

Stored Product Pests

Department of Entomology

INDIANMEAL MOTH *Plodia interpunctella* (Hubner)

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DESCRIPTION

Adults are 5-10 mm (3/16 – 7/16 inch) long and have an average wing span of about 16 mm (11/16 inch). They are very easily identified. The lower two thirds of the fore wings are reddish bronze with irregular dark bands. The upper one third is silvery white or gray. Hind wings are silvery gray with a long fringe of hairs. Females are generally larger than males and have an expanded abdomen. Young larvae are white except for their head, which is dark. Full-grown larvae are usually yellowish white, greenish white, or pinkish. Larval size may vary depending on sex, food, and environment. Twelve to 14 mm (1/2 inch) is about average.

BIOLOGY AND BEHAVIOR

Forty to 400 eggs are deposited directly in or adjacent to food. The number of eggs is dependent on food, season, or temperature from pupal case. Females start ovipositing within 3 days of emergence. Eggs are deposited mostly at night. Within a few hours of hatching, larvae begin to feed, leaving a silky thread behind. This silk can bind particles of food together, clogging machinery used in the food industry. There are 5-7 larval instars. The last larval instar usually will leave the food and search for a suitable place to spin a cocoon and pupate. The pupal case can be yellow brown to nearly black, depending on age. Upon adult emergence, females move to a surface above the food to release sex pheromone. Males are attracted to this pheromone for mating. Development time from egg to adult varies with temperature from 25 days at 30°C (86°F), 30 days at 25°C (77°F) and 60 days at 20°C (68°F). Minimum temperature/RH for development is 64.4°F/20% RH; optimum is 86°F/75% RH and the maximum is 95°F. Adults are generally short lived (about 7 days) and are nonfeeding.

Diapause (delayed adult emergence) is possible in the last (nonfeeding) larval instar. Larvae preparing to diapause spin a dense cocoon. At the onset of pupation, the larva



(Top) Indianmeal moth adult. (Bottom) Indianmeal moth larva and pupa. (Photo Credit: John Obermeyer)



Webbing in cornmeal. (Photo Credit: John Obermeyer)

chews a hole in the silk before spinning a flimsy pupal cocoon. It is believed that diapause provides a means of surviving winters in unheated situations. Diapause is induced by short photoperiod, low temperature, or high population pressure. Established infestations can be detected by observing grain kernels attached to bin surface. These kernels are attached to the surface with larval webbing.



Webbing in corn bin. (Photo Credit: John Obermeyer)

FOOD

Indianmeal moths can be found infesting a variety of grain and food materials. They have been reported from grain products, dried fruit, oilseeds and products, pulses, citrus pulp, fallen fruits, nuts, dried vegetables, seeds, dead insects, dried milk, spices, candies, chocolate, and drugs. Just about any plant based materials is vulnerable. In grain, larvae feed primarily on the embryo.

CONTROL

Indianmeal moth can be managed with residual insecticides, including surface treatment of diatomaceous earth. There are commercial pheromone traps available to catch and monitor males in and around a facility.

READ AND FOLLOW ALL LABEL INSTRUCTIONS. THIS INCLUDES DIRECTIONS FOR USE, PRECAUTIONARY STATEMENTS (HAZARDS TO HUMANS, DOMESTIC ANIMALS, AND ENDANGERED SPECIES), ENVIRONMENTAL HAZARDS, RATES OF APPLICATION, NUMBER OF APPLICATIONS, REENTRY INTERVALS, HARVEST RESTRICTIONS, STORAGE AND DISPOSAL, AND ANY SPECIFIC WARNINGS AND/OR PRECAUTIONS FOR SAFE HANDLING OF THE PESTICIDE.

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