

Table 1. Risk and monitoring period for spined citrus bug activity.

Flowering		Fruit drop			Golf ball			Colour break	Maturation		
Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul

Description

The spined citrus bug is native to Australia.

Eggs: are laid in rafts, sphere-shaped and about 1 mm in diameter. The eggs are initially white and develop black and red markings closer to hatching.

Immature: early-stage nymphs have yellow and black or orange and black markings. Late-stage nymphs have green and black markings (Figure 1).

Adults: are shield-shaped, green with a black spine at each front shoulder near the head and are 15–20 mm long (Figure 1).

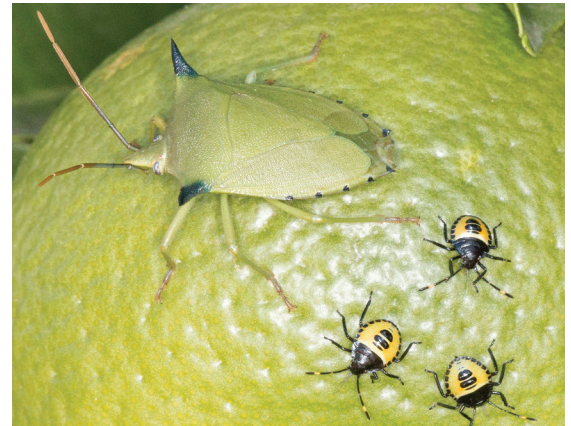


Figure 1. Spined citrus bug adult and nymphs.

Life cycle

There are 3 generations per year in New South Wales, Victoria and South Australia. Egg laying occurs from October to March, with peak periods between October–November and February–March. Egg rafts are laid on leaves, fruit or twigs. Eggs hatch in 3–4 days. Five nymphal stages occur. Early-stage nymphs (Stages 1–3) are common in spring and summer with late-stage nymphs (Stages 4–5) common in autumn and early winter. The nymphal stage lasts 10 weeks (Figure 2). Adult females can live for up to 18 months. Adults aggregate over winter in non-lemon citrus that are near lemon trees.

Host plants: native Rutaceae, citrus.

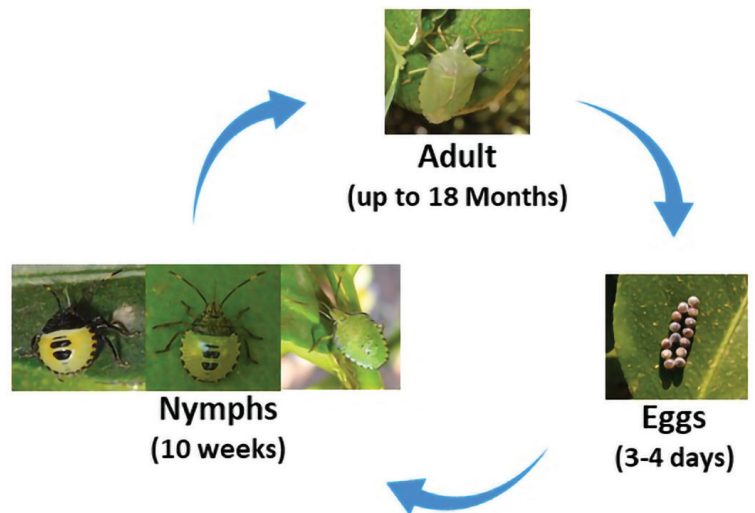


Figure 2. Spined citrus bug life cycle.

Damage

The spined citrus bug nymphal stages (except Stage 1) and adults do not feed on leaves, preferring all stages of lemon, mandarin and orange. The bug pierces the rind and sucks the fruit interior. This causes dry patches inside, browning, fruit segment staining, skin gumming, skin lesions and early fruit drop (Figure 3). Gumming occurs on the rind where it was pierced. Fruit can be blemished with damaged small fruit dropping to the ground. Spined citrus bug favour lemons and mandarins. Damage in oranges is less common and after maturation, oranges suffer little damage. Immature lemons and mandarins drop readily after attack while oranges often colour prematurely but might not drop.

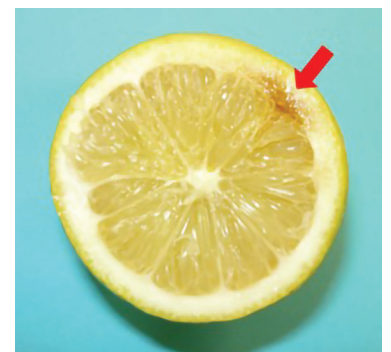


Figure 3. Spined citrus bug damage to fruit (red arrow).

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Monitoring

Check sites for adult and nymph populations fortnightly from October to March, ensuring 4 to 5 nearby trees are also observed. Collect 5 egg batches and allow them to hatch, observing parasitism levels. Also examine the first 2 rows of non-lemon citrus (oranges, mandarins, grapefruit) next to lemons during winter for clusters of adult bugs.

Risk period: October to March (Table 1).

Management and control

Biological: several parasites and predators attack spined citrus bug. Parasitism levels greater than 50% negate the use of chemicals. Parasitic wasp species (*Trissolcus oenone*, *Trissolcus ogyges* and *Anastatus biproruli*) parasitise spined citrus bug eggs while spiders, predatory bugs, praying mantises and assassin bugs (*Pristhesancus plagipennis*) predate on spined citrus bug adults and nymphs. Ants and lacewing larvae also feed on spined citrus bug eggs.

Cultural: effective spined citrus bug control is achieved by removing overwintering clusters, monitoring to detect spined citrus bug early during the growing season, and spot-spraying with selective insecticides to reduce negative effects on natural predators, and, hence enhancing natural biological control.

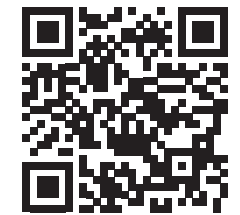
Chemical: intervention might be required when spined citrus bug pressure rises above the 10% threshold of trees infested with adults and nymphs. Trees with over-wintering adult clusters can be spot sprayed to reduce localised populations. Note: do not spray if natural predator levels are higher than 50% in spring. Using broad-spectrum chemicals will kill the natural predators of spined citrus bug.

More information

Mo J. 2006. Spined citrus bug. Primefact 217, NSW Department of Primary Industries. https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0008/76733/Spined-citrus-bug-Primefact-217-final.pdf



Smith D, Beattie GA and Broadley R. 1997. *Citrus pests and their natural enemies: integrated pest management in Australia*. Queensland Department of Primary Industries, <http://hdl.handle.net/10462/pdf/9446>



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