



CLIMA Media Release

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SUPER MODEL ON SHOW ON GREEN BRIDGE

This growing season the risk of reduced crop yields due to diseases generated over summer from the green bridge will be restricted to the far south and south-eastern grainbelt, according to an innovative WA ‘greenness’ forecasting model.

Centre for Legumes in Mediterranean Agriculture (CLIMA) researcher, Tim Maling, has developed a new predictive framework to forecast bean yellow mosaic virus (BYMV) and aphids in lupin crops, which will mean greater productivity and lower costs for growers.

“Usually about 700,000 hectares of narrow leaf lupin are sown in the WA grainbelt, with potential for more than a million hectares,” Mr Maling said.

“However, aphids and the viruses they transmit can dramatically slash lupin yields, especially when they arrive early in the season,” he said.

Mr Maling said his ‘greenness’ model utilised meteorological data, before and during the growing season, to estimate pasture capacity for aphid populations and determined a greenness level using daily temperature, rainfall and evaporation data.

Aphid-borne, non-persistent BYMV is not seed transmitted in lupins, so crop infection relies on BYMV-infected pasture being adjacent to the lupin paddock and an aphid population sufficient to start spreading the infection early.

The modeling framework, developed through an Australian Research Council (ARC) industry linkage project and supported by the Department of Agriculture and Food WA (DAFWA), can automatically retrieve data, facilitating higher resolution and quicker forecasting.

“This will greatly improve researcher and grower understanding of what drives virus epidemics and aphid outbreaks in WA in any season,” Mr Maling said.

“This year, high WA greenness levels in mid-April are mainly restricted to the southern and south-eastern grainbelt, although a small patch of greenness can be seen in the north-east.

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“These areas are where green bridge mediated diseases will be most prevalent and growers should regularly monitor any green bridge near their crops to assess infection risk and the need for management strategies,” he said.

The model framework has also produced maps for DAFWA’s cucumber mosaic virus (CMV) website, which provides an annual forecast for CMV and aphid risk in WA lupins based on different sowing dates and seed infection levels.

Mr Maling has automated a CMV model originally developed by CLIMA researcher, Dr Debbie Thackray with funding from the Grains Research and Development Corporation, so that it picks up climate data for the season to date, combines it with archived data for the rest of the year and delivers maps of CMV risk for worst, best and medium case scenarios.

“The good news for the 2007 growing season is that throughout the grainbelt, the CMV model shows low risk of early aphid arrival and subsequent lupin yield losses from crops sown with low seed infection levels of 0.2% or 0.5%,” Mr Maling said.

Mr Maling’s project supervisor, DAFWA Plant Virologist Dr Roger Jones, encouraged growers to minimize the risk of infection by having representative samples of lupin seed tested at AGWEST Plant Laboratories at South Perth.

“Most growers are likely to plant seed with less than 0.5 per cent infection, but in some areas they need to be especially vigilant, particularly the south-coast shires, where the risk of yield loss is high, with a greater than 0.5 per cent seed infection rate,” he said.

Management options are described on the website www.agric.wa.gov.au/cropdiseases

Image caption: Centre for Legumes in Mediterranean Agriculture researcher, Tim Maling with the new 'greenness' framework to forecast bean yellow mosaic virus and aphids in lupin crops.

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Authorised by CLIMA and issued on its behalf by
Brendon Cant & Associates, Tel 08 9384 1122

MEDIA CONTACTS:

Tim Maling, Tel 08 9368 3667
Dr Roger Jones, Tel 08 9368 3269