



Garden weevil

## Weevils in New Zealand vineyards

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The garden weevil is an insect pest native to South Africa and was first established in New Zealand in 1893. Recent reports of weevil damage in Marlborough vineyards came from the Rarangi area in late 2020. The Garden weevil species (*Phlyctinus callosus*) was identified as the main culprit. Garden weevil chewing damage is relatively easy to identify, particularly on leaves, which typically show a 'shotgun' pattern of tiny holes.

These damage reports continued over the following years prompting Bragato Research Institute (BRI) to investigate the matter on affected sites in Marlborough and other regions (Hawke's Bay and Wairarapa), develop a weevil monitoring protocol, and publish a factsheet (available from [bri.co.nz](http://bri.co.nz)). Over the 2022-2023 growing season, a survey was carried out by BRI and the New Zealand Winegrowers (NZW) biosecurity team to determine the presence and spatial distribution of Garden weevils across the Marlborough region.

BRI extension staff Dr Paul Epee and Yuichi Ando, along with NZW

biosecurity advisors Jim Herdman and Kerrie Hopkins, worked with Dr Scott Hardwick, an entomologist at AgResearch, to develop a methodology for sampling weevils in vineyards. Eighteen vineyards across Marlborough were randomly chosen and sampled for weevils. Using

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two separate modified blower vac machines, the biological material (dry grass, insects) found in the midrow sward was sucked up over a 20 metre distance. The collected material was placed in labelled bags and stored in a chilly bin, then sent to AgResearch Lincoln for weevil identification.

Sampling was conducted monthly during the period when adult weevils were most active in vineyards and their populations had peaked – November 2022, December 2022 and February 2023.

### Weevil species composition and spatial distribution

Across the Marlborough region, eight weevil species were identified (listed here alongside their relative proportion over the whole period): Clover root weevil *Sitona obsoletus*, 72.5% (1255 weevils); Argentine stem weevil *Listronotus bonariensis*, 20.1% (348 weevils); Vegetable weevil *Listroderes costirostris*, 5.14% (89 weevils); White fringed weevil *Naupactus leucoloma*, 0.98% (17 weevils); Fullers rose weevil *Pantomorus cervinus*, 0.64% (11 weevils); Garden weevil *Phlyctinus callosus*, 0.52% (9 weevils); Black vine weevil *Otiorynchus sulcatus*, 0.06% (1 weevil); and Lucerne weevil *Sitona discoideus*, 0.06% (1 weevil). The Clover root weevil was not only the most abundant but was also the most widely spread, occurring in 16 vineyards out of 18, and was followed

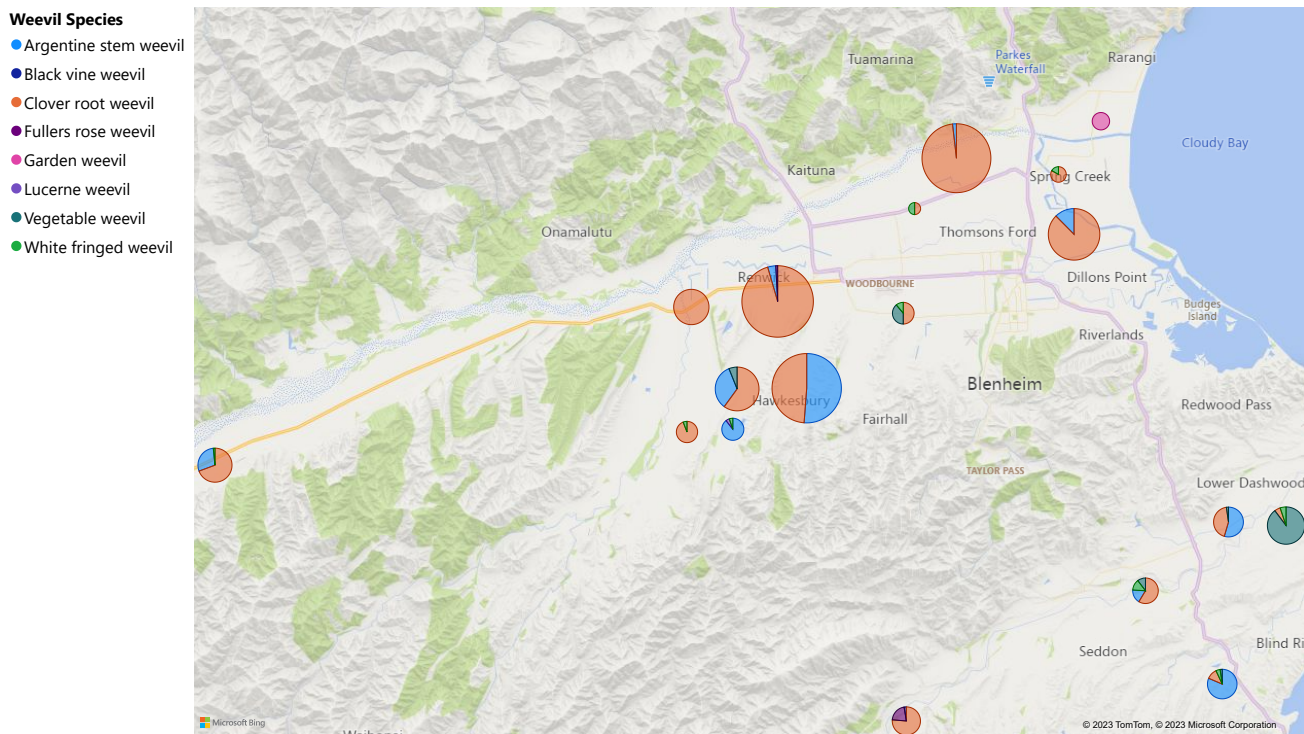


Figure 1 Spatial distribution of eight weevil species across the Marlborough region. The circle size represents the total number of counted weevils at a location and a sector in the circle the proportion of a weevil species relative to the total number of weevils at that location.

by the Argentine stem weevil (10 vineyards), the White fringed weevil (nine vineyards) and the Vegetable weevil (six vineyards) (Figure 1). Garden weevil, Lucerne weevil and Black vine weevil only appeared in one vineyard at a time, located respectively in Rarangi, Hawkesbury and South-West Seddon in the Awatere Valley (Figure 1).

Although Clover root weevil and Argentine stem weevil were the two most numerous and widely spread weevil species across the region, they do not constitute an immediate threat to winegrowing because they are not potential grapevine pests. However, Vegetable weevil and White fringed weevil were respectively the third and fourth most numerous and widespread weevil species. These two weevil species are also potential grapevine pests. The Vegetable weevil was found in Lower Dashwood, Woodbourne, Seddon and Hawkesbury. That weevil species is a polyphagous pest of vineyards as it can feed on buds, leaves, and berries. Larvae and adults live above ground and are active during the autumn, winter and spring when they cause

the greatest damage to the vine. The White fringed and Vegetable weevil followed a similar spatial distribution except for the Wairau Valley, where the White fringed weevil was present and the other weevil absent. The White fringed weevil was imported from South America, discovered in New Zealand in 1940, and is a pest of establishing vineyards. Therefore, in areas where these two weevil species were detected, it is recommended to closely monitor their population and activity between November and February.

**Garden weevil limited spread across the Marlborough region and implications**

The weevil species of interest in this study, the Garden weevil, was only present in one vineyard located in Rarangi, and in relatively low numbers. Moreover, no other weevil species was found in that vineyard. This result seems to show that Garden weevil is not widespread in Marlborough but rather located in limited isolated pockets such as Rarangi. Considering that Garden weevil is a wingless insect, its dispersal occurs mainly through

vineyard machinery, transportation of soil and other biological materials (plant materials, grape and grape products), footwear and clothing. Thus, by following good biosecurity practice and restricting movement vectors (movements that potentially displace Garden weevils), the spread of this pest across the region could be contained. It is recommended that further work is done to monitor the regional spread periodically (once every two- or three-year period) to ensure that it does not suddenly and unexpectedly get out of control. Vineyard owners/managers located in the Rarangi area should be alert and closely monitoring their vineyards for Garden weevil presence and activities. Although there is currently no registered insecticide for the control of Garden weevil on grapevines in New Zealand, following the foregoing prophylactic measures will help to contain the problem within isolated blocks. The BRI factsheet on Garden weevil monitoring is a useful tool in setting up a monitoring strategy. Additionally, there is work being done by agrichemical companies to test and register new products to control weevils in vineyards.●