Control of Cutworms on Citrus

Infestations of pest in certain areas of southern California in May 1954 controlled by spray treatment

E. Laurence Atkins, Jr.

Cutworms caused economic damage to citrus in the spring of 1954 in the Redlands-Pomona and Riverside-Arlington areas.

The damage was general and particularly serious in approximately 5,000 acres in the Redlands and adjoining areas.

The cutworms feed on the new spring flush of growth and on the newly set fruit as well as on ripe or mature fruit. Damage is caused by the larvae feeding on the pistil or tip of the fruit and eating into the sides of the young fruit. The damaged fruit is either permanently scarred or falls from the tree. In several groves attacked this spring, approximately half of the new flush of growth and half of the newly set fruit were damaged or destroyed.

The citrus cutworm—*Xylomyges curialis* Grote—is ¾” to 2” long and is light green with a white stripe along each side. There is considerable variation in the color pattern—some specimens are pinkish or brownish—but there is always a white, longitudinal stripe.

Eggs of the cutworms are laid on the new leaves. The larvae remain on the trees and if dislodged, crawl onto the trees again, either up the trunk or any place where the foliage contacts the ground. Each larva requires three to four weeks to become fully grown, and then drops to the ground. Pupation occurs in a cell in the soil.

Many groves in the affected areas, when examined, showed enough foliage and fruit damage to indicate the necessity of immediate treatment.

It is usually difficult to find the worms on the trees. If an examination of the trees—particularly on the shady sides where the worms are usually feeding and are therefore more easily seen—is made in 15-minute periods and 10 or more cutworms are found on a per-hour basis, it is practical to treat.

Another method which gives an accurate picture of the infestation is to spray several trees in a suspected grove with two pounds of 50% wettable powder of DDT per 100 gallons of water, taking care to obtain a thorough outside coverage. After a period of one to 1½ hours, an examination of the ground under the trees is made for the worms. If 10 or more larvae are found per tree, the grove needs treatment. Some groves tested by the spray method have had up to 400 worms per tree.

For emergency treatment of the citrus cutworm, the following insecticides were effective when applied at the rate of 500 to 1,000 gallons per acre to get a thorough outside coverage spray—including the tops of the trees—because cutworms are more or less equally distributed over the trees:

**Formula 1.** DDT, 50% wettable powder, at the rate of 10 pounds per acre;  
**Formula 2.** Toxaphene, 40% wettable powder, at the rate of 15 pounds per acre;  
**Formula 3.** DDD, 50% wettable powder, at the rate of 10 pounds per acre;  
**Formula 4.** Parathion, 25% wettable powder, at the rate of 8 pounds per acre.

When orange tortrix needs treatment in the same grove, DDD or parathion is used because toxaphene and DDT are not effective against the orange tortrix.

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CUTWORMS

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If the fruit tree leaf roller should need control treatment in the same grove—and there is no orange tortrix—either DDT, DDD or parathion may be used. Toxaphene is not effective against the fruit tree leaf roller.

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The above progress report is based on Research project No. 1080.

DONATIONS FOR AGRICULTURAL RESEARCH

Gifts to the University of California for research by the Division of Agricultural Sciences accepted in May, 1954.

BERKELEY

California Cedar Products Co. .................................. $2,000.00
For research on chemistry of wood
California Redwood Association .......................... $500.00
For study of wood extractives
California Spray-Chemical Corporation ......... $8,500.00
For research on nitric-phosphate fertilizers
Chemagro Corporation ......................................... 18 gals. Systox
For walnut insect investigations
Geigy Chemical Corp. ........................................... 1 gal. diazinon 25E
For strawberry insect investigations
20th diazinon 25W For agricultural experiments
125th 25% diazinon For codling moth control on pears
General Chemical Co. ........................................... 400th orange lead arsenate; 150th DDT, wettable
For codling moth control on pears
Pittsburgh Coke & Chemical Co. ........ 1th chlorthion alcohol
For use in synthesis of systemic insecticide
Scoria Fertilizer Co. ............................................ 600th SM-20 trace minerals
For establishing experimental fertilizer plots on field and vegetable crops
Strawberry Institute ............................................. 2700 Lassen strawberry plants
For study on biological control of cyclamen mite
Tracy Pest Control Group ......................... $848.21 For insect control studies
Velsicol Corporation .............................................. 4 gal. Hecathor
For experimental test plots on soil insect control
50th 25% Hecathor For garden centipede investigations
Jack Wilson Co. .................................................. 1 gal. 24% emulsifiable IPC and 1 gal. 47%
For experiments on stone fruit

DAVIS

American Cyanamid Co. ......................................... 20 gr. folic acid
Lederle Laboratories Division
For poultry nutrition studies
American Maize Products Co., Victor welding unit type 310, with parts
For research in food technology
American Potash Institute, Inc. . $2,000.00
For leaf analysis studies
Clinton H. Burt ........................................ 1 Egg-O-Pak egg gathering box
For experiments on collecting and cooling eggs
California Committee on Relation of Electricity to Agriculture $4,125.00
For experiments on electrical applications to agriculture
California Fertilizer Association ................................. $2,000.00
For experiments on field crop fertilization
California Packing Corporation ........................ $500.00
For grape breeding project
Clyco Products Company ................................ 1 drum G-625 iron complex
For experiments in treating chlorotic plants
Commercial Solvents Corporation .................. 25th BY-21 For nutritional research
Dow Chemical Company ........................................ 5th DL-Methionine
For nutritional research
Geigy Chemical Corporation ............................ $500.00
For studies of little leaf in grapevines

Mr. and Mrs. Gordon G. Guihterson ............... 1 thoroughbred stallion
Institute of American Poultry Industries ...... $2,700.00
For poultry meat research
Lodi District Grape Growers Assoc., Inc. $100.00
For breeding or hybridization of Tokay grapes
Mayrath Inc. .................................................... 1 Mr. Mayrath Junior
For research on labor-saving devices for bulk feed
Merck & Co., Inc. ............................................ 100 gms. 0.1% trituration of crystalline Vitamin B12;
5% Vitamin B12 exp., feed supplement
For nutritional research
Columbia Geneva Steel ................................. 112 sheets galvanized iron roofing and nails
For experimental housing for poultry research
National Science Foundation ......................... $1,700.00
For research on biosyntheses of amino acids in dairy cows
Charles Pitzer & Company .............................. $1,250.00
For the study of unidentified growth factor in poultry
Poultry Producers of Central California .................. $1,000.00
For research in poultry husbandry, particularly egg quality studies
Renfro-Franklin ........................................... 200 12" hen cages with feeders and waterer
For experimental housing for poultry research
Various donors: ...................................................... $1,000.00
U. S. Golf Association, Green Section
National Golf Fund Inc.
Life Magazine
Professional Golf Association
For studies on turf grass irrigation
Velsicol Corporation ........................................... $500.00
For research on toxicity to insects of chlordane and/or heptachlor
Western Condensing Company ....................... 1 barrel instant milk
For nutritional research

LOS ANGELES

Hardie Manufacturing Company .................... 4" plug cutter
For turf research

RIVERSIDE

Allied Chemical & Dye Corporation .... 5 gals. Hexachlorocyclohexane
For research on chemical control of weeds
American Potash Institute, Inc. ................ $2,000.00
For research on potassium absorption by citrus trees
E. I. du Pont de Nemours & Co. ................. $1,500.00
For research on housefly resistance to chlorinated insecticides
Food Machinery & Chemical Corporation ...... 10th herbicide
For research on toxicity to insects of chlordane and/or heptachlor
Hoffman Drug Co. ........................................ 5th weed killing compound
For research in weed control in nursery crops
Richfield Oil Corporation ....................... 50 gals. petroleum herbicide
Specialty Products Sales Division
For research on chemical control of weeds
U. S. Industrial Chemicals Co., Division of
National Distillers Products Corp. ........... 6 gals. herbicide
For research in chemical weed control
Velsicol Corporation ........................................... $2,000.00
For the study of heptachlor and chlordane as soil insecticides
Wilson & George Meyer & Company ........... 1500th calcium nitrate fertilizer
For studies on nitrogen requirements of citrus trees