

Armyworms in Rice

Background

The armyworm (*Mythimna unipuncta*) (Fig. 1) is an insect commonly found in rice fields; it can become a pest when populations reach high densities. A serious armyworm outbreak occurred in 2015, resulting in yield reductions of up to 20% in some fields. The western yellowstriped armyworm (*Spodoptera praefica*) can sometimes be also found in rice fields, mostly feeding on broadleaf weeds such as ducksalad and redstem.



Figure 1. Armyworm larvae feed on rice foliage and panicles. Severe injury can lead to yield reductions.

Life Cycle

Armyworm adults are thick straw-colored moths that fly at night. Pheromone trapping in the Sacramento Valley has shown that moths start flying in early June and increase in numbers quickly, peaking in late June or early July. Another peak occurs in mid-August (Fig. 2)

Mated females lay egg masses in the vegetation around rice fields and rice field borders. Each egg mass can have over 100 eggs, and a single moth is capable of laying up to 2000 eggs in her lifespan. Egg masses are very difficult to find in the field.

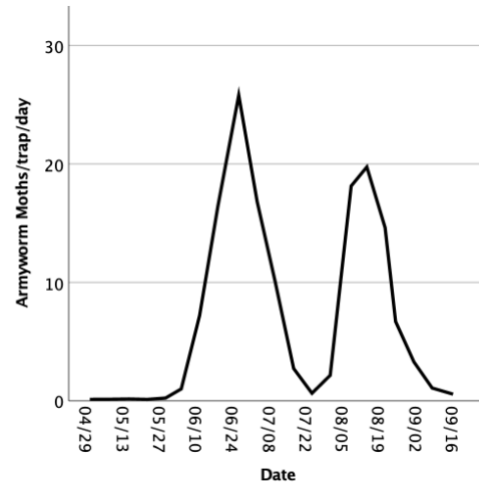


Figure 2. Average number of moths caught with pheromone traps at 15 locations in the Sacramento Valley in 2018, a year with average worm pressure.

Eggs hatch after four or five days. Young larvae are small and do little feeding, making their detection difficult. Larvae feed at night, spending the day hidden in the foliage near the water level. Larvae go through six instars, with instars five and six being the most conspicuous because of their size and the large amount of foliage they consume. Large larvae can take a week or longer to complete their development and turn into a pupa. Armyworm larvae pupate in rice fields by lodging themselves between tillers and making a protecting case with pieces of foliage. Adults emerge in about 10 days.

Injury to Rice

Larvae can be found in rice fields in early July and mid-August. During early July, infestations start near field borders and progress into the field. When larval density is high, defoliation can be severe. During the mid-August infestation, armyworms also feed on panicle branches, resulting in partially blanked panicles (Fig. 3).



Figure 3. Armyworms can feed on panicle branches, causing partial panicle blanking.

Management

Rice plants are very tolerant of defoliation during vegetative growth. Research has shown that when more than 25% of rice foliage is consumed, a yield reduction can be expected. When defoliation is severe (to the water level), the yield reduction can be as high as 26%. Significant yield reductions because of panicle feeding can occur when more than 10% of panicles are injured.

Managers should scout fields frequently during late June and early July and monitor the level of defoliation and the presence of larvae in the field. Experience shows that weedy fields can harbor more armyworms than clean fields. If defoliation approaches 25% and larvae are present, an insecticide treatment may be needed. Similarly, during mid-August, growers should monitor for panicle injury and the presence of larvae.

The insecticides methoxyfenozide (Intrepid) and diflubenzuron (Dimilin) are effective insecticides. Methoxyfenozide is currently (2021) available through a Section 18 label. Dimilin has an 80-day pre harvest interval, so it cannot be used during the heading infestation.

Pheromone traps can aid in monitoring by providing a relative measure of moth populations. However, moth catches do not predict larval injury – high moth captures do not necessarily produce high larval populations. Armyworms have many natural enemies in rice fields, including predators and parasitoids that can significantly reduce larval populations (Fig. 4). Avoiding unnecessary insecticide applications can allow these natural enemies maintain armyworm populations below damaging levels.

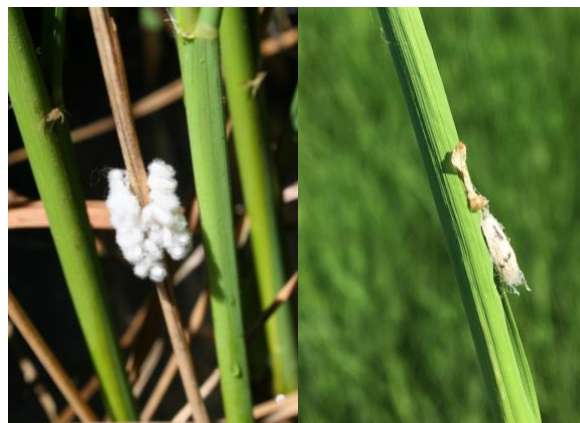


Figure 4. Armyworm parasitoid cocoons are commonly found in rice fields.

For more on this topic:

- ✓ Integrated Pest Management for Rice, Third Edition. UC Agriculture and Natural Resources.
- ✓ UC IPM for Rice: ipm.ucanr.edu
- ✓ Agronomy Research and Information Center-Rice: rice.ucanr.edu

Agronomy Research and Information Center
<http://agric.ucdavis.edu/>



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