

## Legume varieties in the Victorian HRZ

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### Key messages

- There were no significant differences in yield between field pea or lupin varieties in 2014
- The extremely dry spring may have reduced varietal differences in the trials
- Pea varieties yielded 2.5 t/ha to 2.8 t/ha while lupin varieties yielded 1.7 t/ha to 2.5 t/ha

### Aim

To evaluate the performance of new and existing field pea and lupin varieties in the HRZ at our Hamilton and Westmere sites.

### Introduction

Southern Farming Systems is an organisation which is attuned to the needs of its growers. In recent years, there has been significant interest from farmers in the high rainfall zone regarding the possibility of finding a suitable pulse species and variety to include in rotations. The research outlined below aims to identify high performing pea and lupin varieties in the HRZ, and assess their performance at varying field sites (Hamilton and Westmere).

In south western Victoria, field peas are considered a lower risk pulse crop, but the uptake and area sown to the crops is still quite low, due to the risk of low profitability brought about by lack of suitable varieties for the HRZ. However, due to recent interest in pulses, new releases from seed companies are beginning to be tailored to HRZ conditions, and it is hoped that these cultivars will perform well, and provide growers with that elusive economically rewarding pulse option. Therefore, SFS seeks to identify the best performing existing and newly developed varieties of both species, at a range of trial sites across the western districts.

### Method

The lupin trial was sown on 22 May at Westmere, while the pea trials were sown on 4–5 June in Hamilton and Westmere using the SFS cone seeder. Agronomic inputs were applied as per industry standard to ensure weeds, disease and nutrition were not influencing variables.

### Field peas

Varieties sown at our Westmere and Hamilton sites were Kaspera (with 1x inoculant rate at both sites and 2x inoculant rate at Westmere only), Oura, OZP1101, Pearl, Coogee, Wharton.

Table 1. Agronomic and management details for Hamilton and Westmere sites (field peas).

|                      | Hamilton   | Westmere   |
|----------------------|--|--|
| <b>Sowing date</b>   | 5 June 2014  | 4 June 2014  |
| <b>Previous crop</b> | Pasture  | Barley   |
| <b>Row spacing</b>   | 200 mm   | 200 mm   |
| <b>Sowing depth</b>  | 50 mm  | 50 mm  |
| <b>Fertiliser</b>    | 100 kg/ha MAP IBS*   | 60 kg/ha MAP IBS*  |
| <b>Inoculant</b>     | Granular group E   | Granular group E   |
| <b>Plant density</b> | 45 pl/m <sup>2</sup>   | 45 pl/m <sup>2</sup>   |
| <b>Fungicide</b>     | 3 x Chlorothalomid<br>1 x Prosaro<br>1x Carbendazim                              |  |
| <b>Herbicide</b>     | Treflan, Glyphosate, Hammer, Metribuzin 750, Hasten, Brodal, MCPA 720, MCPA 500. | Glyphosate, Hasten, Treflan, Metribuzin 750, Gramoxone, Uptake, Reglone, BS1000. |
| <b>Harvest date</b>  | 27 November 2014   | 27 November 2014   |

\* Incorporated by sowing

### Lupins

Varieties sown at out Westmere trial site were Barloc, Gunyindi, Mandelup, Jenabillup, Jindalee, Wonga (narrow-leaved lupins), Luxor, Rosetta (Albus lupins).

Table 2. Agronomic and management details for the Westmere trail site (lupins).

|                      | Westmere   |
|----------------------|--|
| <b>Sowing date</b>   | 22 May 2014  |
| <b>Previous crop</b> | Barley   |
| <b>Row spacing</b>   | 200 mm   |
| <b>Sowing depth</b>  | 25-30 mm   |
| <b>Fertiliser</b>    | 60 kg/ha MAP IBS*  |
| <b>Inoculant</b>     | Granular group G   |
| <b>Plant density</b> | 45 pl/m <sup>2</sup>   |
| <b>Herbicide</b>     | Treflan, Metribuzin, Gramoxone, Hasten, Brodal, Select 240, Supercharge, Factor, Reglone, BS1000 |
| <b>Harvest date</b>  | 27 November 2014   |

\* Incorporated by sowing

### Results

#### Field peas

Table 3. Field pea yields at Westmere and Hamilton in 2014.

| Variety              | Yield (t/ha) |           |
|----------------------|--------------|-----------|
|                      | Westmere     | Hamilton  |
| Pearl                | 2.82         | 3.16      |
| Wharton              | 2.71         | 3.04      |
| OZP 1101             | 2.69         | 2.92      |
| Kaspa                | 2.76         | 2.86      |
| Oura                 | 2.76         | 2.85      |
| Coogee               | 2.62         | 2.72      |
| Kaspa (2x inoculant) | 2.40         | -         |
| <b>LSD(p=0.05)</b>   | <b>NS</b>    | <b>NS</b> |

NS = not significant

### Lupins

Table 4. Lupin yields at Westmere in 2014.

| Variety            | Yield (t/ha) |
|--------------------|--------------|
| Luxor              | 2.42         |
| Rosetta            | 2.37         |
| Mandelup           | 2.27         |
| Gunyidi            | 2.07         |
| Jindalee           | 1.93         |
| Barloc             | 1.89         |
| Jenabillup         | 1.88         |
| Wonga              | 1.73         |
| <b>LSD(p=0.05)</b> | <b>NS</b>    |

NS = not significant

### Discussion

Overall, in 2014, the pea and lupin variety trial yields did not differ significantly between varieties. All trials were sown within the optimum sowing window for pulses, and suffered no disease pressure.

The lupin trial at Westmere had a grass herbicide applied in mid-September, which unfortunately coincided with

many of the lupin varieties flowering. The longer season Albus lupins, Luxor and Rosetta, may not have been as affected by the application when compared to the narrow leafed lupin varieties.

Although the difference in yield was not significant, Luxor out-yielded Wonga by 0.69 t/ha. This lack of significance can be attributed to the dry spring dampening differences between varieties and the herbicide damage and the potential gilgai effect of the Westmere site causing variations in plot yields. This type of spatial variability increases the level of error within the statistics, and contributes to a non-significant result.

The similar yields achieved by all narrow leafed lupins (except Mandelup) could be due to the dampening effects of the seasonal conditions. Spring rainfall was extraordinarily low in the Western District, coming in as a decile 1 or 2 depending on the location. This means that the rainfall received during spring was in the lowest 10-20% ever recorded. It is therefore important to note that the majority of narrow leafed lupin varieties all yielded similarly, and in an adverse season such as 2014, suggests that there is no obvious varietal choice which will outperform the rest.

The peas were sown at two sites, and again, there was no significant varietal difference in yield. Hamilton sown peas performed better than Westmere sown peas, perhaps due to the high fertility of the Hamilton site. The largest yield difference in the pea trials was at Westmere, where Kaspera yielded less than the other varieties. This may be due to the fact that Kaspera is a longer season variety, and may have suffered yield penalties due to seasonal conditions. In this trial, yields appear to have been constrained only by the dry finish to the season, as there was no disease or pest pressure and no damage to the crop by other means. In comparison, 2013 pea yields sown at Westmere averaged 4 t/ha, indicating that the better season in 2013 allowed pea varieties to maximise their production. In 2013, 147 mm of rainfall was recorded during spring, whereas in 2014, 74 mm was recorded. The average spring rainfall for Westmere is 126 mm.

The figure below shows the even biomass produced by the peas in the Westmere trial. Differences in varieties continued to be slight during the remainder of the season, resulting in similar yields.



Figure 1. Peas sown at Westmere, photo taken 26 September 2014, showing even biomass of trial plots.

### Conclusion

In an adverse season, pea and lupin varieties may perform similarly, as evidenced by the SFS 2014 results. Therefore, there is no obvious high performing pea or lupin variety identified by SFS in 2014. However, further trials data must be analysed over a range of seasons and sites before decisions can be made regarding the most suitable cultivar.