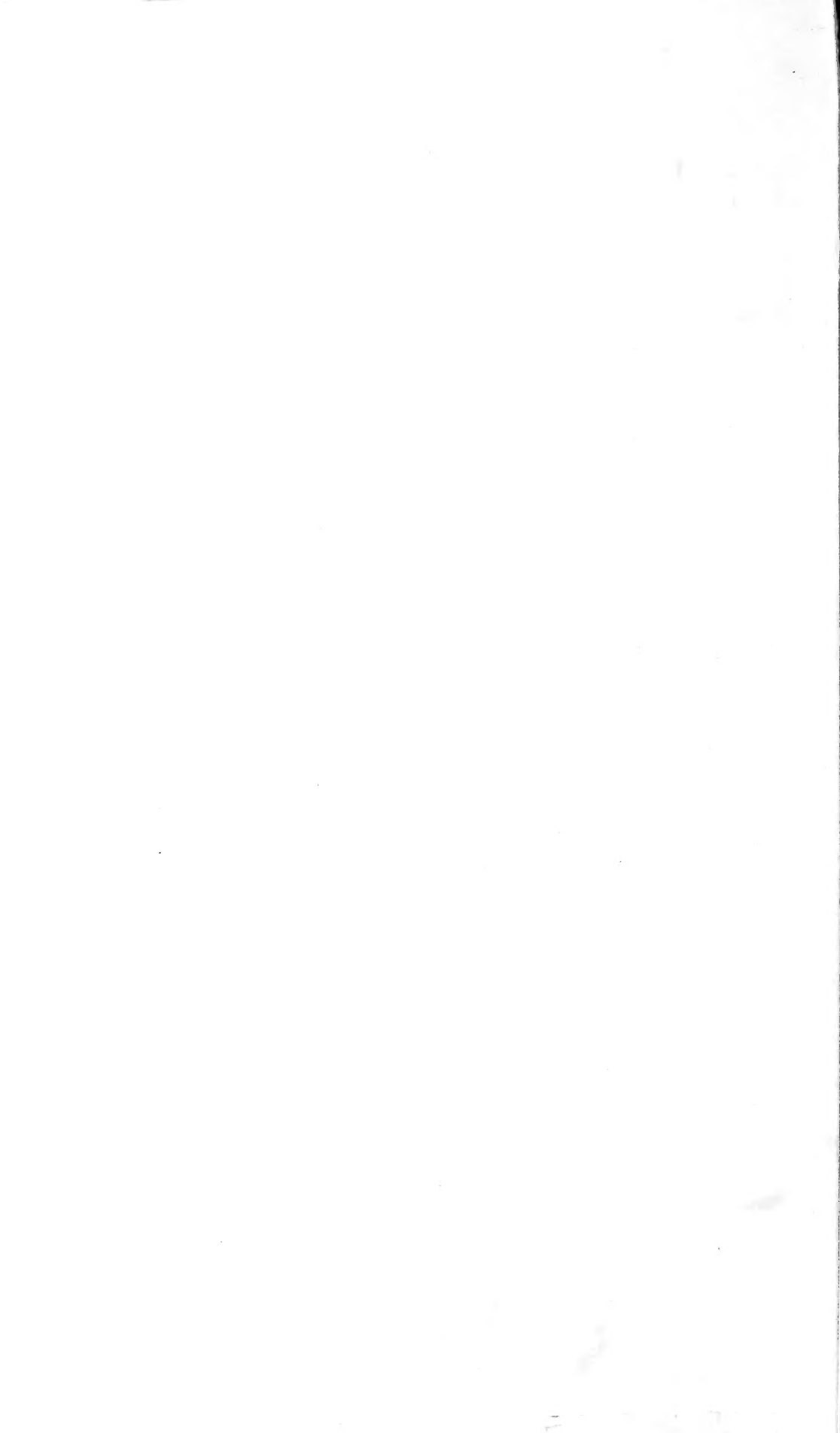


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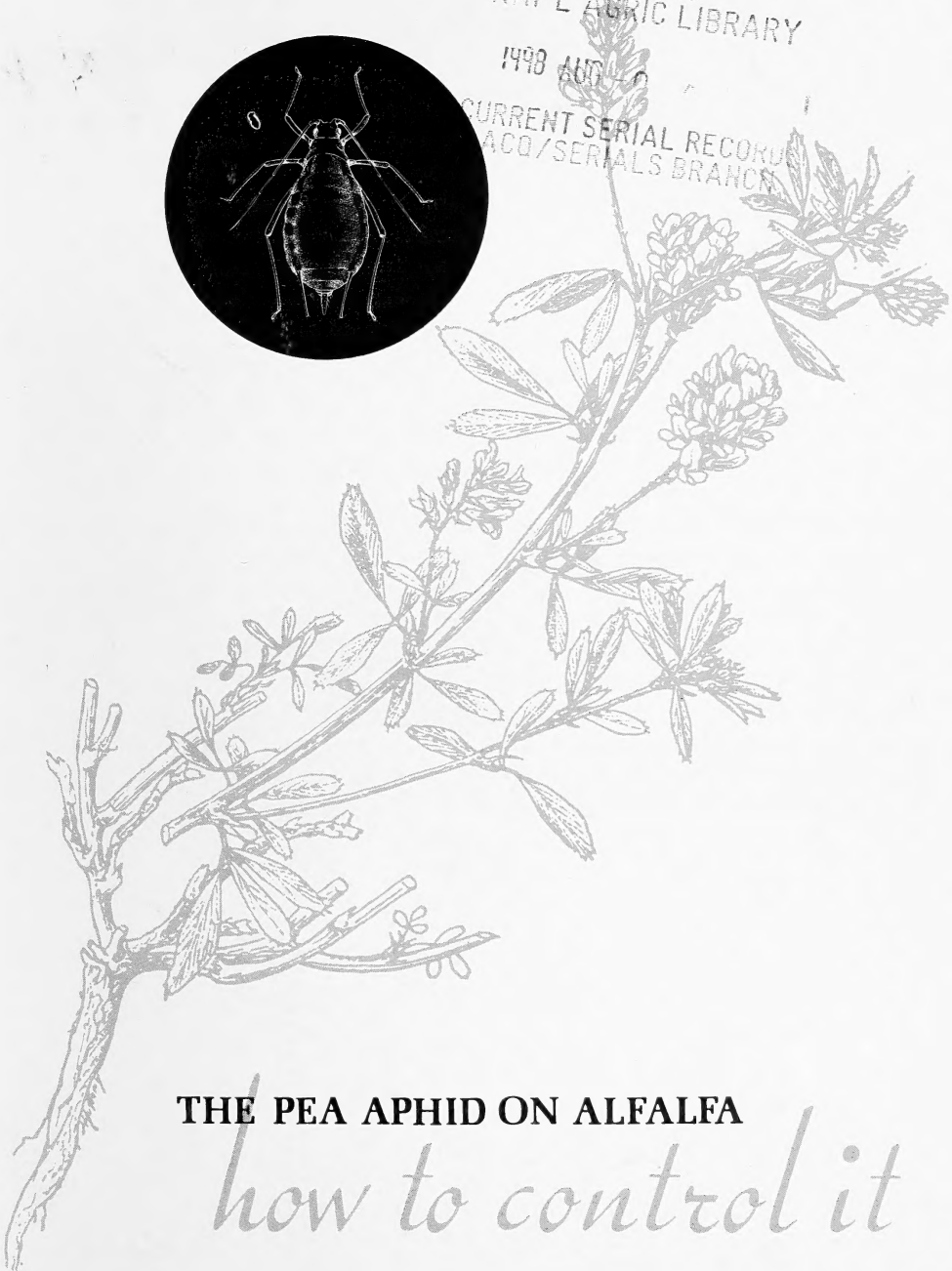
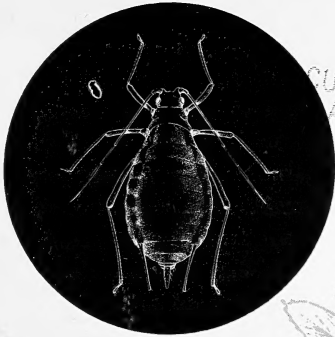


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THE PEA APHID ON ALFALEA

how to control it

THE PEA APHID ON ALFALFA

how to control it



Prepared by Entomology Research Division, Agricultural Research Service

In years of heavy outbreak, the pea aphid¹ is responsible for alfalfa crop losses of several million dollars. It also damages other forage legumes — sweetclover, trefoil, vetch, and several varieties of clover — garden peas, and sweetpeas.

DAMAGE TO ALFALFA

Enormous pea aphid populations often develop in the spring and, sometimes, in the fall. Both the adults and the young (or nymphs) suck juice from alfalfa leaves, petioles, stems, and flower buds. They prefer young growth and congregate on the growing tips of the plants.

Pea aphid feeding causes alfalfa to turn yellow and wilt. In heavy infes-

tations, the tops die. Heavy infestations in the spring can cause failure of the first crop, reduce the vigor of the succeeding crop, reduce yield of seed crops, and kill part of the stand.

Pea aphid feeding also causes stunted plants with small leaves and spindly stems. When alfalfa growth is retarded, weeds often take over and crowd out the alfalfa.

APPEARANCE AND DEVELOPMENT

The adult pea aphid is soft bodied and ranges in color from light to dark green. It is about $\frac{3}{16}$ -inch long and $\frac{1}{16}$ -inch wide. The nymph is smaller, but otherwise resembles the adult.

In most parts of the United States, the pea aphid is active and repro-

¹ *Acyrtosiphon pisum*.

duces during the late spring, summer, and early fall. Reproduction is greater during the spring and fall than during the summer when temperatures are high. In warm, southern climates it is active during the entire year and reproduces except during periods of severe cold or when there is a lack of suitable food.

In early spring almost all aphids are wingless females. As the season advances, and the population becomes large and the food supply less succulent, winged females develop. These migrate to other fields of alfalfa or other legumes. (Winged aphids are poor fliers, but can be carried long distances by the wind.)

These females can reproduce without mating. They can produce from 1 to 14 young per day during the reproductive period of their lives. In southern climates, 12 to 15 generations may be produced in a single year.

During the fall in northern latitudes, true sexual forms develop. The males are usually winged and the females wingless. These mate

and the females lay eggs. The eggs are glued to alfalfa leaves and stems: they are yellow-green when first laid, but soon turn shiny black.

Pea aphid eggs are able to survive low temperatures that kill all other forms (although in some areas all forms may survive a mild winter). The eggs hatch in April or May, the time depending on the latitude.

CONTROL WITH INSECTICIDES

Spray with an insecticide before the aphids have damaged the alfalfa. One application per season, either by ground equipment or by aircraft, usually gives satisfactory control. For best results, spray when temperature is above 60°.

Use one of the emulsifiable concentrates listed in the accompanying table. Mix the concentrate with the amount of water your sprayer is calibrated to deliver per acre (not less than 6 gallons for ground equipment, and not less than 2 gallons for aircraft equipment).

CONCENTRATES FOR PREPARING SPRAYS, AND RATES AT WHICH THEY ARE APPLIED

Insecticide (as emulsifiable concentrate) and strength	Amount of emulsifiable concentrate to be added to water to treat 1 acre
	<i>Pints</i>
Demeton, 25 percent.....	1
Diazinon, 25 percent.....	2
Malathion, 57 percent.....	1 to 1½
Naled, 8 pounds per gallon.....	1
Parathion, 25 percent.....	1
Mevinphos (Phosdrin), 25 percent.....	½
Tepp, 20 percent.....	1



TC-7439

Pea aphids clustered on the tip of an alfalfa plant.

Trade names are used in this publication solely for the purpose of providing specific information. Mention of a trade name does not constitute a guarantee or warranty of the product by the U.S. Department of Agriculture.

PRECAUTIONS

Insecticides are poisonous to man and animals. Use them only when needed and handle them with care. Follow all directions and heed all precautions on the labels.

Keep insecticides in closed, well-labeled containers in a dry place. Store them where they will not contaminate food or feed, and where children and pets cannot reach them.

Avoid repeated or prolonged contact of insecticides with the skin. Avoid inhalation of insecticide dusts or mists.

When handling insecticides, wear clean, dry clothing. Wash your hands and face before eating or smoking.

Avoid spilling insecticides on your skin, and keep them out of the eyes, nose, and mouth. If any is spilled on skin or clothing, wash it off the skin and change clothing immediately.

If insecticide gets in the eyes, flush them with plenty of water for 15 minutes and get medical attention.

If an insecticide is swallowed, induce vomiting by giving 1 tablespoon of salt in a glass of warm water; repeat until vomit fluid is clear. Have victim lie down and keep quiet. *Call a physician immediately.*

If a person suddenly feels sick while using an insecticide, or shortly afterwards, call a physician immediately.

In all cases of insecticide poisoning, make the insecticide container and label available to the physician.

Minimize the killing of honey bees and other pollinators. When it is necessary to spray alfalfa in bloom, spray when the bees are not visiting the plants. Avoid drift of insecticides into bee yards and into adjacent crops in bloom. Notify beekeepers at least 48 hours before spraying, so measures can be taken to protect the bees.

Protect fish and wildlife. Do not contaminate lakes, streams, or ponds with insecticide. Do not clean spraying equipment or dump excess spray material near such water.

Avoid drift of insecticide sprays to nearby crops or livestock.

Demeton, parathion, mevinphos, and Tepp are extremely poisonous.

They can be fatal if swallowed, inhaled, or absorbed through the skin. They should be applied only by a person who is thoroughly familiar with their hazards, and who will assume full responsibility for their safe use. This person must wear a respirator of a type that has been tested by the U.S. Department of Agriculture and found satisfactory for protection against these insecticides. A current list of satisfactory respirators can be obtained from Entomology Research Division, Agricultural Research Service, Beltsville, Md., 20705.

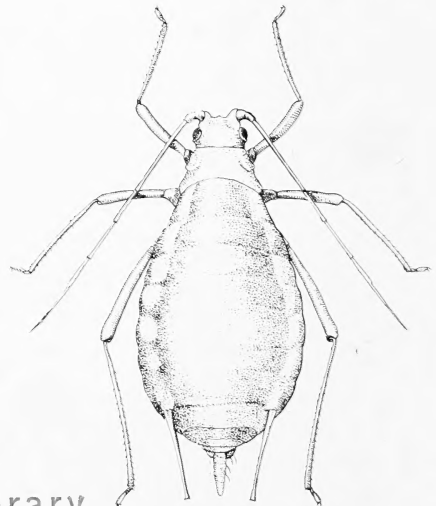
Do not apply demeton more often than once per cutting.

After treating alfalfa with one of the following insecticides, wait the indicated number of days before harvesting or feeding it to livestock.

	<i>Days</i>
Demeton.....	21
Diazinon.....	7
Malathion.....	7
Mevinphos.....	1
Naled.....	4
Parathion.....	15
Tepp.....	3

Wingless female pea aphid.

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Before applying insecticides to alfalfa, thoroughly clean sprayers that have been used for herbicides.

NATURAL CONTROL

Weather that is favorable to rapid spring growth of alfalfa greatly reduces the possibility of aphid damage. Aphid infestations may be wiped out by hot weather and retarded by cold weather. Heavy rains often dislodge and kill aphids. And warm spring weather is favorable to the development of their natural enemies.

Many natural enemies—predatory and parasitic insects, and fungus diseases—attack the pea aphid and help control it. Usually, they become

abundant only when the aphid is abundant.

The most numerous and beneficial predator is the convergent lady beetle (*Hippodamia convergens*). Other predators include a few other beetles, larvae of lacewing flies and syrphid flies, and nabid nymphs.

Several parasitic wasps attack the pea aphid. One species (*Aphidius smithii*) was imported from India and released in California in 1958. It has become firmly established and is exerting considerable control of the pea aphid in certain areas. This species has been introduced into several other States.

During periods of high humidity and warm nights, fungus diseases develop rapidly and are often of considerable importance in controlling the pea aphid.

