

PLANT AND ENVIRONMENT INVESTIGATION REPORT

Radish yellow edge virus in NZ-grown round red radish

Korea's plant quarantine authority detected radish yellow edge virus (RYEV, *Alphacryptovirus*) in imported New Zealand-grown hybrid round red radish seed. RYEV is poorly documented in the literature, largely because it is non-symptomatic in most cultivars, and even when present does not reduce crop yields. To date, New Zealand radish producers do not consider RYEV to have economic significance. However, it is listed on MAF's Unwanted Organisms Register. As no PCR test is available, the IDC Plant Health and Environment Laboratory quickly developed primers and successfully confirmed RYEV presence, both in the radish seed exported to Korea and in the seed originally imported to New Zealand to produce this seed crop. Further test results showed the presence of RYEV in radishes grown at different Canterbury sites, over different seasons, and in seed used by market gardeners throughout New Zealand. No urgent containment measures were considered appropriate. RYEV will be removed from the Unwanted Organisms Register.

Borer beetles in basketware from Philippines

Woven bamboo and cane goods from the Philippines were found to be contaminated with insect borer and mould. The goods had been removed from the point of sale by the time MAF was notified. The consignment was similar to one sent to a South Island retail distribution centre that, when inspected by a MAF Quarantine Inspector, was found to be very heavily infested with *Dinoderus minutus* (an unwanted organism), and was subsequently fumigated with methyl bromide (MeBr) at the distribution centre/transitional facilities. Both consignments had Philippine MeBr fumigation certificates. Arrangements were made to shrinkwrap the risk goods at each North Island retail store and transport them back to the Auckland distribution centre for MeBr treatment. A single basket sample sent to the IDC enabled the borer present in the North Island goods to be identified as *D. brevis*, a species related to the borer identified from the South Island consignment. It is likely both species were present in both consignments as mixed populations (not an uncommon situation). Most of the white residue on the basket was thought to be borer

The MAF Investigation and Diagnostic Centres (IDC) are accountable for the investigation and diagnosis of suspect exotic pests and diseases. In the plant and environment sectors IDC has investigators and scientists based in Auckland and Christchurch. IDC provides field investigation, diagnostic testing and technical expertise for new pests and diseases affecting plants and the environment. IDC also conducts surveillance and response functions, and research and development to support surveillance and incursion response activities.

frass (dust-like faecal matter), although fungal material was also present. The latter was identified as *Aspergillus* and *Penicillium* species of the types commonly found on stored products in New Zealand and elsewhere, and was not considered to pose any significant biosecurity risk. Nonetheless, like the *Dinoderus* species, these fungi likely originated from the Philippines.

New badnavirus in *Bougainvillea*

A bougainvillea specimen (*Bougainvillea spectabilis* cv. Scarlett O'Hara) exhibiting small, sparse, chlorotic leaves was submitted to the IDC. The plant had exhibited similar symptoms ever since it had been planted in an Auckland residential backyard around 2001. The obtained 553bp nucleotide sequence in putative RT and RNase H region gave a 97 percent match to the "Delhi" isolate of *B. spectabilis* chlorotic vein banding virus (BsCVBV) as described by Baranwal *et al* (2010). This paper proposed that the two isolates of BsCVBV ("Delhi" and "Tirupati") recently found in India, and the previous isolates reported in Brazil and Taiwan, should be classified as distinct species of *Badnavirus*, as these isolates share <80 percent nucleotide identities. This species division is yet to be accepted by the International Committee on Taxonomy of Viruses. The Taiwanese strain of BsCVBV is present in New Zealand.

Badnaviruses are transmitted predominantly by mealybugs and some also by aphids or lacebugs. Many species can be transmitted by grafting, and a few by inoculation and in seeds or pollen.

A second undescribed *Caulimovirus* species was also detected in this plant. This virus had the closest nucleotide identity with cestrum yellow leaf curling virus (72%, 330 bps), but was considered to be a separate species. Most caulimoviruses are non-persistently or semi-persistently transmitted by aphids. While transmission methods for some caulimoviruses remain unknown, they are not known to be transmitted by seed or contact.

There have been 17 importations of bougainvilleas since 1999 but this particular infected plant is likely to have originated from an earlier import. This indicates that these viruses are likely to be widespread in New Zealand, though it is not known whether they are common, nor which virus contributes to the symptoms observed. These viruses are not unwanted or regulated organisms.

Grape vine leaves with blisters and brown spots

Two- to three-year-old grapevines pruned in 2010 were reported with blisters on the upper surface of the leaves and brown spots underneath. Wild vines growing about 30m outside the vineyard were showing similar symptoms. The IDC's Plant Health and Environment Laboratory identified erineum mites (*Colomerus vitis*) as the causative agent. This species of mite is present in New Zealand.

Ant hitchhiker on yacht

A yacht sailed to New Zealand from the South Pacific in October 2010 and berthed in Wellington. Two weeks after the yacht was cleared by MAF and Customs, the owner found an unusual ant on the yacht and suspected that there might be more. FBA Consulting inspected the yacht and found a worker carpenter ant, *Camponotus* sp., a species that is regulated in New Zealand. Since this species is nocturnal, night-time bait surveillance was used to determine the level of infestation and extent of spread before taking any action. No further live ants were found, but the owner of the yacht and the maintenance contractor were asked to contact MAF if they discovered any.

Wrongly declared Christmas decorations

During MAF border monitoring surveys, pine cones were found in Christmas decorations in a retail store

in Auckland. An investigation revealed that these were imported in October 2009 and the consignment had been declared as "metal candle holders" with an incorrect tariff code. The item description and the tariff code used had not triggered MAF inspection so the pine cones passed across the border without intervention. These were now deemed unauthorised goods, because clearance had been given on the basis of misleading information. In all, 494 candle holders (with pine cones) were recalled from various stores around New Zealand. Each unit had two candle holders and there were five pine cones in each candle holder. All were subsequently destroyed at the importer's expense.

New-to-New Zealand canker pathogen on grapevines

A new-to-New Zealand grapevine pathogen (*Neofusicoccum macroclavatum*) was reported to MAF, collected from a vineyard in the Nelson region by Lincoln University researchers. *N. macroclavatum* is a known pathogen of *Eucalyptus* species in Australia, but this was the first report of pathogenicity on grapevines. The sample was collected as part of a survey of nine nurseries in September 2008, during which 322 samples were collected. No obvious introduction pathway for this new detection was identified. Lincoln University researchers used molecular technologies to identify the pathogen because traditional methods were unsuitable. Their attempts at species identification based on morphology were hampered by difficulties in eliciting spore production, combined with the similarity of spore morphology between different members of the family Botryosphaeriaceae (these problems have also been reported by many other pathologists.) Since the sample came from a nursery that had been supplying plants to new vineyards for many years, it was anticipated that the species would already have become widespread in New Zealand. Lincoln University researchers completed pathogenicity tests on grapevine and *Eucalyptus* and found this isolate was pathogenic on both species. However, on grapevines it was no more pathogenic than the other Botryosphaeriaceae they had been working with, and which were already very widespread in New Zealand. In addition, previous studies by Lincoln University had found that these species were cosmopolitan on many different hosts. Production of spores from infected wood seems to be a common feature.

Considering the mode of spread (spores are dispersed by wind, irrigation water, rain, insects and human-assisted transmission/dispersal e.g. mechanically through pruning) and the fact that the infected materials had already been distributed widely, it was concluded that the pathogen was already widespread in New Zealand and the potential costs of eradication would far outweigh the benefits.

Suspect borer in screwdriver handle

A hardware store in the Waikato notified MAF of a borer-damaged screwdriver handle that came as part of a package consisting of cordless hedge trimmers and batteries. An intact auger beetle pupa (family Bostrichidae) was found inside the wooden handle and determined to be a species not known to be present in New Zealand. An Australian exporter had arranged the importation of this product into New Zealand and it had been shipped directly from China. The items had been classified as low risk because the wooden materials only constituted a small proportion of the original consignment and thus were not declared at the border. In November 2009, 152 units were imported and most had been sold by the time MAF was notified of the beetle find. The remaining stock, which were located at retail stores nationwide, were checked and no further borer infestation was found. Feedback has been provided to the Australian exporter, who has assured MAF that their product departments have been told to check all risk materials before export to New Zealand.

Live caterpillar in imported nectarine

A member of the public notified MAF of a live caterpillar found in a nectarine purchased from a supermarket in Auckland and imported from the United States. A sample was submitted to the IDC Plant Health and Environment Laboratory and identified as a species of leafroller belonging to the genus *Argyrotaenia*. This genus is not established in New Zealand, and there are seven *A.* species on the Unwanted Organisms Register. Post-border detections on fresh produce can be difficult to trace and recall, owing to rapid product turnover in the produce market and multiple consignments of the same produce being imported on a given day. In addition, members of the public may not detect the infestation until several days after purchase, meaning delays before MAF is notified.

MAF manages risks at the border by implementing the requirements of the import health standard. Such detections provide useful feedback to MAF about biosecurity risks associated with product import pathways.

Subterranean termites in Auckland

Subterranean termites, *Coptotermes acinaciformis*, were found on a residential property at Pukekohe in November 2010. A rapid risk assessment was made and a response initiated. A site inspection revealed live termite activity inside the house and in imported wooden railway sleepers near the driveway. Site interviews were conducted and treatment, ongoing monitoring and tracing investigations initiated. Delimiting survey operations are planned for early to mid February 2011.

Exotic ants associated with imported goods

Ants collected by a MAF Quarantine Inspector at an Auckland yacht builder's yard were identified as queens of *Nylanderia* (= *Paratrechina*) sp., a genus that is present in New Zealand but also includes some high-risk species that are not present. Worker ant samples, not queens, are required to distinguish between the different species of *Nylanderia*. In addition to manufacturing and reconditioning yachts, the yard is also a transitional facility. The ants were found near a recently devanned sea container and a number of hatch covers received at the yard from a yacht recently arrived from the Pacific Islands. FBA Consulting was contracted to visit the site to collect worker specimens and eradicate any colonies found. Many colonies of endemic ants were found but no *Nylanderia* specimens were detected except more queens on the hatch covers. FBA Consulting baited risk sites on the yacht, including the galley, mess, food storage areas and around the deck hatches. Surveillance results suggested it was unlikely the ants had originated from the yacht. Although the source was not identified, toxic baits laid in both the yard and the yacht were considered sufficient to eliminate any undetected risk ants. Staff at the yacht builder's yard will contact MAF if further ants are found.

***Pseudomonas syringae* pv. *papulans* ruled out**

A Plant and Food Research scientist reported a suspect *Pseudomonas syringae* pv *papulans* (Psp) (blister spot) infection on apples. The symptoms were first noticed by the orchardist in early December 2010. Samples were sent to the IDC for diagnostic testing. Apple samples exhibited small (1mm) red-purple spots, some with a lighter-coloured centre. The Plant Health and Environment Laboratory was able to rule out the presence of Psp in these samples.

Reference

Baranwal, VK, M. Ayra and J. Singh 2010. First report of two distinct badnaviruses associated with *Bougainvillea spectabilis*. *Journal of General Plant Pathology* 76(3): 236–39.

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