



ENTFACT - 011

### REARING WAXWORMS

Lee Townsend, Extension Entomologist\*

Waxworms may be raised for fish bait or for use in classroom biology studies. They can be obtained from bait companies, biological supply houses, or from infested bee hives where they are destructive pests of honeycombs. In addition to waxworms to start the colony, rearing cages, food, and a suitable environment for growth are the remaining key elements.

#### Rearing Facilities

A minimum of two containers are needed- one in which to rear the developing larvae and one in which the adults can mate and lay eggs. A wide-mouth glass gallon jar is good for rearing the caterpillars, pint jars are ideal for the adults. Metal containers can be used but wood should be avoided because the larvae can chew through it. Lids or covers should be made with 20-mesh screen to allow some ventilation. After production is underway it will be best to keep several rearing containers going.

Boil the containers and lids in water to sterilize them before starting the colonies and clean and boil them again between uses. This will help to keep down mold growth and kill diseases which can infect the insects and kill the entire colony.

As the first mature larvae begin to spin cocoons, pieces of folded paper towel or rolls of corrugated cardboard should be placed in the container. The larvae will move in these materials and spin their cocoons.

#### Food

Waxworms infest bee colonies where they feed on pollen, honey, and bits of cast larval skins incorporated into comb wax. They can be reared much more easily and economically on an artificial diet.

Diet 1 is made using 7 parts dry dog food mixed with 1 part water followed by 2 parts honey. Mix the ingredients and let them stand for 1 day. The granules should be soft but not sticky.

Diet 2 is made using 1 box of Gerber's Mixed Cereal, 7 tablespoons of honey and 7 tablespoons of glycerin and 3-1/2 tablespoons of water. Moisten the cereal with the liquid mixture to mold a ball that crumbles

easily.

Try both diets to determine which is best for your situation. About 1-1/2 pounds of diet are needed to produce about 500 usable mature larvae. Waxworms thrive in dark, warm (about 85° F), poorly-ventilated areas. A colony can produce larvae year-round.

#### Life Stages

There are four stages of development of this insect-egg, larva (waxworm), pupa, and adult or moth.

A single female can lay as many as 1,600 eggs. The eggs hatch in about 4 days and the larvae feed for about a month. The milky white to light tan larvae molt or shed their outer covering 7 times. Most of the growth and size increase occurs during the last 2 stages. The process takes about 6 to 7 weeks at 85° to 90° F and high humidity. Full grown larvae spin a cocoon in which the pupal stage is passed.

Mature larvae can be harvested at 3-day intervals when they begin to spin cocoons. They readily crawl into pieces of folded paper towels or rolls of corrugated cardboard and spin their silken cocoons. Placing these items in the rearing containers will make it easy to collect and store full grown larvae. They can be safely stored for 2 to 3 months at 60° F and 60% humidity. The temperature in a typical refrigerator is too cold.

The silken cocoons can be removed from mature larvae by agitating them for about 20 minutes in diluted commercial bleach (1 part 5.25% sodium hypochlorite to 5 parts water). After the silk dissolves, the larvae should be rinsed with tap water and dried on toweling before being placed in storage.

A few pupae should be kept at 85° for adult emergence to keep the colony thriving. Place these pupae in a pint container with a strip of dark paper or a strip of wax paper folded like a fan and held with a paper clip. Females will lay their eggs on these strips. The egg papers can be transferred to rearing containers. About 1,000 eggs placed with about 1-1/2 pounds of diet should yield about 500 mature larvae.

The adult will emerge from the pupa. A look at the

shape of the rear margin of the wing will allow you to distinguish between males and females. The female has a relatively straight margin while it is indented or scalloped in males. After mating, the females will their eggs and the cycle will begin again.

Proper cleaning and sterilization of cages will help to reduce disease problem as well as growth of bacteria and fungi. The media can become over grown with these organisms or may become infested with stored product pests such as grain mites. Parasites or diseases may kill developing larvae. Keeping several, rather than one colony, will allow you to discard any in which problems develop without shutting down production. It is best to discard containers with these serious problems rather than attempting to salvage them.

\*Information in this fact sheet was adapted from a publication by Dr. W. F. Lyon, Extension Entomologist at the Ohio State University and from How to Keep Bees and Sell Honey by Walter T. Kelley.  
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