

Walnuts in Southern California

control of codling moth by treatment with new materials evaluated during 1952 season

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DDT is the most effective and economically feasible material to use for the control of the codling moth on walnuts in southern California. It has been used successfully under a variety of conditions for a number of years in the field. At present there is no indication that the codling moth larvae are becoming resistant. DDT is compatible with all of the more effective aphicides and miticides recommended for use in walnut pest control.

Field investigations are conducted each season with new insecticidal chemicals as they become available in an effort to find a material which has all of the desirable qualities of DDT and still does not adversely affect aphid and mite populations.

During the 1952 season, Isodrin, Endrin and Dilan were evaluated in the field for the control of the codling moth on walnuts in southern California for the first time. Compound Q-137—diethyl diphenyl dichloroethane—was included because in the previous season it showed much promise in some very preliminary work.

Treatments applied on May 9, 1952 for the control of codling moth on walnuts. One pound of parathion (25% wettable) added to all treatments for the control of the walnut aphid. Finished sprays applied by air carrier type sprayer at the rate of 400 gallons per acre.

Material	Pounds active ingredient per acre	Per cent ¹ wormy nuts
Diethyl diphenyl dichloroethane (25W)	3	2.0
Isodrin (25W)	3	4.3
Isodrin (18.5E)	3	3.6
Endrin (18.5E)	3	4.0
Dilan (25W)	3	3.9
DDT (50W)	3	4.2
DDT (50W) (Standard treatment)	6	2.2
No treatment	—	9.2

¹ Total crop, which includes preharvest drops, first, second and third harvests.

From the data obtained it appears that Q-137 was, in this instance, slightly more effective than the standard DDT treatment in controlling the codling moth. At comparable dosages, Q-137 was the most effective material tested. In the previous season's work, however, DDT was the more effective, even when the amount of actual Q-137 was increased to twice the DDT dosage. Circumstances did not permit replication of the treatments and as a

result a critical statistical analysis of the data was not possible. The per cent of wormy nuts obtained when the standard DDT treatment was used—12 pounds of 50% wettable powder per acre—was slightly above what is normally expected. However, codling moth infestations were high during the 1952 season in southern California.

The European red mite population remained very low on the standard DDT plot, averaging only 1.1 mites per leaflet, eight weeks after treatment. In the same period of time the Q-137 treatment averaged only 5.2 mites per leaflet. The number of mites per leaflet on the remaining plots ranged from 26 on the untreated check to 43 on the Dilan treatment. European red mite populations built up to damaging proportions where the standard DDT treatment was used on plantings adjacent to and in the vicinity of the experimental area.

The addition of parathion to all of the treatments held aphid populations to a very low level. Eight weeks after the codling moth treatments, all of the plots were treated for the European red mite and parathion was included in the spray formula. The parathion was added to eliminate the few aphids present. This program was successful in that no additional specific treatments for aphids alone were necessary throughout the season.

Codling moth infestations in 1952 were generally heavy in most localities in southern California so a two-treatment spray program might be considered for 1953. Heavy losses were sustained in some areas last season because treatments were not applied or only one treatment was applied when a two-treatment program was indicated.

The time of treatment depends upon the development of the walnuts and the codling moth. If both are normal and a single treatment is indicated, it should be applied when the walnuts are about one-half inch in diameter—usually about May 10. If two treatments are necessary the initial treatment should be made during the first week in May and the second about three weeks later.

Where there is a light infestation one application of a DDT or of a basic lead arsenate treatment should be adequate. Where the infestation is moderate one DDT or two basic lead arsenate treat-

ments should be sufficient. In heavy infestations, two treatments of DDT or two of basic lead arsenate are indicated.

The following table indicates the amount of material for use with air carrier type sprayers and with conventional sprayers.

Dosage Chart for Codling Moth Control—1953

Spray	Air Carrier sprayer with volute		Conventional sprayer with tower	
	Lbs. per 100 gal.	Gals. per acre	Lbs. per 100 gal.	Gals. per acre
DDT 50% wet-table powder . . . 3	400	1½	800	800
Basic lead arsenate 4	800	4	800	800

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

The addition of an aphicide such as nicotine sulphate, parathion or tetraethyl pyrophosphate to either the DDT or the basic lead arsenate sprays is suggested to control early season infestations of the walnut aphid. The amount of material to be added is indicated in the following table.

Amount of Aphicide Added to Codling Moth Treatment

Method of Application	Material in ounces per 100 gals.		
	Nicotine sulfate (40%)	Parathion (25% wettable powder)	TEPP (20% powder)
Air carrier type sprayer using DDT at 400 gal. per acre	6	4	8
Air carrier type sprayer using basic lead at 800 gal. per acre	4	2	4
Conventional sprayer using DDT or basic lead arsenate at 800 gal. per acre	5	4	8

Parathion is extremely toxic to human beings and precautionary recommendations on the manufacturer's label should be followed.

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