had previous history of heavy codling moth infestations.

Aphis damage was heavy on all plots, the leaves being covered with a black sooty fungus mold which later caused a considerable leaf drop. In this particular grove European red mite and two-spotted mite populations remained low throughout the season.

Aphid, Mite Control

The studies also investigated the effects of reduced dosages of DDT on codling moth, walnut aphid, European red mite and two-spotted mite.

The data indicate that within the limits of the experiments there is no safe amount of DDT that can be relied upon to maintain a high degree of codling moth control and at the same time eliminate the mite problem.

The elimination of DDT treatment for codling moth will not necessarily keep aphid populations in check. This is particularly evident in the coastal areas of southern California. DDT used alone, may reduce the aphid population slightly but this protection is relatively short lived and the subsequent build-up of aphids is generally very rapid. The addition of

an aphicide such as nicotine sulfate, parathion, or tetraethyl pyrophosphate affords protection for a longer period and is a very economical method of control. No significant beneficial or detrimental effects were obtained in aphid control when the dosage of DDT was reduced and the amount of parathion was kept constant.

Reduced dosages of DDT may tend to ease the mite problem but not to the extent that additional treatment can be eliminated. One pound of parathion—25% wettable powder—per acre included in the DDT-codling moth spray appears to have no effect in controlling the European red mite.

The addition of materials to the DDT codling moth sprays which are not only toxic to the motile forms of the mites but also exhibit ovicidal and residual qualities are under investigation and show some promise.

Codling Moth

DDT, applied at six or nine pounds per acre, was effective in controlling the codling moth. However, results obtained in previous years do not show the six-pound dosage to be so effective. The control was erratic and in some instances unsatisfactory. The promising performance of DDT used at nine pounds per acre indicates that it may be possible to lower the dosage from 12 pounds per acre and still maintain a high degree of control of the codling moth.

The time of treatment depends upon the development of the walnuts and the codling moth. If both are normal and two treatments are considered necessary, the first application in most localities should be made before May 10 and the second before June 1. Where only a single treatment is necessary it should be made about May 15. Either DDT or basic lead arsenate may be used.

In lightly infested groves one DDT or one basic lead arsenate treatment is sufficient.

In moderately infested groves one DDT or two basic lead arsenate treatments should be applied.

In heavy infestations two DDT or two basic lead arsenate treatments are recommended.

When a speed sprayer with volute is used, DDT 50% wettable powder should be applied at three pounds per 100 gallons, and 400 gallons per acre. Basic lead arsenate should be used at four pounds per 100 gallons, and 800 gallons per acre.

When a conventional rig with tower is used, DDT 50% wettable powder is recommended at 1½ pounds per 100 gallons, and 800 gallons per acre. The dosage for basic lead arsenate is the same as that given for the speed sprayer.

A spreading and deposit-building agent should be added to the basic lead arsenate sprays at the rate of one quart per 100 gallons.

Addition of Aphicide

The addition of an aphicide such as nicotine sulfate, parathion, or tetraethyl pyrophosphate to the DDT or basic lead arsenate sprays is recommended as an effective and economical method to control early season infestations of the aphid. The amount of material to be added is indicated in the following table:

Method of application	Amount of material in ozs. per 100 gals.		
	Nicotine sulfate (40%)	Parathion (25% wettable pwdr.)	TEPP (20%)
Speed sprayer; DDT, 400 gal. per acre	6	4	8
Speed sprayer; basic lead arsenate, 800 gals. per acre . . .	4	2	4
Conventional rig; DDT or basic lead arsenate, 800 gals. per acre	5	4	8

The use of parathion and tetraethyl pyrophosphate presents a potential hazard to humans and animals. The chemicals should not be used near dwellings, farm buildings or animal enclosures. Contamination of crops with parathion should be strictly avoided particularly when grown for human or animal consumption and to be used as such within a period of 21 days following the spray application.

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