Insect Pests of Rice

**Rice Water Weevil – *Lissorhoptrus oryzophilus***

The rice water weevil is the most serious pest of rice in the US. It is native to Texas, but was accidentally introduced into California, as well as China, North and South Korea, Taiwan, Japan and Europe. Thus, it is now a global pest of rice. Adults feed on rice leaves and lay their eggs underwater in rice stems. Eggs hatch and larvae move to the roots upon which they feed. As the larvae grow, they shed their skins periodically and increase in size. The larvae complete four instars (stages between molts) before pupating in a mud cocoon attached to rice roots. Research shows that an average of 1 larva per plant reduces yield about 80 lb/acre. This is a linear relationship; thus, 3 larvae per plant reduce yield about 240 lb/acre. Thus, 3 larvae per plant is the economic injury level (EIL) for the rice water weevil. The EIL is the population density that causes damage equal to the cost of control.

This insect is controlled by 3 seed treatments (Dermacor X-100, NipSIt INSIDE and CruiserMaxx Rice) and various foliar-applied insecticides. Currently, the United States Environmental Protection Agency (USEPA) is concerned about the use of pesticides because of possible toxicity to honey bees. USEPA and the Texas Department of Agriculture (TDA) regulate and label pesticides for use in our country and state.

**Rice Stink Bug – *Oebalus pugnax***

The rice stink bug is another serious pest of rice. It is native to Texas and the other southeastern rice-producing states—Arkansas, Louisiana, Mississippi and Missouri. It does not occur in California—the other rice-producing state. This insect has piercing-sucking mouthparts which the insect inserts in rice grains and extracts the contents. Generally, no yield losses are associated with this feeding but rice quality can be affected. Damage results in ‘pecky’ rice which is discolored rice caused by rice stink bug feeding. In addition, upon milling, ‘pecky’ rice tends to break so head rice (% whole grain rice after milling) is reduced. Farmers receive less money for lower quality rice. The rice stink bug lays its eggs in masses (two rows per mass) on rice foliage.
After egg hatch, nymphs (immature rice stink bugs without wings) complete five instars before becoming adults. Each instar is a little bigger than the previous instar. The later instars (4th and 5th) and adults cause the most severe damage. The rice stink bug is controlled by various insecticides including Tenchu 20SG which is systemic (absorbed by the plant), pyrethroids and carbaryl. The most susceptible stages of rice to rice stink bug are heading (flowering) and milk. Thus, the EILs for rice stink bug are lower for these stages than later stages—soft dough and hard dough.

Fields with abundant weeds (particularly barnyardgrass) generally harbor high rice stink bug populations. Also, populations of rice stink bug are generally higher near the margins of fields.

**Fall Armyworm**—*Spodoptera frugiperda*

The fall armyworm is a sporadic pest of rice. The larvae have chewing mouthparts and defoliate (consume foliage) of rice. The adult is a moth which lays its eggs in masses on rice leaves. Eggs hatch and the larvae complete four to six instars (stages of growth) before pupating in a cocoon in the soil. Generally, fall armyworm are more severe on rice before the permanent flood. Usually, fall armyworm can be controlled by applying a flush (temporary flood) or permanent flood which drowns the larvae. A wasp parasite (*Cotesia* sp.) and egrets also can help control populations. Dermacor X-100 seed treatment controls fall armyworms. Some farmers apply pyrethroid insecticides (not systemic) when defoliation reaches 20% which is the EIL for this insect.

**Chinch Bug**—*Blissus leucopterus leucopterus*

The chinch bug is another sporadic pest of rice. This insect has piercing-sucking mouthparts like the rice stink bug. Adults are winged and are black and white. Adult female chinch bugs lay their orange eggs singly in soil cracks or on rice stems. Eggs hatch and nymphs begin feeding on rice stems usually near the soil surface. The insect completes five nymphal instars before becoming an adult. Seedling rice is very susceptible to attack. At this stage, an average of only one adult per two seedlings can kill rice. Frequently, an effective method of
control is to flush rice or apply a permanent flood which drowns insects or forces them to move up the plants where feeding results in less damage compared to feeding on stems near the soil surface. However, rice growing on levees can still be damaged. NipsIt INSIDE and CruiserMaxx Rice seed treatments control this pest. Foliar applied insecticides, such as pyrethroids, also provide control.

Stalk Borers – Mexican rice borer (*Eoreuma loftini*), rice stalk borer (*Chilo plejadellus*) and sugarcane borer (*Diatraea saccharalis*)

The most abundant and damaging stem borer is the Mexican rice borer which was introduced from Mexico into the Texas Rice Belt in 1988. The Mexican rice borer lays eggs on dead or dying rice foliage. Eggs hatch and larvae move to the inside of leaf sheaths where they are partially protected from natural enemies and pesticide residues. These small larvae feed in the sheaths and eventually bore into the culm. Inside the culm, they feed between nodes to cause “deadhearts” (dead leaves) and “whiteheads” (panicles with unfilled grains). After completing five larval instars, the insect pupates within the culm and emerges as an adult moth. Stem borers are controlled with the seed treatment insecticide Dermacor X-100. They can also be controlled with pyrethroids applied late in the season shortly before and after panicle emergence. Late planted rice is more susceptible to stem borers than earlier planted rice. Hybrid rice varieties tend to be more resistant to stem borers than other varieties.
Grasshoppers – Orthoptera

Grasshoppers are seldom pests of rice. Usually populations are highest near the margins of fields. Grasshoppers feed on foliage and sometimes panicles. The most common grasshoppers in rice are long-horned grasshoppers which can also be beneficial since they feed on pest insects as well as rice. Long-horned grasshoppers are easily identified by their very long antennae.

Blister Beetles – Epicauta texana

Blister beetles are sporadic pests of rice. The adults usually move in mass from weedy field margins. They typically defoliate rice and broadleaf weeds late in the season. Occasionally, blister beetles will also feed on the reproductive organs of rice flowers. Insecticides registered for rice stink bug also control blister beetles. Usually ‘spot’ treatments of insecticides effectively control blister beetle populations.

Leafhoppers – Cicadellidae (Graminella nigrifrons)

Leafhoppers are sporadic pests of rice. The most common leafhopper in Texas rice fields is the blackfaced leafhopper. Leafhoppers have piercing-sucking mouthparts and remove fluids from the plant causing yield and quality losses. Sooty mold fungus is black and grows on leafhopper exudates called honeydew. A good indication of high populations of leafhoppers is abundant sooty mold fungus on rice foliage. In addition, foliage takes on a bronze appearance.
Rice Delphacid – *Tagosodes orizicolus*

A new pest of rice is the rice delphacid which is related to a leafhopper. These insects are native to Latin America and have piercing-sucking mouthparts like leafhoppers. They were found for the first time attacking maturing ratoon rice in 2015 in several counties in the western part of the Texas Rice Belt. High densities can kill rice plants. Honeydew and black sooty mold fungus are associated with high numbers of this exotic insect which also has the ability to transmit a virus to the rice plant which causes “hoja blanca” disease. Hoja blanca means white leaf in Spanish; thus, symptoms of the disease are bleaching of foliage and stunting of the affected rice plant. In addition, in severe cases, panicles do not develop resulting in 100% yield loss.