

THE EUROPEAN CHAFER QUARANTINE

Neely Turner, State Entomologist

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THE CONNECTICUT
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State Entomologist

The European chafer, *Amphimallon majalis* Raz., was found in Meriden in 1951 by M. P. Zappe, Deputy State Entomologist. This pest is of European origin and was discovered in New York State in 1940. It has been a serious pest of pastures, turf and lawns both in its native home and in New York.

Description and Life History

The adult beetles are medium brown in color and about one-half inch long, with the long legs typical of scarabs. The body color, seen from below, may vary from light brown to almost black. The adults emerge late in June or early in July from infested grass. Flight occurs at dusk on warm, calm nights. The individual beetles crawl quickly to the top of a blade of grass, and fly up to and around the tops of trees and shrubbery silhouetted against the horizon. Mating occurs and the beetles return to the soil before daylight. Adults do not feed and usually do not fly far from the place where they emerge.



Adult European
chafer, twice
natural size

The eggs are white and are laid individually in small cells in the soil. Each female may lay about 25 eggs, which hatch in about three weeks.

The grubs are typical white grubs and feed on grass roots or possibly on organic matter in the soil. During July, August and September they moult three times. Fall temperatures result in migration down in the soil, and they usually winter just below the frost line.

In the spring the grubs resume feeding and complete their growth in May. Pupation follows, and the adults emerge in late June.

Economic Importance

The European chafer has caused much damage in permanent pastures, and particularly on knolls or hilltops. In this respect it is of more importance to agriculture than the Japanese or Asiatic beetles. The single infestation in Connecticut is confined to grass strips along the Wilbur Cross Parkway at the junction of Route 5 in Meriden and to lawns in the immediate vicinity.

The short flights of the adults at a restricted period make natural spread of this insect relatively slow. Unless the beetles, eggs or grubs are transported, natural spread has been only about 100 feet a year. This fact has been used in attempting to prevent spread of the pest by control and quarantine measures.

Control and Quarantine in Connecticut

The site of the infestation in Connecticut was treated with chlordane in the fall of 1951, and the following spring cultivated areas were sprayed with parathion to kill the larvae. Although some control was evident, the infestation persisted. In 1955 the known infested area was treated again using granular dieldrin. The flight of adults in July 1955 continued from the treated soil.

The U. S. Department of Agriculture established a quarantine against the European chafer, including a circle of one-mile radius centering on the junction of Wilbur Cross Parkway and the Berlin Turnpike (U. S. 5). A state quarantine of the same area was established on October 4, 1955, following a public hearing held on August 25, 1955. This quarantine restricts movement of soil or plants bearing soil from the area without (1) inspection and certification for freedom from infestation by the European chafer, or (2) supervised treatment by a method approved as effective in killing European chafers.

Infested soil may be treated by one of the following methods:

- (1) Fumigation using carbon disulphide at the rate of one pound to a cubic yard for 48 hours at a temperature of 45° F. or higher.
- (2) Steam sterilization to a minimum temperature of 130° F., or
- (3) Mixture of one pound 5 per cent chlordane dust to a cubic yard of soil held for 4 weeks at a temperature of 60° F. or more.

Balled nursery plants may be treated by dipping the ball in an emulsion of 3 cc. ethylene dibromide-chlordane mixture in 1 gallon of water, and holding for 1 day.

Land on which nursery plants are to be grown may be treated by application of 5 pounds dieldrin per acre (100 pounds of 5 per cent granular dieldrin dust) harrowed into the soil. Plants may be certified the spring following treatment.

Control in Pastures and Lawns

No experiments on control of European chafer grubs have been carried out in Connecticut. However, the extensive tests on control of the Japanese beetle and other related grubs are applicable to control of the European chafer. Chlordane, dieldrin, DDT and methoxychlor have all given excellent protection to grass. Chlordane has killed grubs very quickly and has lasted for at least six years. Dieldrin and DDT act more slowly and have long residual effect. Methoxychlor acts even more slowly but is preferred by some because it is least toxic to birds and earthworms. The rates of application to 1000 square feet of lawn are as follows: chlordane or dieldrin, 5 pounds of 5 per cent dust; DDT, 6 pounds of 10 per cent dust; or methoxychlor, 8 pounds of 10 per cent dust. For pastures or meadows, 100 pounds of granular 5 per cent dieldrin per acre should be effective.

Treatment has been done successfully at any time the ground was not frozen. The required amount may be distributed uniformly over the area to be treated, using a fertilizer distributor adjusted to deliver the required amount. Some hazard to migrating or nesting birds may be avoided by summer or fall application.