

Impact of anthracnose on narrow leafed lupin varieties and advanced breeding lines

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Purpose:	To assess comparative effect of anthracnose on yield and seed infection in a range of varieties and advanced lupin breeding lines.
Location:	Badgingarra Research Station
GSR:	300mm

BACKGROUND

Previous field trial results show that Tanjil has a yield advantage over other varieties in the presence of anthracnose, however Tanjil has lower tolerance of Metribuzin than Mandelup and so is unsuitable in some areas due to requirement for use of this herbicide.

A variety combining high level anthracnose resistance and metribuzin tolerance would be beneficial for growers in the northern high rainfall cropping zone where anthracnose is most damaging. The advanced lines in this trial have both of these characteristics.

The recently released variety, Jenabillup, has improved tolerance of BYMV/ black pod syndrome over Mandelup and Tanjil, however it is moderately susceptible to anthracnose. BYMV can be a constraint to lupin production in higher rainfall areas of the West Midlands, this variety has been included to compare with varieties with better anthracnose resistance.

TRIAL DESIGN

Plot size: 20m single cone seeder width plots with 2m bare ground buffer between plots

Replicates: 4

Crop details: Seeded at 100 kg/ha on 11th May 2010

Fertilizer: **At seeding:** 100kg/ha Superphos plus 1L/ha Irrigator Extend

Experimental treatments:

Varieties: Tanjil (R), Mandelup (MR), Jenabillup (MS), WALAN2289 (MR[#]), WALAN2328 (R[#]), WALAN2334 (MS-MR[#]), WALAN2337 (R[#]), WALAN2400 (MR[#]). (# Provisional resistance ranking)

Anthracnose infection: Seven infected Kiev Mutant seedlings transplanted into each plot 10th June

RESULTS & DISCUSSION

The trial was sown into dry soil on the 11th May. This trial was indicative of many lupin crops within the West Midlands region in 2010, with establishment and weed control issues. Establishment was inconsistent across the trial site with seasonal conditions, non-wetting soil and rhizoctonia root rot contributing to uneven plant numbers and poor growth within some plots. Herbicide management of weeds, particularly ryegrass, was less effective than expected, resulting in high weed burdens, especially in plots with poor lupin establishment.

Anthracnose was introduced into plots 4 weeks after sowing but warm dry weather following introduction of infection and long dry spells during the growing season reduced disease development.

Disease assessments at crop maturity indicated that despite high levels of inoculum being introduced only low levels of disease were present within the trial and differences between varieties were not statistically significant. Approximately 10% of the moderately susceptible Jenabillup plants suffered stem infection, the resistant variety Tanjil and resistant breeding lines had between 2-4% of plants with stem infection. Pod infection levels were low across the trial due to dry weather during podding.

Due to uneven establishment, variable soil moisture, root disease and weed burden, individual plot yields varied from 0.5 t/ha to 2 t/ha across the site (average 1.4 t/ha), however neither variety nor anthracnose infection significantly affected yield.

In seasons with good rainfall, anthracnose can be a yield constraint for lupin production in the high-medium rainfall regions of the northern agricultural region (particularly in areas with abundant blue lupins); the anthracnose resistance in current advanced breeding lines will reduce disease development and yield loss.

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