

## 2.6 Pulse

### 2.6.1 Pulse variety trial - Inverleigh, Vic

#### Location:

Inverleigh Research Site.

#### Authors:

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#### Funding:

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#### Researchers/Authors:

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#### Acknowledgements:

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#### Background/Aim:

Pulses provide choice when considering alternative breaks to canola in the crop rotation. In the higher rainfall zone, pulses have shown improved yield potentials as they become more commonly adopted on farm. Variety choice, best management practices and optimum sowing times are the most critical decisions needed when considering pulse. Early sown pulses often out yield their later sown crops.

The benefits that pulses bring to the crop rotation include providing a break crop for cereal disease. They also provide an opportunity for rotational weed control and a chance to use alternative herbicides and integrated weed management principles. Pulses can also be used to improve soils through nitrogen fixation and green mulching. On top of all this, pulses can be a cash crop when prices allow.

#### Paddock history:

2006: Barley, 2007: Wheat

#### Soil type:

Sandy clay loam

#### Soil Nutrients:

N = 17mg/kg (0-10cm) + 8.3mg/kg (10-60cm),  
P = 54mg/kg (Colwell),  
K = 0.45 Meq/100g,  
S = 11mg/kg,  
pH (CaCl<sub>2</sub>) = 4.7

#### Take home messages:

- The early maturing pea variety Celine was the highest yielding pulse when compared to beans, chickpeas and lentils.
- Celine peas yielded 2.54 t/ha significantly ( $p=0.01$ ) higher than 1.64 t/ha for the variety Kaska. In 2006 at the Inverleigh trial site, peas failed with an average yield of 0.36 t/ha, where as in 2007, an average yield of 3.14 t/ha was achieved.
- Bean yield responses in 2008 were reasonable for the dry finish. Farah beans yielded 1.8 t/ha significantly ( $p=0.01$ ) higher than Nura beans which yielded 1.7 t/ha. In the past two years beans have yielded an average of 2.25 t/ha at the Inverleigh trial site.
- Both Chickpeas and lentils failed due to the dry season, with only minor rainfall events occurring during their growing season.

#### Trial information:

Trial design consisted of a replicated block design using 4 replicates across 6 rows per variety. Two varieties were alternated across the block of 12 rows. Plot lengths were 12 metres long and 1.45m wide. Rainfall was highly variable throughout the season, with a wet winter, then a very dry Spring. Late rainfall in mid December did not contribute to the yield result of this trial.

#### Rainfall:

Avg. Annual: 483.3mm, Sheoaks 1991-2008  
Avg. G.S.R.: 390.4mm, Sheoaks 1991-2008  
2008 Total: 401.4mm, Inverleigh Research Site  
2008 G.S.R.: April – November = 260.2mm<sup>1</sup>  
**(Inverleigh Research Site; 130mm below average)**

<sup>1</sup> Yield Potential: 1/3 of Dec (70mm), Jan (18mm) & Feb (22.4mm) with monthly totals above 20mm + ½ March (23.6mm) rainfall when total above 20mm + ((April – November rainfall) – 90mm\*) x 20kg/mm/ha. In total December-March adjusted rainfall to stored soil water = 42.5mm, plus April-November = 260.2mm, minus evaporation factor\* =>212.7. Therefore, for Inverleigh, the pulse variety trial water limited yield should be 2.55t/ha, or 212.7mm x 12kg/mm/ha.

#### Treatment list:

Two current varieties of field peas and two current varieties of beans were trialed at the Inverleigh site. Measurements included yield comparison of the varieties.

**Sowing rate:** Seeding rate based on seed size with a desire to establish 25 plants/m<sup>2</sup> for the beans and 40 plants/m<sup>2</sup> for the field peas.

**Tillage type:** This trial was seeded with the SFS cone seeder using 2.5cm knifepoints.

#### Sowing date:

28<sup>th</sup> April 2008 for the beans and 12<sup>th</sup> July 2008 for the peas.

#### Fertiliser:

100kg/ha Superfect at sowing

#### Herbicides:

- 28/4/08 RoundUp PowerMax @ 1.50L/ha + Triflur 480@ 1.50L/ha IBS.
- 29/4/08 Diuron @ 0.50L/ha + Simazine 2.0L/ha PSPE.
- 13/7/08 Brodal @ 0.08L/ha PSPE
- 4/8/08 Select @ 0.30L/ha + Hasten @ 1%
- 14/10/08 Brodal @ 0.20L/ha + MCPA500 @ 0.20L/ha (Peas only)

#### Harvest:

2<sup>nd</sup> December 2008 Beans  
2<sup>nd</sup> February 2008 Peas

#### Diseases:

There was negligible disease development in pulses at the Inverleigh trial site for the 2008 season.

**Results and discussion:**

Farah beans were determined to have a significantly ( $p=0.01$ ) higher yield (1.8t/ha) when compared to Nura which yielded 1.7 t/ha. In recent years Farah has achieved yields of 2.38 t/ha (2007, Inverleigh) and 1.76 t/ha (2006, Inverleigh). Nura has recently yielded 2.88 t/ha (2007, Inverleigh) and 2.02 t/ha (2006, Inverleigh). It would be expected that Nura may have yielded higher in the dry 2008 season.

Nura is a small seeded, early to mid maturity faba bean. It is considered to have the best foliar disease package of all current varieties. Nura beans are suitable for both human and livestock markets. Farah beans are a more versatile bean for end users and are higher yielding than Fiesta variety.

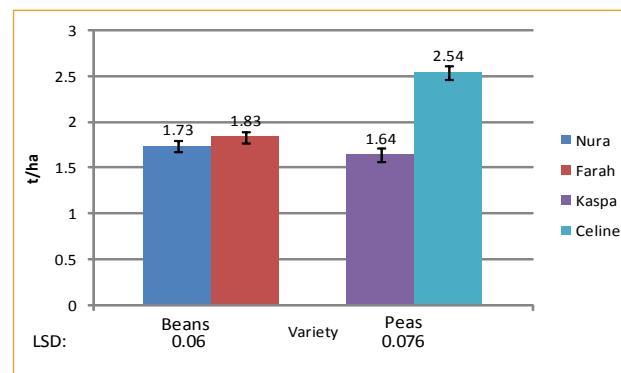
Celine peas were determined to have a significantly ( $p=0.01$ ) higher yield (2.54 t/ha) when compared to the Kasper peas which yielded 1.64 t/ha. In recent years Kasper has achieved yields of 3.14 t/ha (2007, Mininera) and 0.26 t/ha (2006, Inverleigh). Celine achieved 0.46 t/ha (2006, Inverleigh) and was not included in 2007 trials.

Celine peas are an early maturing semi-leafless variety, grown for both human consumption and stockfeed markets. The maturity timing of the varieties may have contributed to the significant difference observed in the yield, as the Kasper variety is a late flowering variety. Kasper is a high yielding variety, comparable to Celine and demonstrates good resistance to downy mildew, black spot, lodging and shatter damage.

The trend that was observed in the 2008 pulse trials was that the early maturing peas significantly out yielded the later maturing Kasper varieties. This was indicative of the wet winter and dry spring. For the beans, being sown early, then a warm and dry finish, there was only 100kg/ha difference in yield. In past trials sowing date has been identified as an important factor when optimizing yield potential.

**Conclusion:**

The Inverleigh pulse trial of 2008 found that Farah beans were the highest yielding beans with 1.8 t/ha compared to 1.7 t/ha in Nura. Celine peas were the highest yielding with 2.54 t/ha compared to 1.64 t/ha. The 2008 season found that the early maturing variety Celine peas were the highest yielding pulse. Both the chickpeas and lentils failed at the Inverleigh site, not able to register yield as the crop was too short to harvest; an indication of the dry finish to the season at the trial site.



**Figure 1:** Inverleigh pulse trial yields for beans and peas