



# Entomological Notes

Department of Entomology

## MEDITERRANEAN FLOUR MOTH

The Mediterranean flour moth was first reported in North America in 1889. Authorities differ as to the origins of this now cosmopolitan insect of stored goods. Some believe it came from Europe, by way of the Mediterranean region, while others believe it originated in Central America.

### DESCRIPTION

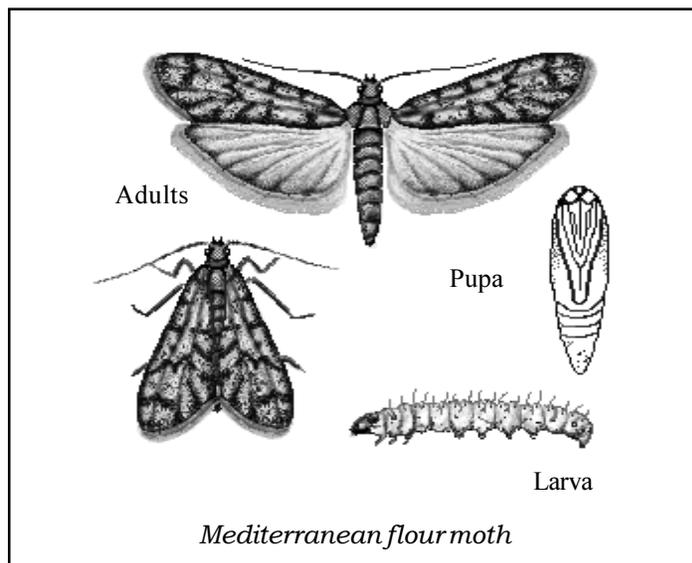
The adult moth is a pale-gray color and from one-fourth to one-half inch long, with a wingspread of slightly less than one inch. The wings are marked with two indistinct, black zigzag lines. The hindwings are a dirty white. When at rest, the moth extends the forelegs which raises the head and gives the body a sloping appearance. This posture is very distinctive and is a more reliable character for identification than the wing markings which may be rubbed off.

### LIFE HISTORY

The female moth lays from 116 to 678 small white eggs in accumulations of flour, meal, waste grain, and other food sources. Commonly, the eggs are attached to the food. Within a few days (three days at eighty to ninety degrees F) the eggs hatch into small whitish or pinkish larvae, with a very hard and dark colored head and small black spots on the body, that immediately begin to spin silken tubes. The larvae remain within the tubes until fully mature, which takes approximately forty days. When fully grown, the larvae will leave the immediate area where they were feeding and wander about in search of a location to spin silken cocoons. Within the cocoons, they transform into reddish-brown pupae. After eight to twelve days the adult moths emerge. During very warm weather, the Mediterranean flour moth may complete its life cycle (egg to adult) in five to seven weeks. In Pennsylvania, there may be three to four generations per year under favorable conditions.

### DAMAGE

The Mediterranean flour moth can be found on a great variety of foodstuffs in addition to flour, grain residues (insect-infected grain, broken kernels, and dust), and various whole grains. Although this insect is not as



*Mediterranean flour moth*

serious a pest as the Indian meal moth and some of the grain infesting beetles, it still causes clogging of machinery with its webbing, and at times causes grain mill shut-downs. In recent times, the use of fumigants has greatly reduced the incidence of the Mediterranean flour moth.

### 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, if the grain will be stored for more than six months. Take special care to treat all cracks, crevices, and areas around doorways and other places where insects could hide or enter. Spray the bins about four to six weeks prior to storing grain.

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 loaded 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.

Steven B. Jacobs  
Sr. Extension Associate  
Dept. of Entomology  
October 1988

Dennis Calvin  
Associate Professor  
Dept. of Entomology

SG-11

© The Pennsylvania State University 2001

This publication is available in alternative media on request.

Where trade names are used, no discrimination is intended and no endorsement by The Pennsylvania State University or Pennsylvania Department of Agriculture is implied.

Entomological Notes are intended to serve as a quick reference guide and should not be used as a substitute for product label information. Although every attempt is made to produce Entomological Notes that are complete, timely, and accurate, the pesticide user bears the responsibility of consulting the pesticide label and adhering to those directions.

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.

The Pennsylvania State University is committed to the policy that all persons shall have equal access to programs, facilities, admission, and employment without regard to personal characteristics not related to ability, performance, or qualifications as determined by University policy or by state or federal authorities. It is the policy of the University to maintain an academic and work environment free of discrimination, including harassment. The Pennsylvania State University prohibits discrimination and harassment against any person because of age, ancestry, color, disability or handicap, national origin, race, religious creed, sex, sexual orientation, or veteran status. Discrimination or harassment against faculty, staff, or students will not be tolerated at The Pennsylvania State University. Direct all inquiries regarding the nondiscrimination policy to the Affirmative Action Director, The Pennsylvania State University, 201 Willard Building, University Park, PA 16802-2801, Tel 814-865-4700/V, 814-863-1150/TTY.