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NECTRIA FLUTE CANKER – A DISEASE ALMOST BEATEN?

When Nectria flute canker was first recognised in New Zealand on *Pinus radiata*, nothing was known about the disease. The causal agent, *Neonectria fuckeliana*, was known as a wound invading fungus of *Picea* and *Abies* trees growing in the Northern Hemisphere. The fungus was behaving radically differently on a new host in a new environment in a new part of the world (see *FH News* 180: 1). The pruned stub trial was one of the first trials set up to learn more about what factors influenced Nectria flute canker. It was established in 2003 to to determine the effect of season of pruning on Nectria disease development; to determine the effect of stub treatment with a protective fungicide, and also to determine how long freshly pruned stubs are susceptible to infection. Since 2005, the objective of the trial was broadened to examine the effect of stub size on fluting and to monitor the development of cankers or flutes over time.

Trees were low pruned in 2003 and medium pruned in 2005, both in summer and in winter. After pruning, individual stubs on three whorls per tree were assessed for fluting, initially every 4 months for the first two years after pruning, then twice a year for one year, and then annually until 2007. The final assessment was made in late March 2009. Over 20,000 individual stubs were assessed on each occasion.

After six years, the trial has delivered some significant results. Firstly, we found that pruning or inoculation with *N. fuckeliana* in winter resulted in a higher incidence of fluting than pruning or inoculation in summer. Secondly, we showed that fungicide applied to stubs was ineffective. However, more importantly, we found that the incidence of fluting is not stable over time. Fluting incidence increased after pruning for about a year, after which it slowly declined over three years, and remained stable after that. That trend was similar after first and second lift pruning operations.

The second significant finding of the trial was that fluting is positively related to stub size. In August 2004, 18 months after summer pruning and one year after winter pruning, fluting was rarely associated with branch stubs smaller than 30 mm in diameter. However, six years after first treatment, almost all the flutes that have persisted are associated with stubs larger than 60 mm.

In October 2007, as part of another study, 30 trees (10 each assessed as having minor, medium, or severe flutes present) were selected for dissection. Very little stained wood was seen on the cut discs except for those taken close to whorls with severe flutes. *N. fuckeliana* was isolated only from symptomatic wood, never from unstained wood near flutes. These results suggest that many trees with flutes that fully occlude with no outward signs of damage are left with no residual internal damage.

The trial has showed that treatment in winter results in a higher incidence of fluting, as does inoculation with *N. fuckeliana*. It also showed that many flutes disappear over time and the only trees to show persistent external damage are those with branch stubs over 60 mm in diameter.

From a management perspective, these are important results. Fluting assessments made within four years of pruning need to be treated with caution because it is likely that disease will be overestimated. It appears that

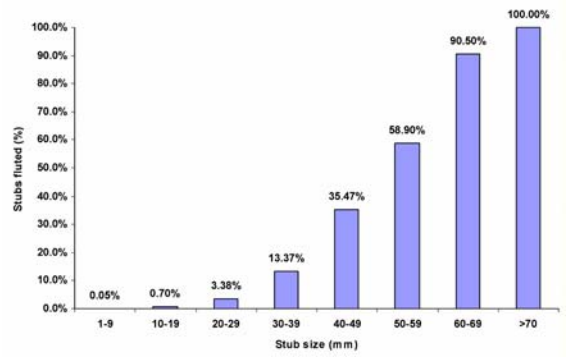

Figure 1 - Percentage of fluted stubs for all treatments, first lift whorls, in August 2004

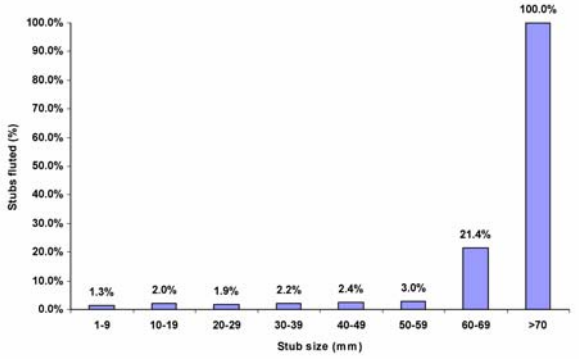

Figure 2 - Percentage of fluted stubs for all treatments, first lift whorls, in March 2009

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only large stubs are associated with disease. Limiting branch stub size to less than 60 mm and avoiding pruning operations in winter should significantly reduce levels of Nectria disease.

This applied research has provided the means to manage Nectria flute canker. The ecology research programme is making good progress in understanding the fundamental processes that produce the results seen in the pruned stub trial.

Lindsay Bulman

NEW BIOLOGICAL CONTROL AGENT FOR ACACIA TORTOISE BEETLE?

In January 2009 a wasp was detected parasitising the eggs of the *Acacia* tortoise beetle, *Dicranosterna semipunctata*, in Rotorua. This beetle is a moderate pest of Australian origin that feeds primarily on *Acacia menaloxylon* in New Zealand. It was first detected in Auckland in 1996 and is now known to occur in Northland, Auckland, Coromandel, Waikato, Taupo and the Bay of Plenty. It was recorded in Rotorua for the first time in 2006 and is now quite abundant in the area.

Previous attempts to use biological control to manage *D. semipunctata* have been relatively unsuccessful. In 1999 exploration in the beetle's native range identified two egg parasitoids, *Neopolycystus* sp. and *Enoggera polita*, but no attempt was made to introduce either.

In 2000, the egg parasitoid *Enoggera nassaui*, introduced in 1987 to control the *Eucalyptus* tortoise beetle, *Paropsis charybdis*, was considered as a potential biological control agent for *D. semipunctata*. Although *E. nassaui* readily parasitises *D. semipunctata* eggs in the laboratory, parasitism has not been detected in the field, despite hundreds of eggs being collected and assessed.

Initiatives have also been taken to establish the ladybird *Cleobora mellyi* in regions of the North Island where *D. semipunctata* occurs. The ladybird was initially introduced against *P. charybdis* but only established in Marlborough. It has since been observed feeding on *D. semipunctata* eggs and was recently reported to have established in the North Island following efforts to increase its distribution (*FH N*ews 193).

The new parasitoid found exploiting *D. semipunctata* is thought to be a species of *Neopolycystus*. It has been confirmed that it is not *N. insectifurax*, a species detected in New Zealand in 2002 that contributes to the control of *P. charybdis*. Neither is it thought to be the same *Neopolycystus* species that failed to establish following its introduction against *P. charybdis* from Perth in 1987. It does not appear that the new parasitoid attacks *P. charybdis*.

At this stage no attempt has been make to determine its distribution or abundance in New Zealand. In Rotorua it appears to be parasitising a large proportion of *D. semipunctata* eggs but it is not known if the parasitoid population will be able to survive the winter months. If it does, the combined effects of this parasitoid and *C. mellyi* may have the potential to finally provide effective biological control of *D. semipunctata.*

Thanks to John LaSalle (CSIRO) for his work towards identifying this parasitoid.

Tara Murray

NEW INSECT ON *ROBINIA*

The latest issue of Biosecurity (92, June 2009) recorded the presence of *Obolodiplosis robiniae* (Cecidomyiidae) in the New Zealand for the first time. Samples were collected during the course of high risk site surveillance in March and April this year.

The insect, which is native to eastern North America, forms leaf margin roll galls on *Robinia pseudoacacia.* The midge was reported from Japan and South Korea in 2002 and from Europe in 2003 where it is now quite widespread. In some parts of Europe damage can be quite severe; more than two galls per leaflet can result in premature leaf drop. For further information see:

http://hrcak.srce.hr/index.php?show=clanak&id_clanak_jezik=57330

John Bain

Above: Leaf margin galls on *Robinia*.

Left: *Robinia* gall midge larva.

(Photo: C Inglis, SPS Biosecurity)

NEW RECORDS

We are no longer publishing details of new records. For further information on results of MAFBNZ funded programmes see MAFBNZ's Biosecurity magazine (http://www.biosecurity.govt.nz/publications/biosecurity-magazine/index.htm) where information on new biosecurity identifications is regularly published.

John Bain

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