



# BUG BIZ

Pest Management and Insect Identification Series



## *Eoreuma loftini*, Mexican Rice Borer (Lepidoptera: Crambidae)

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### Description

Mexican rice borer is an invasive pest of grass crops in the Gulf Coast region of the United States. Adult moths are straw-colored without distinctive markings but with some variation, mainly in the form of a small black spot that is sometimes present on each forewing. Adults at rest hold the wings in a triangular (delta) shape, but this is typical of a large number of species in the family Crambidae, among others. Adult size is around 1/2 to 3/4 of an inch (12 to 19 mm), measured from the head to the end of the forewings in resting position. A pair of long palpi extend in front of the head, another feature that is shared by many other members of the family. The front of the head is cone-shaped, a diagnostic characteristic that distinguishes Mexican rice borer from other, similar pests in grass crops. Observing this characteristic usually requires removal of hairs and scales that obscure it in most specimens. A number of other moths in the families Crambidae and Pyralidae are superficially similar to the Mexican rice borer. In cases where doubt exists, an entomology diagnostician should be consulted. In some cases, dissection to examine male internal sex organs may be necessary.

Mexican rice borer eggs are minute (less than 1/25 of an inch or 1 mm), round and cream-colored. Mature larvae are pale, white or cream-colored, with four, variable, parallel purple to reddish-brown stripes along the top surface. These stripes may be continuous or broken. Mature larvae are 3/4 to 1 inch (19 to 25 mm) in length. Pupae are cylindrical, slender, and yellow to brown in color. They range from 2/3 to 4/5 of an inch (16 to 20 mm) in length.

### Life Cycle

Mexican rice borer can complete four to six overlapping generations annually. Total life cycle can be completed in 30 to 45 days under optimal conditions. Females deposit masses of eggs (up to 100 eggs each) in folds of sugarcane leaves, with a preference for older, drier leaves. A single female can lay up to 400 eggs during her lifetime. Larval development takes 33 to 53 days to



*Mexican rice borer adult (LSU AgCenter).*

complete. After hatching, larvae burrow into stalks and begin feeding, tunneling through the stalk and backfilling tunnels with excrement (frass). Larvae undergo five or six growth stages (instars), with males developing faster than females. Mature larvae stop feeding and transform into the pupal stage in the interiors of the host plant stems. Adults exit the stalk, mate, and females lay eggs to repeat the cycle. Adult life span is six to 14 days. Mexican rice borers feed on a wide variety of grass host plants, including four crops that are important to Louisiana's agricultural industry, rice, corn, sugarcane and sorghum.

## Ecological Significance and Pest Status

Mexican rice borer is indigenous to western Mexico. It was first documented in Texas during 1970. LSU AgCenter scientists, in cooperation with colleagues in Texas, tracked the movement of Mexican rice borer eastward for a number of years prior to its arrival in Louisiana during 2008. By 2015 it had reached Florida and was established across the southern U.S.

Mexican rice borer is one of several species in the moth borer complex in Louisiana grass crops and has emerged as the primary pest species in sugarcane and rice in the region. Yield losses of 15% to 25% have been reported in Texas and Louisiana sugarcane. Damage in rice from the borer complex, mainly Mexican rice borer, was estimated at 29% during 2013. Economic effects on corn and sorghum are less comprehensively studied, but plant death has been observed as a result of internal feeding in both crops. The internal feeding habits of members of the borer complex protect them from most insecticides that are labeled for use on these crops and, to some extent, protects them from attack by natural enemies such as spiders and most other generalist predators.



Mexican rice borer damage in sugarcane stalk (LSU AgCenter).

## Management and Control

**Monitoring.** Pheromone traps baited with the synthetic pheromone of the Mexican rice borer have been the main tool used to monitor population dynamics and document geographical range expansion. This synthetic product simulates the sex pheromone produced by female moths and is effective at attracting male moths at distances of up to 100 yards/meters. Research by LSU AgCenter scientists have optimized

pheromone trap scouting protocols that maximize trap coverage and reduce trap interference.

**Cultural control.** Practices such as adjusting planting time, stubble management, non-crop host management, and soil fertility management aid in the control of Mexican rice borer populations. A great deal of research has focused on developing damage resistant cultivars, especially in sugarcane, and this may emerge as the most effective strategy to manage borer complex pests. Plowing under sugarcane stubble reduces survival of moth pupae.

**Biological control.** Paradoxically, another pest, the red imported fire ant (*Solenopsis invicta*) has emerged as an unlikely ally in controlling borer pests in sugarcane. Fire ants are excellent at locating and extracting borer larvae inside stalks. Allowing limited areas of weedy plant growth within and along margins of sugarcane fields can serve as diversity refuges for insects, including predators and parasitoids of pest species. A variety of parasitoid species in the wasp family Braconidae and at least one species of fly in the family Tachinidae attack Mexican rice borers and have been studied for their potential as natural control agents. Limited releases of exotic parasitoids have been conducted in Texas. Thus far, results from these potential biocontrol agents have been disappointing. Similarly, studies on various nematodes and fungal and bacterial pathogens have not provided control in field conditions.

**Chemical control.** Pyrethroids such as gamma-cyhalothrin, lambda-cyhalothrin and other chemicals such as chlorantraniliprole and fluebenidamide are registered for foliar application and chlorantraniliprole for seed treatment. Insect growth regulators tebufenozide and novaluron have been demonstrated to reduce damage by the Mexican rice borer in sugarcane but are less effective in rice. In general, insecticide applications against Mexican rice borers are limited and resulting levels of control have been inconsistent. For insecticide recommendations for borer complex species in Louisiana, consult the current Louisiana Insect Pest Management Guide published annually by the LSU AgCenter.



Mexican rice borer larva (LSU AgCenter).

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