

PLANT AND ENVIRONMENT INVESTIGATION REPORT

Unusual symptoms on tomatoes in Auckland

In November 2011 MPI became aware of some new disease issues in glasshouse tomatoes in several different regions, the cause of which was unclear. An investigation was initiated to determine whether these were due to newly arrived exotic tomato diseases.

There were three apparently distinct symptom types, possibly relating to different diseases. One symptom was consistent with a bacterial disease and was limited to foliage. A second symptom on tomato fruit, described as “frog-skin”, was limited to plants of a new cultivar that was in its third season of production since importation and release in New Zealand. A third symptom, leaf-rolling, had showed up nationally over the last two growing seasons on a number of cultivars, but not on the cultivar affected by frog-skin.

Of most concern was the frog-skin fruit. Although instances of this symptom were generally uncommon, affected plants were found in glasshouses across the whole country, with some growers reporting that up to 10 percent of their fruit had frog-skin that made them unmarketable. An integrated pest management consultant specialising in greenhouse crops considered the cause of the frog-skin and leaf-rolling symptoms was most likely to be physiological or environmental rather than pathological. Many growers regularly trial new tomato cultivars as they become available on the international market, and find some varieties unsuitable for New Zealand conditions owing to factors such as lack of fruit uniformity. Also there were claims (albeit unsubstantiated) that frog-skin symptoms had been reported in overseas crops of the new cultivar. Nevertheless, MPI considered it prudent to obtain samples of symptomatic foliage and fruit for investigation to rule out any newly arrived exotic tomato disease.

Next Generation Sequencing (NGS) technology was used (a first for MPI’s Plant Health & Environment Laboratory) to obtain a quick answer. NGS can theoretically provide a definitive answer as to the presence or absence of sequences belonging to all pathogenic organisms (including bacteria or fungi), in a single test. No disease-causing agents were found in the frog-skin samples. To be certain, a sub-sample was examined using electron microscopy, and no virus particles were observed.

The Ministry for Primary Industries’ (MPI) Investigation and Diagnostic Centres & Response directorate (IDC & R) is accountable for the investigation and diagnosis of suspected exotic pests and diseases. In the plant and environment sectors IDC & R has investigators and scientists based in Auckland and Christchurch. IDC & R provides field investigation, diagnostic testing and technical expertise on new pests and diseases affecting plants and the environment. IDC & R also conducts surveillance and response functions, and research and development to support surveillance and incursion responses.

Samples exhibiting symptoms typical of bacterial infection also tested negative for known bacterial pathogens. In addition, the stem necrosis characteristic of tomato bacterial canker was not observed in the samples.

These results suggest no exotic tomato disease was present and no further action was considered necessary by MPI. However, commercial growers were reminded that they can submit tomato crop samples exhibiting unusual symptoms to MPI for examination at any time.

Ghost ants on yacht from the Pacific Islands

Ghost ants (*Tapinoma melanocephalum*) were found on a yacht moored in the Nelson Marina in February 2012 and their identification subsequently confirmed by the Plant Health and Environment Laboratory. The yacht had been sailing through the Pacific, stopping off at several islands before returning to New Zealand. *T. melanocephalum* is known as a tramp ant species that has spread around the globe assisted by human activities. As it has spread so widely it is unclear whether its native range is Asia or Africa. It is widely distributed in tropical and subtropical zones and often closely associated with human settlement. It is highly flexible in the habitats it occupies, provided that there is some sort of disturbance allowing it to establish ahead of more dominant ant species, and nests both outdoors and indoors.

A site visit confirmed the 19-metre yacht was heavily infested with ghost ants, a regulated and new to New Zealand organism. These ants are a significant pest

species as they live both inside and outside dwellings, eat a range of foodstuffs (including both live and dead insects) and form very large colonies. In New Zealand it is likely that the climate is too cold for them to establish outside, but urban areas are likely to provide habitat that would enable them to form large populations inside a dwelling and become a pest. The cost of pest control and social impacts is considered significant.

No nests could be located as the numerous compartments in the yacht could not be accessed, but large numbers of ants were rapidly attracted to the baits laid, indicating that a large nest or possibly multiple nests were present. A toxic baiting programme was initiated to treat the infestation.

Surveillance was undertaken around the mooring point at Nelson Marina. There was no evidence of spread, nor was there any favourable habitat nearby that was likely to attract the ants. The emphasis of the investigation then shifted towards tracing the yacht's previous movements and further surveillance and monitoring of the site.

Four further sites, three in the Nelson area (a sail repairs company, personal goods store and refitting operations workshop) and one at Bayswater Marina in Auckland, had been visited by the yacht and its occupants.

No live ants were found in the last round of surveillance on the yacht, the adjacent wharf, or four sites associated with movements that had occurred since clearance. From this it has been concluded that the baiting programme was successful and the biosecurity risk has been eradicated.

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