

Green Vegetable Bug (GVBs)

Nezara viridula

Damage symptoms

Nymphs and adults cause dull to black shiny spots on the boll walls, warty growth inside the carpels and brown staining of lint in developing bolls. In severe case, it is hard to peel the carpel off the damaged lint which may result tight lock and yield loss. Damage symptoms cannot be distinguished from those caused by mirids. GVB damage varies with boll age, small bolls will suffer more damage than old bolls. Bolls aged up to 7 days old could drop. Eight to 24 days old bolls will not drop but still can suffer significant damage. Bolls aged 25 days and above will not suffer any damage.

Sampling

Sample for adults and nymphal instars of the pest. GVB instars four and five inflict the same amount of damage as adults. Third instar GVBs cause half the damage of adults, and a cluster (more than 10) of first and second instars cause as much damage as one adult.

It is important to correctly identify which instars are present to determine whether or not the population has reached the threshold.

Instar	Instar length (mm)	Description
1	1	Predominately orange
2	2	Black with 1 or 2 white spots
3	4	Mosaic pattern of green, black and red spots
4	7	More green spots, wings begin to develop during late 4th instar
5	10	Spots start to diminish to green, wings well developed
Adult	15	All green with wings

Monitor fruit retention as well as for the presence of the pest.

Frequency

Sample at least weekly.

The crop is most susceptible to damage from flowering through until one open boll/m. Monitor fruit retention and pest presence from the beginning of squaring.

TABLE 11: Control of green vegetable bug

Active ingredient	Concentration and formulation	Application rate of product	Comments
Green vegetable bug <i>Nezara viridula</i>			
Dimethoate	400 g/L EC	0.34–0.5 L/ha	Apply when pests appear. Do not harvest for 14 days after application. Do not graze or cut for stockfeed for 14 days after application.#
Fipronil	200 g/L SC	0.0625–0.125 L/ha	Apply when pests appear. Use higher rate when higher infestations are present.#
Clothianidin	200 g/L SC	0.125–0.25L/ha + Maxx Organosilicone Surfactant 0.02L/L of water	Use higher rate when heavy infestations is expected and longer control is required. Treated insects may still be on plant 2 or 3 days after application but will have stopped feeding.

#See label for instructions to minimise impact on bees.

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GVB will use turnip weed as a host in spring. (Lewis Wilson, CSIRO)

Methods

GVBs are most visible early to mid morning making checking easier at this time. Visual sampling and beat sheets are equally effective checking methods while the crop is squaring. From flowering onwards when the crop is most susceptible to damage, beat sheeting is twice as efficient for detecting GVBs. Although beat sheet sampling is efficient it may tend to give a lower population than the actual number in the field. It has been found that the first and second instars tend to hide in the bracts and may be difficult to dislodge.

Even when pests are not observed, cut or squash 14 day old bolls to check for the presence of feeding damage. This will take the form of warty growths and/or brown staining of the developing lint.

Thresholds

Sampling Method	Flowering to First open boll	First open boll to Harvest
Visual	0.5 adults /m	0.5 adults /m
Beat Sheet	1.0 adult /m	1.0 adult /m
Damage to small bolls (14 days old)	20%	20%

Convert nymph numbers to adult equivalents and include in the counts. Fourth or fifth instars are each equivalent to 1.0 adult, each third instar counts as 0.5 adult and clusters of 10+ first/second instars count as 1.0 adult.

Comparing damage between stinkbugs using GVB adult equivalents

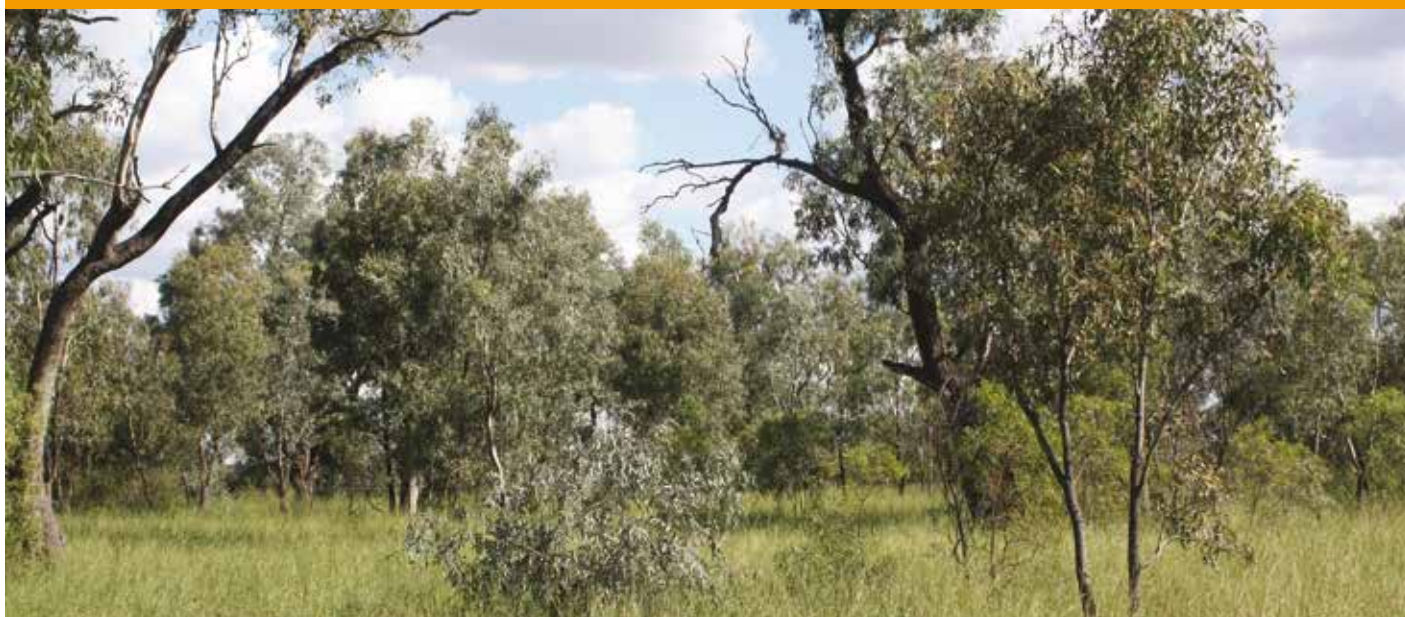
There are 5 more stinkbugs occasionally occur in cotton causing similar type of damage as GVB.

Other Stink Bugs	Proportion of damage compared to GVB	Threshold (based on GVB adult equivalents)
green stinkbug (GSB)	1/2	2
red banded shield bug (RBSB)	1/3	3
cotton stainer bug (CSB)	1/3	3
brown stinkbug (BSB)	1/4	4
harlequin bug (HRLQB)	1/4	4

Key beneficial insects

Parasites – *Trissolcus* is an egg parasite, they parasitise GVB eggs by inserting their eggs inside GVB eggs. After hatching they will remain inside GVB eggs to continue to feed and mature. *Trichopoda* is an adult parasite. They lay eggs on GVB adults and hatched out larvae bore into GVB and kill them.

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GVB with 4 Trichopoda parasite eggs. (Hugh Brier DAFF Qld)

Selecting an insecticide

The insecticide products registered for the control of GVBs in cotton in Australia are presented in Table 11. Mid-season use of dimethoate for GVB control could have implications for managing insecticide resistance in aphids.

Resistance profile

No GVB resistance to insecticides has been detected in Australia.

Overwintering habit

A high proportion of GVB adults enter a dormant phase (bronze colour) during late autumn. They overwinter in a variety of sheltered locations such as under bark, in sheds, and under the leaves of unharvested maize crops. A small proportion will remain green and active and will feed on whatever hosts are available.

Alternative hosts

In Queensland there are two GVB generations during the warmer part of the year. The preferred weed hosts of the first, spring generation include turnip weed, wild radish and variegated thistle. Early mungbean crops are also a favoured host in spring. The second generation breeds in late summer

and early autumn. Pulse crops – particularly soybeans and mungbeans – are key hosts for this generation. GVB populations are usually much lower in mid summer, mainly due to a lack of suitable hosts. In NSW there is a summer/autumn generation, similar to the second generation in Queensland.

Further Information:

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