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### NF422 Sunflower Head Moth Management

Ronald C. Seymour

*University of Nebraska - Lincoln*, rseymour1@unl.edu

Gary L. Hein

*University of Nebraska - Lincoln*, ghein1@unl.edu

Ray Weed

*University of Nebraska - Lincoln*

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## Sunflower Head Moth Management

By Ray Weed, Extension Educator, Kimball-Banner counties

Ronald C. Seymour, former IPM Extension Assistant, West Central Research and Extension Center

Gary L. Hein, Extension Entomologist, Panhandle Research and Extension Center

Sunflower head moth, *Homoeosoma electellum* (Hulst), can cause substantial economic loss to commercial sunflowers in Nebraska and the surrounding region. Populations of sunflower head moth vary tremendously from year to year. Consequently, pest monitoring is important each growing season to determine when moths first appear and the extent of the infestation. Field scouting in confection sunflower fields is critical because of their higher value and the importance of maintaining quality.

### Identification and Biology

Sunflower head moths are generally considered the most serious insect pest of sunflowers in Nebraska. The buff to gray colored moths are approximately 3/8 to 1/2 inch long with a 3/4-inch wingspread (Figure 1). The forewings have a tiny, dark dot near the center of each wing and two or three similar dark dots near the leading margin of each wing. When at rest, the wings are rolled tightly against the body giving the insect a cigar-shaped appearance.

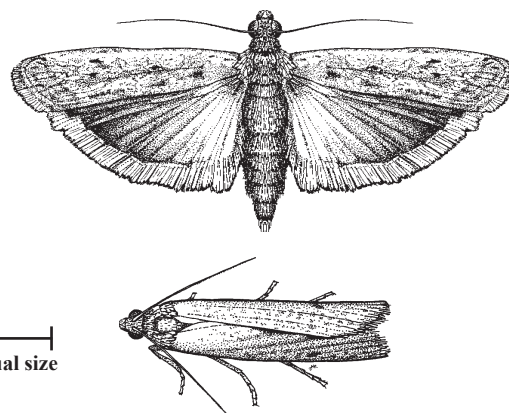


Figure 1. Sunflower head moth.

Sunflower head moths do not overwinter in Nebraska. Aided by southerly winds, adults migrate from southern areas and appear in Nebraska in July. The moths are attracted to sunflowers that are just beginning to bloom (stage 5.1; beginning of pollen shed, Figure 2), and feed on the nectar and pollen.

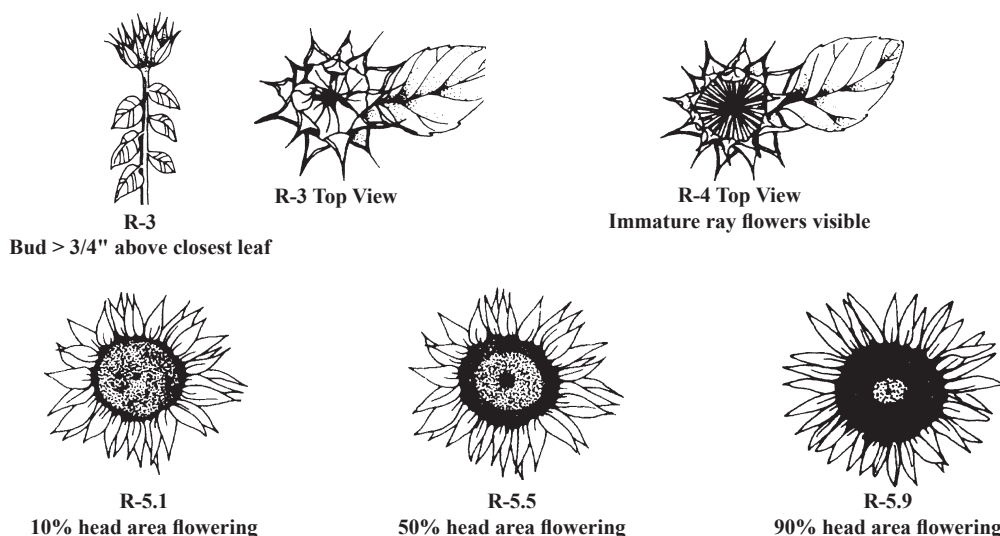


Figure 2. Sunflower growth stages important to head moth management (Reprinted with permission from North Dakota State University Extension Service).

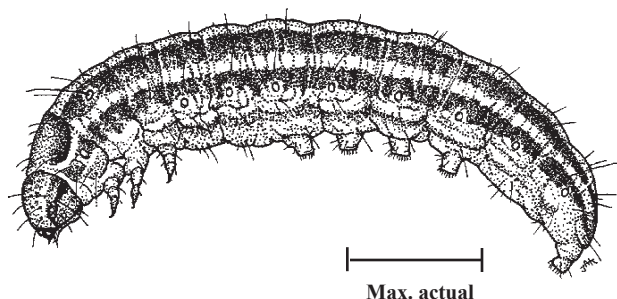


Figure 3. Sunflower head moth larva.

If sunflower fields are not in bloom when moths arrive, the moths will feed on wild sunflower and other plants. Eggs are deposited among the florets on the face of the flower head. Most eggs are laid by the third day after the onset of bloom (stage 5.0-5.1), with up to 90 percent being laid within seven days after onset of bloom. Eggs hatch within 40-72 hours and larvae begin to feed on florets and early developing seeds. Larvae have alternate dark and light lines running along the length of the body and have a brown head capsule (Figure 3). Larval development requires two to three weeks from hatching to full maturity. Each larva can destroy four to six seeds during its development. Older larvae tunnel through immature seeds and the receptacle during July and August. As larvae feed, they spin silken threads, trapping the dying florets and their frass, giving the sunflower head a trashy appearance. In addition to the direct damage to the developing seeds caused by the larvae, infested heads may be more prone to *Rhizopus* head rot, especially in high moisture situations.

### Management

If moth flights do not coincide with early bloom (stages 5.1 to 5.5) of the sunflowers, damage will be minimal. Planting after June 1 will reduce, but not eliminate, the potential for sunflower head moth damage, because moth activity will be decreasing when the flowers head; however, earlier planting dates may have higher yield potentials, according to recent University of Nebraska trials.

Use pheromone traps to monitor flights of the sunflower head moth. When the plants are in the late bud stage (R3; distance between bud and nearest leaf exceeds 3/4 inch, see Figure 2), place two to four milk-jug or wing-style pheromone traps (e.g. Pherocon 1C) in each field (see Figure 4). Place the traps on a steel post slightly above canopy height, 15 feet into the field, on both the north and south sides. Pheromone sources and wing traps can be purchased from commercial suppliers (see Table I). One pheromone source per trap should be sufficient to follow the complete moth flight for the season. Monitor traps frequently, at least two to three times per week, until the plants are nearly done flowering (R5.9). If an average of fewer than one moth per night is caught, the risk of a significant infestation is low. If an average of one to four moths per night are caught, the risk of infestation is moderate, and a control decision should be based on further field scouting data. If the trap catch averages more than four moths per night per trap, the risk of significant damage is high and an insecticide

Table I. Suppliers of sunflower head moth sampling equipment and supplies.

- Phero Tech Inc., 7572 Progress Way, Delta, B.C. V4G 1E9, phone (604) 940-9944 or 1-800-665-0076; fax: (604) 940-9433
- Sentry Biological, 610 Central Avenue, Billings, MT 59102, phone (800) 735-5323.
- Great Lakes IPM, 10220 Church Rd. NE, Vestaburg, MI 48891, phone 517-268-5693 or 517-268-5911, fax: 517-268-5311
- Gempler's, Inc., 211 Blue Mounds Rd., Mt. Horeb, WI 53572, phone (800) 382-8473

treatment should be considered. Remember to make sure that all traps are functioning properly throughout the moth flight. The fluid level in milk jug traps should be maintained and moths removed each time the traps are checked. The moths caught in wing traps will not need to be removed unless an extensive moth flight makes counting difficult. If this occurs, replace the bottom of the sticky trap.

Field scouting also can be used alone to monitor moth flights or as a supplement to pheromone trapping. Begin scouting by stage R4 so that populations can be assessed as flowering (R5.0-5.1) approaches. Scout for the sunflower head moth in the evening when moths are most active on and around the heads. When scouting, approach plants carefully to avoid disturbing any moths. Using a flashlight, if necessary, count the number of sunflower head moths on 20 plants in each of five locations in each field. Samples should be taken in an "X" pattern across the field. Consider treatment if one

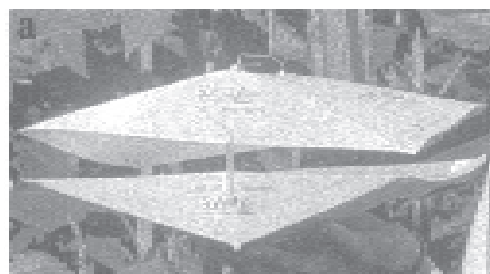


Figure 4. Sunflower head moth pheromone traps: a) wing trap with sticky bottom, b) milk jug water trap.

to two adults are found per five plants at the beginning of bloom (R 5.0-5.1). Fields that are pre-bud, in early bud, or in full bloom at the first appearance of the sunflower head moth have a reduced potential for severe damage; however, if moths remain active during late bud to early bloom for later developing fields, significant damage can result.

### Chemical Control

For optimum control of the sunflower head moth, the treatment window is quite narrow and lasts only a few days. Insecticide applications need to be made to prevent moths from laying eggs; if moths are present in threshold levels, apply treatments close to first bloom (R5.0-5.1) before egg laying has occurred. Because it is difficult to control larvae that are feeding within the head and receptacle, the longer treatments are delayed after stage R5.1, the greater the potential for unacceptable control. Even if an insecticide is applied, continue monitoring the field. If moth numbers rebound and are abundant five to seven days after treatment, consider an additional insecticide application, particularly in confection fields.

A product list of insecticides for sunflower head moth control is in the *High Plains Integrated Pest Management Guide for Colorado, Western Nebraska, Montana, and Wyoming*. Insecticides labeled for sunflower head moth control are also listed on the University of Nebraska Department of Entomology Web site <http://www.ianr.unl.edu/ianr/entomol/instabls/shmoth.htm>. Consult the label on all products for additional information and restrictions.

**Spraying blooming sunflowers can be extremely hazardous to bees.** If treatment is necessary, spray only during early morning or late evening when bees are least likely to be foraging. Coordinate all insecticide applications with local beekeepers. Follow label directions concerning bee safety and use insecticides that have the least hazard to bees.

### Additional resources and information referred to in this production sheet include:

*High Plains Sunflower Production Handbook*. Produced by Colorado State University, Kansas State University, University of Nebraska, University of Wyoming, and USDA-ARS—Central Great Plains Research Station, Akron, Colorado. Published by Kansas State University Agricultural Experiment Station and Cooperative Extension Service. MF-2384. January 1999.

*High Plains Integrated Pest Management Guide for Colorado, Western Nebraska, Montana, and Wyoming*. Bulletin 564A. Colorado State University, Fort Collins. 1998.

Note: Reference to commercial products or companies is made with the understanding that no discrimination is intended and no endorsement by Cooperative Extension is implied.

**File under: INSECTS & PESTS**

**C-11, Field Crops**

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