Distribution of *Pyrenophora tritici-repentis*, the causal fungus of tan spot, in the South Island

S.K. Weith[1], H.J. Ridgway[1], I.C. Harvey[2], R.A. Craigie[3] and E.E. Jones[1]

[1]*Faculty of Agriculture and Life Sciences, Lincoln University, Lincoln, New Zealand*
[2]*PLANTwise Services Ltd, PO Box 69181, Lincoln 7640, New Zealand*
[3]*Foundation for Arable Research, P.O. Box 23133, Templeton 8445, New Zealand*
Corresponding author: Sean.Weith@lincolnuni.ac.nz

Tan spot of wheat is caused by the fungus *Pyrenophora tritici-repentis* (*Ptr*) with reported incidence in New Zealand increasing in recent years. Lesions characteristic of *Ptr* infection, being oval tan spots surrounded by a chlorotic halo, were observed on wheat leaves in 15 different wheat paddocks throughout the South Island in the 2013-14 season. Fungal isolates recovered from these lesions on potato dextrose agar produced grey-green fluffy mycelium characteristic of *Ptr*. Species-specific PCR using published primers (PtrUniqueF2/ PtrUniqueR2) generated a PCR product of 490 bp, diagnostic of *Ptr*. Sequencing of the rDNA and βtubulin gene regions confirmed the identification. *Ptr* was found to be widely distributed throughout the wheat growing areas in the South Island from Southland to North Canterbury. A post-harvest farmer questionnaire was also undertaken. Questionnaire answers revealed that continuous sowing of untreated wheat seed, conservative tillage and low rate applications of fungicides may have exacerbated the severity of tan spot outbreaks during the 2013-14 season. Further work to identify susceptible wheat cultivars and sensitivity to fungicides is currently under way.

Developing smart aerosol technologies for insect control

Z.J. Lennon, A.R. Harper, D.M. Suckling and A.M. El-Sayed

Plant & Food Research, Gerald St, Lincoln 7608, New Zealand
Corresponding author: ashraf.el-sayed@plantandfood.co.nz

Novel technologies for controlling invasive pest insects could benefit New Zealand environmentally and economically. Current technologies could be improved by reducing non-target impacts and running costs, and improving delivery to target populations. A novel aerosol technology currently in development is presented for control of pest insects. The data are from two preliminary experiments investigating the potential use of this technology to control the invasive social wasp *Vespula vulgaris*. In experiment 1, the quantity of the juvenile hormone analogue methoprene delivered from a prototype sprayer to dead mounted wasps at various distances was measured. Up to ~200 µg of methoprene was able to be delivered from 40 cm away. In experiment 2, *V. vulgaris* larvae were fed methoprene in single varying-strength doses under laboratory conditions. The proportion of larvae pupated after 1 week was measured. It was found that 0.75, 1.5 and 3 µg methoprene all successfully reduced pupation. These promising early results indicate smart aerosol technology may be a viable option for control of pest insects and warrants further development.

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