7.8 DETERMINING THE OPTIMUM SOWING TIME AND SOWING RATE OF PULSES IN THE HRZ (YALLA-Y-POORA).

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Location: Yalla-Y-Poora trial site.

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GSR: (Apr – Nov) 359 mm

Summary:
Reliable and profitable pulse production for the south west HRZ is critical for the success of farming systems in this region. Suitable varieties are now available, but we do not fully understand the best agronomic package. Research and demonstrations presented here primarily indicates that timely sowing is critical for optimum yields. From 2005, delayed sowing in field peas, faba bean and lupins resulted in yield losses between 10% and 60%. We were unable to assess beans and lupins at even earlier sowings because of the late season break.

Background:
Pulses are a vital part of sustainable and profitable farming systems. They provide a vital break to the disease cycle, weed control options, contribute 'free nitrogen' and can be highly profitable. In the higher rainfall zones of Victoria there has been mixed success with producing pulses. They are often seen as a relatively high risk option.

Within most pulse species (faba beans, field peas, and lupins) we now have sufficient disease resistance and agronomic adaptation for reliable and profitable production in the HRZ, but we are yet to fully understand the best agronomic package to optimise yields and minimises risks.

These trials are part of a larger HRZ pulse group demonstration program which also looks at weed management and fertilizer options.

Objectives:
These trials evaluated the effects sowing time and sowing rate on grain yield of field pea, faba bean, lupin and chickpea at Yalla-Y-Poora.

Methodology:

Crops, Varieties, Sowing Times and Sowing rate small plot trials

- Field peas: Kaspa and Parafield sown July 4th and August 17th at 35, 55 and 75 plants/m^2.
- Faba beans: Farah and Nura sown June 1st and July 4th at 15, 25 and 35 plants/m^2.
- Lupins: Mandelup and Jindalee sown June 1st and July 4th at 35, 55 and 75 plants/m^2. Two albus (white) lupin varieties Luxor and Rosetta were also sown compared at each sowing date at 40 plants/m^2 only.
- Chickpeas: Howzat and Genesis 090 sown July 4th and August 17th at 40 plants/m^2.

All trials were small plots (12.5m X 1.45m) set up as completely randomized designs with 4 replicates. Plots were not on raised beds.

Site Management
All pulses were sown with 100kg/ha MAP. All pulse seed was double inoculated with peat innoculant. All treatments had 2L/ha SpraySeed and 2L/ha Triflur X presowing and IBS.

- Beans and Lupins had 1.1kg/ha Gesatop, 250ml/ha Dual Gold and 200ml/Supracide PSPE.
- Peas and Chickpeas had 200ml/ha Supracide and 250ml/ha Dual Gold applied PSPE.
- Due to TT canola stubble, 100g/ha Spinnaker was applied PSPE to beans, at 5 node in Field Peas, and 150ml/ha Brodal in Lupins at 4-5 node.
- All early sown plots were sprayed with 300ml/ha Select + 500mL/100L Uptake to pick up any ryegrass escapes.
- Beans had 2 fungicide sprays of Dithane - one at grass spray, and one at canopy closure.

Results and Discussion

Generally all pulses grew well throughout the season, with no major agronomic issues. There was some slight herbicide burning on bean and lupin young leaves from Uptake oil additives to Select grass herbicide used. All pulses nodulated, but results from the DPI inoculant trials indicate we may be able to improve nodulation in future. The earlier sowing seemed to allow greater earlier growth in the beans and lupins.

Field peas

Good yields were recorded for field peas in 2005. Kaspa was the highest yielding variety when sown early, but performed similar to Parafield at the later sowing date (Table 7-15). There was no response to sowing rate for either variety.

This trial highlighted the potential of field peas in the south west and the need for timely sowing, particularly in a later flowering variety such as Kaspa. These results are similar to that which has been achieved at Hamilton in similar trials in 2004 and 2005. No major issues with harvesting were experienced, due to excellent biomass. Dry and hot conditions late in the season meant that the field peas did not reach the potential yields in excess of 4t/ha, which would make them a very profitable option for the HRZ. However, yields of 3t/ha in a 'less than optimal season' indicates they can be a reliable option for HRZ growers.

Table 7-15: Grain Yields (T/ha) Of Field Peas At Yalla-Y-Poora In 2005 At Two Sowing Dates

Sowing Date	Kaspa	Parafield
4th July	3.03	2.66
17th August	2.37	2.40
Mean	2.85	2.38

$LSD_{(comparison\ of\ variety\ means\ P<0.05)} = 0.22$

Large scale demonstration pea yield: 2.5t/ha, sown 15th August.

Table 7-16: Interaction Between Sowing Date And Plant Density On The Grain Yield (T/ha) Of Faba Beans At Yalla-Y-Poora Sown At Two Dates In 2005

Sowing Date	**15**	**25**	**35**
June 1st	1.70	1.99	2.17
July 4th	1.25	1.15	1.94

$LSD_{(P<0.05)} = 0.36$

Large scale demonstration bean yields: Farah 2.33t/ha, Aquadulce 2.36t/ha, sown 23rd May. These beans were taller than the later sown small plot trial beans. The dry sowing appeared beneficial.

Most weeds were successfully controlled, with only major issues being scotch thistle which Spinnaker and Balance (large scale plots only) seemed effective on, when applied pre-emergent or when small. Disease across all plots was minimal, which was probably due to lower seasonal rainfall, lower disease pressure and possibly wider row spacings on Beans and Lupins.

Faba Beans

Grain yields for faba beans were relatively low in 2005, perhaps a consequence of later than desirable sowing dates. There were some significant difficulties harvesting as the plants had set pods very close to the ground, which were unable to be picked up by the plot harvester. Farah produced the highest yields averaging 1.97 t/ha across treatments compared with 1.54 t/ha for Nura. Both varieties responded similarly to sowing date and plant density. When sown June 1st there was a slight increase in yield with increased plant density, however when sown 17th July yields were significant reduced with 15 and 25 plants/m^2 (Table 7-16).

Faba beans continue to be a good option for the HRZ, particularly now with varieties that offer good resistance to ascochyta, chocolate spot and rust. In long term trials Nura's yields are similar to Fiesta VF and Farah. In SA, however highest relative yields are achieved when sown early. Nura is shorter than Fiesta VF and Farah and is less likely to lodge, however its bottom pods are closer to the ground. It has good seed appearance, light buff in colour, with minimal seed staining and discolouration. Its major advantage to growers is a likely reduction in fungicide sprays, with ascochyta and rust protection only required in high risk situations. Farah is similar agronomically to FiestaVF, but will require less fungicide applications to control ascochyta disease and has seed more uniform in size and colour.

Cercospora may need controlling in all varieties. For Farah, growers are urged to focus on foliar chocolate spot control at early flowering, and chocolate spot control and rust protection where required at late flowering-pod fill. Ascochyta protection is only needed in high risk situations. Herbicide tolerance trials on alkaline high pH soils in SA have indicated Nura is more tolerant of high rates of simazine than Fiesta and Farah, but less tolerant of imazethapyr.

Lupins

Bird damage retarded some lupins and delayed flowering. Lupin yields of all varieties were reduced by over 50% when sowing was delayed in 2005 (Table 3). Previously it has been suggested that Jindalee would be best suited to southern areas with a long, cool growing season due to its later flowering. Early flowering varieties like Mandelup can under similar sowing conditions produce an excessive bulk of vegetative growth, often with poor pod set and yield.

Data from this trial shows that in seasons like 2005 with a late break and a relatively dry, hot finish, varieties such as Mandelup perform equally as well as Jindalee. The reduced yields from delayed sowing is a result of less vigorous and competitive early growth, and reduced vegetative bulk.

Table 3. Grain yields (t/ha) of lupins at Yalla-Y-Poora sown at two dates in 2005

Sowing Date	Jindalee	Mandelup	Luxor	Rosetta	Mean
1st June	1.33	1.42	1.18	1.03	1.24
4th July	0.58	0.41	0.42	0.53	0.49

$LSD_{(P<0.05)} = 0.21$

Large scale demonstration lupin yields: Jindalee 2.10t/ha, Merrit 1.98t/ha, sown 23rd May
These lupins were more vigorous early, and taller than the later sown small plot lupins.
The dry sowing appeared beneficial.

Chickpeas

The chickpea varieties Genesis™ 090 and Howzat produced yields of 1.21 and 1.01 t/ha, respectively, in the small plot trials in 2005. The Genesis series of chickpeas are resistant to ascochyta blight, meaning growers can confidently produce profitable crops with only 1 fungicide application.

In the colder high rainfall southern regions, poor pod set and grain fill is a problem, as chickpeas require average daily temperatures around 14°C to reliably set and fill pods. The national breeding program is addressing this problem and varieties with improved cold tolerance will be available in the future.

Large scale demonstration chickpea yield: Genesis 090 1.34t/ha, sown 15th August.