

Rice Stink Bug in Arkansas

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The rice stink bug, *Oebalus pugnax*, was first reported as a pest of rice in the 1880s. The rice stink bug has been of concern to Arkansas rice producers for many years. Its feeding causes yield reduction and decrease of rice quality or pecky rice. During the years 2000 and 2001, the general population of rice stink bug increased substantially compared to levels in previous years. The increased population levels resulted in increased insecticide costs and significant grade declines as reported by the major industries involved in rice processing and use.

Life History

The rice stink bug overwinters as an adult in grassy areas, ground litter and debris around fields. Adults emerging in the spring feed almost exclusively on developing seeds on wild grass species. Of the grass species rice stink bugs have been reported to feed upon, two of the most important are vasey grass and barnyardgrass. Several other species are also hosts, including bearded sprangletop, broadleaf signalgrass, dallisgrass and crabgrass. Reproduction begins soon after feeding starts.

The ability of the rice stink bug to feed and reproduce on a wide range of wild grasses plays a significant role in its status as an economic pest. Feeding on early grasses in the spring enables the rice stink bug to reproduce and increase significantly in number before cultivated host plants are available.



Rice stink bug eggs
with telenomus parasite



Rice stink
bug nymphs



Rice stink bug adult

Rice is the preferred host plant of the rice stink bug, but it will also feed on oats, wheat and grain sorghum.

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Rice stink bugs normally do not occur in rice fields until heading has begun, but may occur if seeding wild grasses are present in fields. In such cases, rice stink bug populations may build up rapidly because of the early start in the field. A definite relationship has been found between the abundance of barnyardgrass in rice fields and the number of rice stink bugs. Rice stink bugs have been shown to move in and out of fields, moving from wild hosts to rice and back again to wild grasses when heads are developing.

Movement of rice stink bugs into rice is initiated when wild hosts diminish in abundance and are no longer suitable as food. Mowing grasses along highway ditches may cause a sudden increase of rice stink bug numbers in adjoining fields. Cutting rice also stimulates movement of bugs to later maturing fields. The adult rice stink bug begins to move into overwintering sites in early October and probably continues until temperatures decline significantly.

The adult rice stink bug may live up to 3 months. Normally, three generations are produced each year, but four generations may be possible if spring temperatures are moderate. Rice stink bug females lay an average of 500 to 600 eggs, but may lay up to 1,100 eggs. Eggs hatch into immature stink bugs or nymphs in 4 to 11 days, depending on temperatures. Rice stink bugs go through five nymphal stages before molting to adults. The complete life cycle from egg to mature adult ranges from 14 to 30 days.

Feeding and Damage

Rice stink bug adults and nymphs have piercing-sucking mouthparts. When feeding, the bug inserts the mouthpart into the developing seed and begins to inject saliva and other secretions to aid in digestion of plant materials. The salivated plant materials are injected by the bug and subsequently digested. The saliva hardens when it comes in contact with air, forming a feed sheath on the exterior of the plant.

Stink bug feeding on developing seeds causes several different types of damage to rice. Early feeding from prefertilization through early milk stages causes the heads to blank or abort. Feeding during the milk to soft dough stages results in kernel

shrinkage or slight discoloration. During the hard dough through the hard kernel stages, feeding seldom causes shrinkage or discoloration but does create an entry site for fungi and bacterial organisms that may cause discoloration. Pecky rice is created by a combination of the bug's injection of saliva and the creation of an entry site by the feeding hole in the seed. Fungi enter the feeding site either on the mouthparts or post-feeding. These fungi cause discoloration and dark spots typically associated with pecky rice. Pecky rice is also subject to breaking easily and causing shattered kernels. Significant populations of rice stink bug result in yield reductions and decline in quality or grade.

Monitoring Populations of Rice Stink Bugs

Rice fields should be checked for rice stink bug populations weekly or twice weekly when heading starts. Sampling should begin when 75 percent panicle emergence has been reached and continued through the fourth week of heading. A sweep net, 15 inches in diameter, should be used for sampling. The best time for sampling is from around 7 a.m. through 11 a.m. Sampling during the hottest portion of the day usually results in fewer bugs being found. The populations around the edges of the fields are usually higher and thus samples taken solely around the edges will contain higher numbers. Similarly, areas containing grasses such as barnyardgrass also contain higher numbers of bugs.

When sampling, swing the sweep net in 180 degree arcs while walking through the field. Ten consecutive 180 degree arcs constitute a sampling unit. Ten or more randomly selected sites should be sampled in each field and the average number of rice stink bugs per 10 sweeps calculated.

Within the first two weeks following 75 percent panicle emergence, fields should be treated with an insecticide if population levels reach 5 or more bugs, adults and nymphs, per 10 sweeps. During the following two weeks, when rice is in the milk and soft dough stages, treatments should be made when populations reach a average of 10 bugs per 10 sweeps. Insecticide treatments should be applied in the morning hours for best results.

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