USDA National Institute of Food and Agriculture
U.S. DEPARTMENT OF AGRICULTURE

Southern IPM Center

GRANT IMPACT STATEMENT

Using Varietal Resistance for Management of the Invasive Rice Delphacid (2024)

Project Director: Lina Bernaola, Texas A&M University

Early Detection
is critical for successfully managing invasive pests.

Protecting Rice Yields
requires early detection, accurate monitoring, and IPM tools.

Hoja Blanca Disease
risks are associated with rice delphacids.

Rice production in the southern United States is vulnerable to emerging invasive pests such as rice delphacid.
Photo Credit: Lina Bernaola

Rice delphacid adults and nymphs on rice plants.
Photo Credit: Lina Bernaola

Rice delphacid, an invasive pest threatening rice production in Texas and the southern United States.
Photo Credit: Lina Bernaola

WHY THIS PROJECT WAS NEEDED

Rice Production
in Texas and the southern U.S. is threatened by rice delphacid.

Limited Information
about pest distribution and seasonal occurrence is available.

Effective IPM
relies on knowledge of pest ecology, seasonal dynamics, and host resistance.

Knowledge Gaps
exist about pest population timing and rice field vulnerability.

Science-based Management
practices such as resistant varieties and IPM are needed for emerging pest infestations.

PROJECT IMPACT

REDUCED	1,500	1,200	AWARENESS	$50,000
infestations across varieties	Stakeholders Reached	Participants Trained	of pest ID, injury sympotms, and management	In Leveraged Funding

Lasting Impact

- **Characterized pest occurrence and seasonal abundance in Texas rice.**
- **Evaluated host plant resistance and varietal response to pest infestations.**
- **Observed rice delphacids absent April-June and increasing rapidly in July.**
- **Created a foundation for economic thresholds, resistant varieties, long-term monitoring, and sustainable IPM.**

Sweep-net sampling used to monitor rice delphacid populations across Texas rice production areas.
Photo Credit: Lina Bernaola

Addressing A Need

practical, science-based guidance to help stakeholders

Product

Texas A&M AgriLife Research factsheet helps identify rice delphacid and implement management across Texas and the southern U.S.

TEXAS A&M AGRILIFE RESEARCH

Rice Delphacid

Nupur Sarkar* and Lina Bern

Common Name:
Rice Delphacid
Scientific Name:
Tagosodes orizicolus (Müir)
(Hemiptera: Delphacidae)

Description

The RD is a planthopper, typically about ¼ inch long (Fig. 1a). It exhibits sexual dimorphism, with females being larger than males. Males are brown with black patches at the tips of their wings, while females are paler in color (Fig. 1a). Both sexes have a yellow to white median dorsal stripe. There is als a short-winged female morph, where the wings ar significantly smaller, and the abdomen is more bu (Fig. 2a). These short-winged females primarily foc on egg laying (Fig. 2b) when resources are availabl aiding in the rapid establishment and growth of th population.

The RD undergoes five nymphal instars before maturing into adults. Nymphs are lighter in color t adults and have two characteristic brown stripes each side of the abdomen (Fig. 1b). They are small and lack wings. Both adults and nymphs have pier sucking mouthparts, which they use to extract sa from rice plants.

As an adult, the RD resembles a leafhopper, but c be distinguished by its large, apical, hind leg spur. Planthoppers, like the RD, have a prominent spur their hind legs (Fig. 2d), whereas leafhoppers only one or two rows of smaller spines.

Key Facts About Rice Delphacids:

- They are piercing and sucking insects that feed on rice plant phloem.
- They are an invasive pest in the U.S. from Central and South America.
- They cause leaf damage known as "hopperburn."
- Symptoms of damage include yellowing of leaves and ovipositional scars on leaf blades.
- They excrete excess sugar called "honeydew," leading to sooty mold.
- They carry a virus that causes Rice Hoja Blanca disease.
- Rice delphacids were recorded in Texas in 2015 and have since spread throughout the Texas Rice Belt.

Preferred Hosts

Rice delphacids (RDs) feed on various grasses in the Poaceae plant family, with rice being its primary and most economically significant host. While this insect has been observed on other monocots such as barnyard grass and various non-crop grasses, rice remains its most severely affected host.

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A B C

Figure 1. (a) Adult RD on the upper canopy of rice plants; (b) RD n concentrated near the bottom or lower canopy; (c) RD oviposition i on midribs of rice leaves. (Photos courtesy of Lina Be

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