

Evaluation of pulse crop options for Nyngan

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Background: Crop intensification is steadily occurring in the Nyngan district. Improved lucerne-based pastures have traditionally be used as the means to reduce pest, disease and weed incidence and restore soil fertility after a period of cropping with cereals. With a decline in livestock numbers due to low profitability some farmers are cropping up to 40% of their land. Profitable alternatives to wheat need to be found that are adapted to the local climatic environment. Experience in the East indicate that pulses can not only be profitable but provide a substantial amount of nitrogen for subsequent cereal crops. There is a need to evaluate the pulse crop options suitable for the district not only in terms of their profitability but in terms of their contribution to the performance of subsequent wheat crops.

Methods: A range of pulses were sown in a trial (RBD with 3 replications) on the 25 April and 25 May. A Shearer cone seeder was used fitted with super seeder points with a 18 cm row spacing. The early sown trial had 10kg/ha of P applied as Trifos, whereas the late sown trial had 10kg/ha applied as single Superphosphate. The plot size was 6m by 44m and Verdict was used for the control of ryegrass and wild oats.

Table 1. Evaluation of pulse options for Nyngan.

Crop	Variety	Sowing Rate (kg/ha)	Target population (p/m ²)	Observed population (p/m ²)
25th April sowing				
Faba beans	Icarus	160	30	33
Albus Lupins	Ultra	140	40	53
Vetch	Blanchfleur	10	60	23
Angustifolius Lupins	Myallie	85	40	77
25th May sowing				
Fieldpeas	Dundale	100	35	47
Fieldpeas	Bohatyr	100	50	63
Fieldpeas	Excell	100	50	51
Lentils	Digger	65	100	123
Chickpeas	Amethyst	100	35	57

Results and Discussion: All crops emerged and established well in the early stages. Lentils and fieldpeas were very quick and uniform. Lupin emergence was staggered but were eventually very even. Narrow leafed lupins were severely damaged in all replicates by hares, which removed the central spike of every flowering plant. All grain yield was from lateral growth. Hares also damage the front replicates plots from chickpea and lentils so these were removed from the analysis. Albus Lupins, Faba beans and field peas were unaffected. Heliothis pressure was very light and no insecticide was necessary. Albus Lupins and field peas produced substantial grain yields and suppressed weed growth. Faba beans suffered from a moderate level of chocolate spot. Vetch grew very well from late winter onwards and smothered any late weeds. Vetch was sprayed out with Roundup at early pod stage.

Lupin time of sowing demonstration at Wirrinya and Gunning Gap

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Background: Lupins growers are being encouraged to sow lupins by the end of April to achieve best yields. However, some growers feel this is too early, as the plants can grow very vegetative making them difficult to harvest and producing little yield benefit. Trials were conducted in 1999 at the Gunning Gap and Wirrinya CWFS PWA Regional Sites to further investigate the effects of sowing date on the yield of Lupins.

Methods: Good rains in late March and early April provided an ideal opportunity to conduct lupin time of sowing trials. The Forbes TAFE John Shearer combine was used to sow the trials with three sowing dates. The seeder was fitted with small baker boots on 6" row spacings.

Wirrinya

The Wirrinya trial site was direct drilled into durum wheat stubble on the 14th April. Wirrinya did not receive nearly as much rain as Gunning Gap in March/April, with the demonstration being sown into very marginal moisture conditions. Emergence was very poor at Wirrinya. No significant rain fell at Wirrinya again until the first week of June. The second sowing at Wirrinya was sown dry on the 7th May. The third sowing was sown on 2nd June, following a small amount of rain. All of the Lupin plots at Wirrinya failed. Once emerged they never develop into healthy plants. It is suspected that the small baker boots do not provide enough tilth under the seed to allow adequate root development. Similar problems were experienced with the canola trials.

Gunning Gap

The Gunning Gap trial was sown into a well-prepared seedbed using the same machine as used at Wirrinya. Both types of lupins were sown at about 130 kg/ha with 250 kg/ha single super. The demonstration was sown with 2 randomized strips. All of the sowing dates emerged well and developed into strong healthy plants. The first sowing at Gunning Gap was sown into ideal moisture on the 15th of April. Emergence was excellent. The second sowing occurred on the 5th May into slightly marginal moisture. However, the narrow points allowed minimal soil disturbance and moisture loss, with an excellent emergence being the result. No rain was received on the trial site until the first week of June. The third sowing was then sown into good moisture and had an adequate emergence. A different seed source was used for the third sowing (did not initially purchase enough seed to do all the trials) and it did not appear to emerge as well. Weeds were controlled with a 2 l/ha application of Trifluralin and 2 l/ha of Simazine prior to sowing, early post emergence application of 0.5 l/ha Fusilade, late post emergence application of a mixture of 1 L/ha Simazine and 0.2 l/ha Brodal and preharvest desiccation with 2 l/ha Roundup CT extra.

Rainfall (mm)

Location	Mar-99	Apr-99	May-99	Jun-99	Jul-99	Aug-99	Sep-99	Oct-99	Nov-99	Total
Wirrinya	41	Nil	7	52.5	42	72.5	30.7	107	22	374.7
Gunning Gap	142	24	7	26	49	44	26	128	28	474

Results: Harvest results found no yield advantage from the April sowing at Gunning gap. The Wirrinya trial was not harvested. The early May sowing gave the highest yield for the broadleaf Albus Lupins, while the early May and early June sowing's gave equal highest yield results for the narrow leaf Angustifolius lupins.

Table 1. *Demonstration of effects of time of sowing on lupin yields*

Date sown	Albus (Var. Wonga) Yield (t/ha)	Angustifolius (var. Ultra)
15/4/99	2.09	1.96
5/5/99	2.78	2.44
3/6/99	2.30	2.44
Average	2.39	2.28

It should be noted that a severe windstorm on the 18 October passed over the trial site, flattening the early sown plots, which had grown taller and more bulky. This made it very difficult to harvest the early sown plots, and much grain appeared to be lost trying to pick up the lodged lupins. Windrowing may have reduced these losses. The early sown plots appeared to have a heavier pod load and a higher yield potential.

The trial site will be sown back to wheat next year and the plots harvested to assess the effect of lupin sowing date on the yield of the following wheat crop. The early sowing date, with its large dry matter production and lower grain yield, is expected to leave more N behind for the following crops. This will be put to the test this season (2000/2001).

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