



# Entomological Notes

Department of Entomology

## DARK AND YELLOW MEALWORMS

Mealworms are among some of the largest insect pests of stored products. Their common names are derived from the color of the wireworm-like larvae. Both yellow and dark mealworms are in the genus *Tenebrio*, meaning “darkness,” owing to the nocturnal habits of the larvae. Believed to be of European descent, both insects are cosmopolitan, with the yellow mealworm more prevalent in the cooler northern states.

### LIFE CYCLE

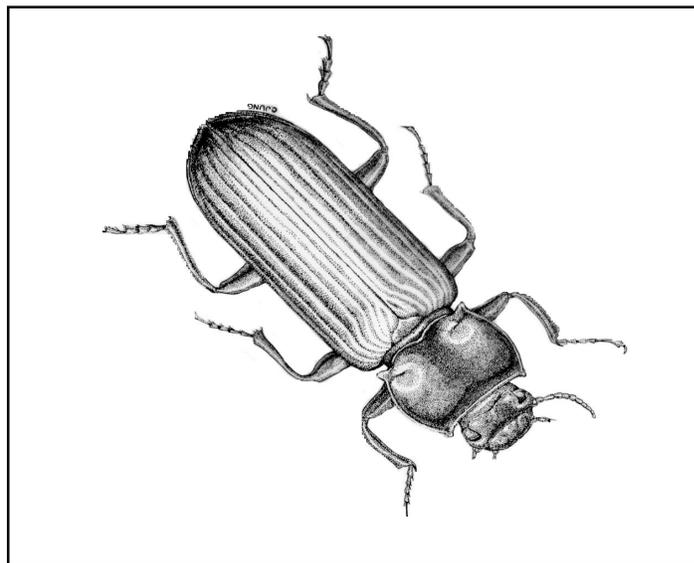
The adults emerge in spring and early summer and females lay eggs over a period of 22-137 days. On the average, a yellow mealworm female will produce 276 eggs. The eggs are white and bean-shaped covered with a sticky secretion that causes the flour, meal, or grain waste in which the eggs are placed to adhere to them. The eggs hatch in about two weeks and slender white larvae emerge. The larvae soon turn yellow and when fully grown are about one-inch long and yellow-brown toward each end and at the articulation of each segment. The larvae become full grown in about three months, but instead of transforming into the pupal and adult stages, they continue to feed and molt until cold weather and then hibernate. During late spring or early summer, they transform into the pupal stage where they remain for about two weeks.

### DESCRIPTION OF LIFE STAGES

The adult is a polished dark brown or black beetle about one-half inch long. Its thorax is finely punctured, and its wing covers are longitudinally striated or grooved. There is but one generation each year. The adults begin to appear in the latitude of Washington, D.C. during late May and early June and may be found until late in August. Both yellow mealworms and dark mealworms have well-developed wings and are attracted to light.

### DAMAGE

Because mealworms are entirely external feeders upon grains, they are not serious pests. Screening and fanning will easily remove them from grain shipments. However, the well-grown larva can do serious



injury to whole grains under certain conditions, such as when grain is held for long periods without being moved. The majority of the damage is largely limited to contamination of the products by the worms and their waste products.

### MANAGEMENT

Prevention is the best strategy to avoid insect problems in stored grains. Proper bin sanitation before introduction of new grain minimizes the need for pesticides. Good sanitation involves the removal of old grain and dust in and around the grain bin. This includes removal of old grain from corners, floors, and walls and grain that may have spilled on the exterior of the bin. Any grain remaining when a bin is emptied can harbor insect infestations which will move into the new grain. After the bin is cleaned, and all needed repairs have been made, the floor and wall surfaces both inside and outside the bin should be treated. Take special care to treat all cracks, crevices, and areas around doorways and other places where insects can hide or enter. Spray the bins about four to six weeks prior to storing grain, if the grain is to be stored for more than six months.

Before grain is placed in a bin it should be screened to eliminate fine materials and broken kernels. Grain placed in a clean bin should be checked at two week intervals during warm months and at one month intervals during cooler months for the presence of hot spots, moldy areas, and live insects. If any of these conditions exist, the grain should be aerated to lower the moisture level and temperature.

Grain that is to be stored for longer than six months may need a protective application of an approved insecticide. Treatments can be applied as the grain is placed into the bin through the use of a metering device calibrated to apply the proper amounts. After the grain is binned and leveled, a surface dressing can be applied to prevent insects from entering the grain on the surface.

If infestation occurs in spite of these precautions, fumigation of the grain will be necessary. Because of the high toxicity of registered fumigants and technical knowledge needed for their proper use, a qualified pesticide applicator should be contacted to perform the fumigation.

## **WARNING**

Pesticides are poisonous. Read and follow directions and safety precautions on labels. Handle carefully and store in original labeled containers out of the reach of children, pets, and livestock. Dispose of empty containers right away, in a safe manner and place. Do not contaminate forage, streams, or ponds.

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October 1988

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Issued in furtherance of Cooperative Extension Works, Acts of Congress May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture and the Pennsylvania Legislature. T.R. Alter, Director of Cooperative Extension, The Pennsylvania State University.

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