

630.7
Or32ci
no. 375

Station Circular of
Information No. 375
(Rev. of Cir. No. 300)

February
1946

OREGON
COLLECTION

QUESTIONS AND ANSWERS ABOUT
THE CHERRY FRUIT FLY

by
S. C. Jones
Associate Entomologist

~~DISCARD~~

MAR 14 1946

AGRICULTURAL EXPERIMENT STATION
Oregon State College
Wm. A. Schoenfeld, Director
Corvallis

630.7
O+32ci
no. 375
c.3

OREGON STATE LIBRARY

AGRICULTURAL EXPERIMENT STATION
Oregon State College
Wm. A. Schoenfeld, Director
Corvallis

FOREST
COLLECTION

OREGON
COLLECTION Circular of Information No. 375
(Rev. of Cir. of Inf. No. 300)

February 1946

QUESTIONS AND ANSWERS ABOUT THE CHERRY FRUIT FLY

by
S. C. Jones
Associate Entomologist

Many questions about the cherry fruit fly have been asked by cherry growers. The information requested by the growers is presented in this circular letter as answers to the questions asked.

Life History

1. Q. How does the cherry fruit fly spend the winter?
A. The cherry fruit fly spends the winter as a puparium. The puparium is found under the infested cherry trees buried from one to three inches in the ground.
2. Q. When does this pest emerge as a fly from the soil?
A. The fly emerges from the soil usually during the last week in May or the first week in June. The time of emergence will depend on climatic factors.
3. Q. How long are the flies on the trees before egg laying begins?
A. The flies spend approximately 10 days on the foliage of cherry or other trees before they begin laying eggs.
4. Q. Where are the eggs laid?
A. The eggs are laid under the skin of the cherry.
5. Q. How long does it take for the eggs to hatch?
A. The eggs hatch in from five to seven days.
6. Q. When does the maggot or larva become mature?
A. The maggot becomes mature in about 14 days.
7. Q. Where does the maggot go after reaching maturity?
A. The maggot drops to the ground and works its way into the soil where it remains as a puparium until May or June of the next year.
8. Q. How long do the flies continue to emerge?
A. Flies may emerge over a period of five to six weeks.
9. Q. How many years will the cherry fruit fly live in the soil before emerging as flies?
A. Most flies emerge in one year, but a few will live in the soil from two to three years.
10. Q. How far will the fly migrate in one season?
A. This question is not yet settled. They have been reported to migrate as far as 100 yards. They are not strong fliers.

Control

11. Q. What sprays or dusts are recommended for the control of this pest?
 A. Six spray or dust formulas are recommended: (1) Lead arsenate $2\frac{1}{2}$ pounds, lime sulfur 2 gallons or wettable sulfur 6 pounds in water to make 100 gallons of spray; (2) 90-10 sulfur or lime lead arsenate dust; (3) Poisoned bait spray consisting of lead arsenate 5 pounds, molasses 5 gallons and water to make 100 gallons; (4) 4% rotenone 3 pounds, molasses, $2\frac{1}{2}$ gallons, water to make 100 gallons of spray; (5) $3/4\%$ rotenone, sulfur and talc used as a dust; (6) Rotenone extractives $2\frac{1}{2}\%$ in emulsible oil, $1\frac{1}{2}$ quarts, water to make 100 gallons of spray.

(1) Lead Arsenate Complete Cover Spray

- Q. Can lead arsenate be combined with a fungicide for the control of both cherry fruit flies and fungus diseases?
 A. Yes. Lime sulfur can be combined with lead arsenate for use on sour cherries. Wettable sulfur should be used in place of lime sulfur on sweet cherries.
- Q. If a fungicide is not necessary can lead arsenate be used alone with the addition of a spreader?
 A. Yes.
- Q. How many sprays are necessary for the control of the fly?
 A. Two or three sprays should suffice. The number of applications will depend on the amount of rain. If no rain occurs two applications should suffice.
- Q. When should these sprays be applied?
 A. The first spray should be applied immediately after the first fly emerges from the soil. The second from 10 to 14 days later.
- Q. How can one tell when to apply the first spray?
 A. The Oregon Experiment Station will determine the time of emergence of the first fly. This information will be given to County Agents concerned, canners, packers, or individual growers asking for this information. The time of emergence of the fly will also be released by the press and radio station KOAC.
- Q. Are the sprays applied as a bait or cover spray?
 A. The sprays must be thorough cover sprays. The average sweet cherry tree will require from 10 to 15 gallons of spray.
- Q. What is the formula for this spray?
 A. The formula is $2\frac{1}{2}$ pounds of lead arsenate to 100 gallons of spray. A spreader such as casein should be added to this mixture. Add wettable sulfur 6 pounds on sweet cherries or lime sulfur 2 gallons on sour cherries if a fungicide is desired. If a fungicide is used omit the spreader.

- Q. Will a heavy cover spray such as is recommended when lead arsenate is used as a cover spray cause a residue problem?
- A. Recent chemical analyses of cherry samples from cannery tests show that effective washing procedure, usually employed by commercial canneries, removes the residue very effectively from the cherries.
- Q. Will there be a residue problem if the cherries are sold locally for fresh fruit consumption?
- A. Yes. Care should be taken to wash the cherries thoroughly before selling. See Sta. Cir. #298.
- Q. Can this pest be controlled by cultural practices such as cultivation?
- A. Cultivation, parasites, and predators help to reduce the number of flies, but such practice cannot be relied upon for complete control.

(2) Lead Arsenate Dust Combinations

- Q. Can lead arsenate dust combinations be used on all varieties of cherries?
- A. Yes, but it is recommended chiefly for sweet cherries.
- Q. How many dust applications should be applied?
- A. Two applications will usually suffice on sweet cherries. Late varieties such as Lamberts may require three applications. Dusts must be repeated after rains.
- Q. When should the dusts be applied?
- A. Dusts should be applied at the same time sprays are applied. Dust is dissipated more rapidly than sprays through rain or wind action.
- Q. Should the dust applications be thorough?
- A. Yes, it is important that the dust be applied thoroughly. Power equipment should be used and applied at the rate of 45 to 50 pounds per acre for sweet cherries and from 35 to 40 pounds per acre on sour cherries.
- Q. What is the dust formula?
- A. A dust consisting of 10 parts of lead arsenate and 90 parts of sulfur is advised. The sulfur is used as a fungicide for brown rot and the lead arsenate for cherry fruit fly. Lime may be used instead of sulfur if a fungicide is not needed. The lead arsenate-lime combination is more easily washed from the trees than the lead arsenate-sulfur combination.

(3) The Lead Arsenate Poisoned Bait Spray

- Q. What is the poisoned bait spray?
- A. This spray consists of lead arsenate 5 pounds, molasses 5 gallons in water to make 100 gallons of spray.

- Q. Is more than one bait spray necessary?
- A. Yes, three or more sprays are recommended. The first spray should be applied when the flies first emerge from the soil; the second seven days after the first; and the third seven days after the second. Royal Ann cherries may require only two applications before harvest. The bait spray is easily washed from the trees and should be repeated after rains.
- Q. What kind of a sprayer should one use to apply the bait spray?
- A. Either a power or hand sprayer can be used. Apply the solution as fairly fine droplets on the upper surface of the foliage on all sides and top of the tree. The spray should be thorough bait spray. The amount of material used per tree will depend upon its size.
- Q. Is it necessary to drench a tree to control this pest?
- A. No. The trees, however, should be well covered by directing the spray over the trees and permitting the liquid to fall on the upper surfaces of the foliage. The spray should reach every part of the tree.
- Q. Should interplanted trees be sprayed?
- A. All trees regardless of kind should be sprayed if they are interplanted with cherries. Brush along fence rows adjacent to cherry orchards should also be sprayed. Flies harbor in these trees and later infest the cherries.
- Q. Should Royal Ann and varieties of sour cherries be sprayed as other varieties of cherries?
- A. Yes. Any variety of cherry is subject to infestation and should be sprayed. Sour cherries are very susceptible to cherry fruit fly infestation.

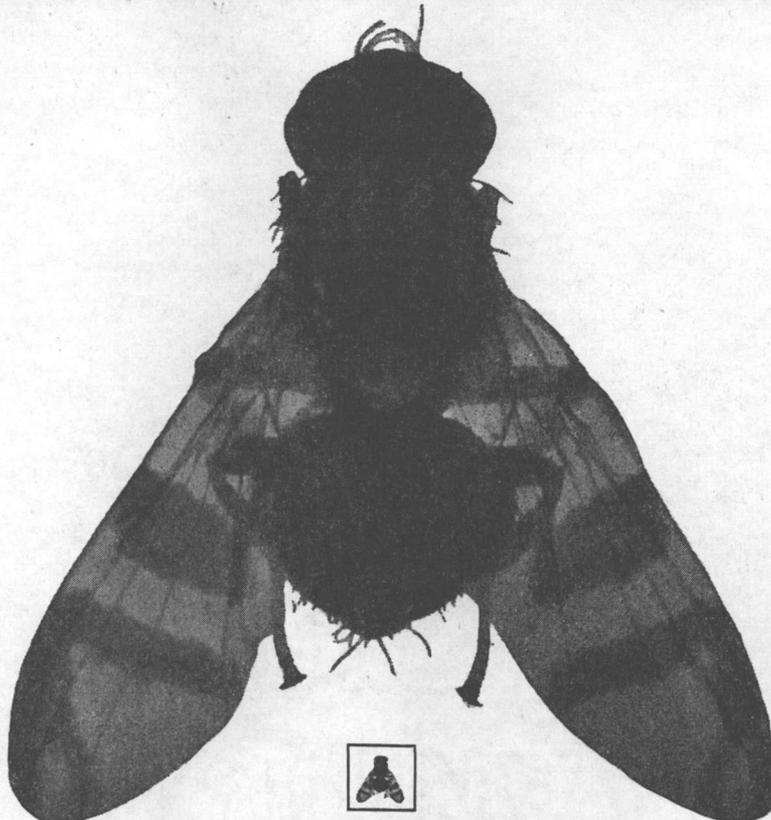
(4) Non-Arsenical Sprays or Dusts

- Q. What non-arsenical sprays or dusts are recommended for cherry fruit fly control?
- A. Rotenone sprays and dusts are recommended.
- Q. What rotenone-bearing sprays are recommended?
- A. 4% rotenone, 3 pounds, molasses $2\frac{1}{2}$ gallons, water to make 100 gallons; rotenone extractives $2\frac{1}{2}\%$, in emulsible oil $1\frac{1}{2}$ quarts, in water to make 100 gallons of spray.
- Q. What is the material known as Berako?
- A. Berako is a commercial product prepared by extracting the active ingredients, rotenone and other resins, from rotenone-bearing dusts and roots, and making them into an oil-soluble product.

- Q. Has this material been used by cherry growers in Oregon for cherry fruit fly control?
- A. Yes, the material has been used for two seasons chiefly by growers shipping to the fresh fruit market.
- Q. Has the material been tested by the Oregon Experiment Station?
- A. Yes, limited preliminary tests have been made.
- Q. Did this material control the cherry fruit fly?
- A. Preliminary tests showed promising results.
- Q. How are rotenone sprays applied?
- A. These sprays are applied as a cover spray.
- Q. Is there any advantage gained in using a rotenone spray?
- A. This spray is non-arsenical and is intended for growers who ship cherries for fresh fruit consumption. These cherries need not be washed.
- Q. How often should this spray be applied?
- A. The spray should be applied at weekly intervals beginning when the first fly appears in the field until the cherries are harvested.
- Q. Can a rotenone dust be used?
- A. Yes. Rotenone dust (3/4% rotenone, sulfur and talc) can be used in place of the spray. The dust must be applied thoroughly.

(5) DDT as a Control for Cherry Fruit Fly

- Q. Will DDT control cherry fruit fly?
- A. No. Recent tests indicate that DDT will not control this pest.



Cherry fruit fly, greatly enlarged. (Insert shows natural size.)