



Stink bugs - a new pest to deal with?

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in a rice hull

- Stink bugs in rice crops can affect grain quality, and at high densities can reduce yields
- A recent survey found seven stink bug species in NSW rice crops, although the population densities of pest species were very low
- Farmers are strongly encouraged to monitor their rice crops for stink bugs as seasonal variation may have an impact on the numbers of the bugs

Problems with some export shipments of milled rice caused by stink bug activity prompted a survey of maturing Langi crops in early 2006. Seven species of stink bugs were found, of which three are capable of feeding and developing on the crop. Whilst none of the plant-feeding species were found in high enough densities to affect the rapidly maturing 2005–06 crop, slow crop maturation in other seasons could allow stink bugs to reach damaging levels.

Stink bugs belong to the insect family Pentatomidae, and are common throughout the world. Some species are predatory and feed on other insects; however most stink bugs feed on plants, sucking up plant juices through beak-like mouthparts that they insert into stems, seed pods, fruit or grain. Many farmers will be familiar with the green vegetable bug, a stink bug that is a major pest in soybeans.

Why are stink bugs a problem in rice?

Some stink bugs feed on developing rice grains, and when they attack grains at the milk stage, the damage they cause prevents the grain from filling. When populations are high enough, severe yield losses can result, however this has not yet been recorded in southern Australia.

Stink bugs may also feed on grain at the dough stage, causing quality problems, rather than yield reductions, and this is currently the problem for the NSW rice industry. Stink bugs feeding on grain during the later stages of its development inject enzymes into the grain that start a digestion process. These enzymes produce discolorations on the grain that are still clearly visible after milling – rice affected is called ‘pecky’ rice (Figure 1). Apart from affecting the grain’s appearance, stink bug damage causes structural weaknesses in the grain, reducing whole grain mill-out. Damaged grains are also reputed to have an unpleasant taste after cooking.

What species are present in NSW rice crops?

In February 2006, a survey was conducted in 21 Langi crops from Yenda to Deniliquin. At each location, two people spent 40 minutes sweep-netting each crop. Stink bugs were found in 10 crops, however only 43 stink bugs in total were collected. Seven different species were found.

Two species were predatory species which are beneficial to the crop rather than potential pests. Two other species were represented by only a single adult, and these could have just been ‘blow-ins’ that landed in the crop but were not feeding there.

Three remaining species dominated the collections, and for two of these both adults and nymphs (immatures) were collected. This is highly significant, because stink bug nymphs, unlike the adults, cannot fly. The presence of both adults and nymphs within the crop is a good indication that a particular species is not just inadvertently flying into the crop, but is actively feeding and reproducing there.



Figure 1: ‘Pecky’ rice caused by stink bugs feeding on maturing grain



Green vegetable bugs (*Nezara viridula*; Figure 2) were found in four crops, but were less abundant than other species. Both adults and nymphs were collected. Green vegetable bugs are regarded as pests of rice in several countries, including Japan.

Rice stink bugs (*Eysarcoris trimaculatus*, Figure 3) were found in six crops, and although no nymphs were found, this species is known to breed within rice crops, and can cause significant crop damage. Rice stink bug is a native species that was a major constraint to rice production in Queensland and Western Australia.

The most surprising result of the survey was the discovery of a small orange and black stink bug feeding on and developing in the crop. Around 60% of the stink bugs collected belonged to a species called *Anaxilaus vesiculosus* (Figure 4) – an insect sufficiently obscure that it doesn't even have a 'common' name. This is the first record of this native Australian species feeding on rice. Little is known about its other host plants, although it has been recorded on several native plants, and also on tomatoes.

Seasonal variability

Despite considerable sampling effort, very few stink bugs were found in the 2005–06 crop, suggesting that damage levels will probably be insignificant in milled grain from the 2006 harvest. It appears that stink bug populations within rice crops vary strongly from season to season. Due to hot conditions in late summer, the 2005–06 crop reached maturity very quickly, and this would have limited

the development of stink bug populations. Species such as the rice stink bug (Figure 3) had invaded crops by early/mid February, but there was no evidence that they had started to reproduce. In seasons where crop maturity and harvest are delayed by cold or wet conditions, stink bug populations could potentially build up to densities high enough to cause significant quantities of 'pecky' grain in milled rice.

Keep an eye out for stink bugs

At present the stink bug problem is not serious enough to justify intervention with insecticides, however high stink bug populations in rice crops should be reported to NSW DPI agronomists so the situation can be kept under review. If the problem worsens in future years, it may be necessary to develop control measures, particularly if crops are being segregated for sensitive markets. Evidence from studies conducted overseas suggests stink bug populations are often kept under control by natural enemies such as parasitic wasps. Minimising pesticide use (particularly armyworm treatments) in the later part of the rice season will help to conserve these natural enemies, and quite possibly prevent stink bugs from becoming serious pests of rice in NSW. 🌱

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Figure 2: Adult green vegetable bug. Body length approximately 14 mm.



Figure 3: Adult rice stink bug. Body length approximately 6 mm.



Figure 4: Adult of the stink bug *Anaxilaus vesiculosus*. Body length approximately 6 mm.