

Nesidiocoris tenuis biology and identification



Figure 1. *Nesidiocoris tenuis* late stage nymphs with wing buds

The mirid bug, *Nesidiocoris (Cyrtopeltis) tenuis*, is not a native of the UK but there is evidence that it is moving north and has already become established in glasshouses in some northern European countries. Both adults and nymphs are predators and can make a useful contribution to integrated pest management (IPM) in tomato crops. However, in the absence of insect or mite prey, the bug will turn its attention to the tomato plants and can cause serious economic damage. This factsheet is intended to increase grower awareness of the insect and the damage that it causes, as well as helping growers to distinguish it from *Macrolophus pygmaeus* – a similar mirid bug which is already used in tomato IPM programmes in the UK.

Introduction

Nesidiocoris tenuis originated in tropical regions but has expanded its range and is now common around the Mediterranean basin. Both adults and nymphs predate upon a wide range of insect hosts and can make a significant contribution to a tomato IPM programme by feeding on whiteflies, spider mites, caterpillars and leafminers. As a general rule, they select the slower moving life cycle stages which are easier to catch. For example, whitefly scales are more likely to be attacked than whitefly adults. *Nesidiocoris* is widely used against the leaf, stem and fruit mining caterpillar, *Tuta absoluta*, in southern Europe.

During the 1990s and early 2000s, most researchers in the Mediterranean region focused on the bug's potential as a biological agent, particularly against tobacco whitefly (*Bemisia tabaci*). However, it is now known that, in the absence of insect or mite prey, the predators can also cause serious damage to tomato plants. As a consequence, it has become a very controversial species.

Nesidiocoris has recently become established in some all-year-round tomato crops in Finland and in the Netherlands. To our knowledge, it has only once become established on a UK tomato nursery where it was eradicated by an end of season 'clean-up' with a high volume spray of acetamiprid (Gazelle); ie a synthetic broad-spectrum neonicotinoid insecticide which is neither IPM compatible nor allowed in organic crops. The predator did not reappear during the following growing season.

Nesidiocoris tenuis is related to *Macrolophus pygmaeus*, a predatory bug which is commonly used in UK tomato crops and is capable of surviving the short winter break

to colonise the new crops. The two species are very similar in appearance – being of comparable size, shape and colour. Both species feed on the same range of insect prey and can cause similar damage to tomato plants. However, *Nesidiocoris* is generally considered to be more robust, more effective as a predator and more harmful to plants than its relative.

Biology and appearance

Adult *Nesidiocoris* is approximately 5mm in length, bright green with bulging dark eyes, striped antennae and black spots on the otherwise clear hind wings. They are strong fliers and very active in warm conditions. Eggs are laid into plant tissue and are very difficult to find without good magnification. They hatch in about seven days depending on temperature.

Nesidiocoris nymphs are 1–4mm long and cannot fly. The younger stages are yellow-green but change to a bright emerald green as they develop. The nymphs tend to be found on the underside of leaves, in the plant growing point and among developing trusses. They are very active and quickly run to the opposite side of the leaf or hide in furled plant growing points when disturbed.

At 25°C, a generation is completed within a fortnight and 60–80 nymphs are produced per female, which gives very rapid population growth. Generation time and reproductive rate decline as the temperature drops, with the lower threshold for development being 12–13°C. Studies at the University of Birmingham indicate that *Nesidiocoris tenuis* could not become established outdoors in the UK and would have little or no impact on native species in the UK. However, under favourable conditions, it would be capable of surviving between crops within UK glasshouses.



Figure 2. *Nesidiocoris tenuis* adult (left), with an example of a brown feeding ring, and late stage nymph with wing buds (right)

Distinguishing *Nesidiocoris* from *Macrolophus*:

The adults and nymphs of *Nesidiocoris tenuis* and *Macrolophus pygmaeus* are very similar in appearance and close examination using a good quality hand lens is required to distinguish one species from the other. Size and colour are variable in both species and do not provide a reliable means of identification. However, adult *Nesidiocoris* have two features which are not seen in *Macrolophus* – a dark coloured band behind the eyes and black ‘knees’.

Some damage symptoms are only produced by *Nesidiocoris* and provide a good indication of which species is present. In particular, the brown rings which appear following *Nesidiocoris* feeding on stems and petioles are not produced by *Macrolophus*.

If in any doubt, growers should seek the assistance of an entomologist with experience of working with both species.



Figure 3. *Nesidiocoris tenuis* has a dark coloured band behind the eyes and black ‘knees’ – both are features which can be used to distinguish it from *Macrolophus pygmaeus*

Crop damage



The first signs of feeding damage by *Nesidiocoris* are usually brown rings which form on tomato stems and petioles.



The plant tissue beyond the feeding mark often dies, resulting in yellow leaves and lost growing points.

Damaged flower stalks become yellow and swollen beyond the 'knuckling-off' point. This is followed by premature fruit drop, leading to incomplete trusses.



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