Opportunities for Faba Beans in the low rainfall zone Mallee

Jason Brand, AgVic-Horsham
Larn McMurray and Christine Walela, SARDI – Clare
Jeff Paull, Uni Adel
Current Production Areas

- 2016 = 280,000ha (up from 120,000ha in 2011)
- 95% in the high and medium rainfall zones
## Opportunities to Expand

Victorian Mallee Pulse Trial Site Grain Yields, 2012-15

<table>
<thead>
<tr>
<th>Year</th>
<th>Location</th>
<th>Rainfall (mm)</th>
<th>Grain Yield (t/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>Curyo</td>
<td>250</td>
<td>Beans: 2.0, Lentils: 2.2, Peas: 2.3, Chickpea: 1.8</td>
</tr>
<tr>
<td>2013</td>
<td>Curyo</td>
<td>287</td>
<td>Beans: 2.7, Lentils: 2.3, Peas: 2.5, Chickpea: 1.6</td>
</tr>
<tr>
<td>2014</td>
<td>Curyo</td>
<td>200</td>
<td>Beans: 1.0, Lentils: 1.0, Peas: 1.1, Chickpea: 0.9</td>
</tr>
<tr>
<td>2015</td>
<td>Curyo</td>
<td>200</td>
<td>Beans: 0.5, Lentils: 0.5, Peas: 0.8, Chickpea: 0.4</td>
</tr>
<tr>
<td>2015</td>
<td>Ouyen</td>
<td>220</td>
<td>Beans: 0.8, Lentils: 0.6, Peas: 1.1, Chickpea: 0.4</td>
</tr>
</tbody>
</table>

Sandy loam soils – sown late April to early May.

Brackling / Necking 2014
Row Space

2013 Grain Yield

Pod Height

- 6 Varieties x 3 Row Spacing’s
  - No Interaction

<table>
<thead>
<tr>
<th>Row Space</th>
<th>2013 Grain Yield</th>
<th>Pod Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>72 cm (28')</td>
<td>2.70 t/ha</td>
<td>67 cm</td>
</tr>
<tr>
<td>36 cm (14')</td>
<td>2.83 t/ha</td>
<td>62 cm</td>
</tr>
<tr>
<td>18 cm (7')</td>
<td>2.79 t/ha</td>
<td>57 cm</td>
</tr>
</tbody>
</table>

Lsd = 4
Row Space

2014 Grain yield

• 8 Varieties x 3 Row Spacing’s
  ➢ No Interaction
### Sow Rate

#### 2013 – PBA Zahra

<table>
<thead>
<tr>
<th>Sow Rate</th>
<th>Establishment</th>
<th>Necking</th>
<th>Bottom Pod Height</th>
<th>Grain Yield</th>
<th>Grain Weight</th>
<th>Net Return</th>
</tr>
</thead>
<tbody>
<tr>
<td>pl/m² (kg/ha)</td>
<td>(pl/m²)</td>
<td>(0-100%)</td>
<td>(cm)</td>
<td>(t/ha)</td>
<td>(g/100seed)</td>
<td>($/ha)</td>
</tr>
<tr>
<td>10 (75)</td>
<td>9</td>
<td>5</td>
<td>22</td>
<td>2.35</td>
<td>68</td>
<td>730</td>
</tr>
<tr>
<td>20 (150)</td>
<td>14</td>
<td>23</td>
<td>24</td>
<td>2.62</td>
<td>71</td>
<td>790</td>
</tr>
<tr>
<td>30 (225)</td>
<td>20</td>
<td>55</td>
<td>28</td>
<td>2.80</td>
<td>72</td>
<td>780</td>
</tr>
<tr>
<td>lsd (P&lt;0.05)</td>
<td>3</td>
<td>11</td>
<td>3</td>
<td>0.23</td>
<td>ns</td>
<td></td>
</tr>
<tr>
<td>CV%</td>
<td>5</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

#### 2015 – AF09169

<table>
<thead>
<tr>
<th>Sow Rate</th>
<th>Establishment</th>
<th>Grain Yield</th>
<th>Net Return</th>
</tr>
</thead>
<tbody>
<tr>
<td>pl/m² (kg/ha)</td>
<td>(pl/m²)</td>
<td>(t/ha)</td>
<td>($/ha)</td>
</tr>
<tr>
<td>5 (28)</td>
<td>6</td>
<td>0.42</td>
<td>22</td>
</tr>
<tr>
<td>10 (56)</td>
<td>9</td>
<td>0.45</td>
<td>23</td>
</tr>
<tr>
<td>20 (112)</td>
<td>17</td>
<td>0.54</td>
<td>40</td>
</tr>
<tr>
<td>30 (168)</td>
<td>29</td>
<td>0.47</td>
<td>-23</td>
</tr>
<tr>
<td>40 (224)</td>
<td>33</td>
<td>0.41</td>
<td>-81</td>
</tr>
<tr>
<td>lsd (P&lt;0.05)</td>
<td>12.7</td>
<td>0.08</td>
<td></td>
</tr>
<tr>
<td>CV%</td>
<td>11.8</td>
<td>7.5</td>
<td></td>
</tr>
</tbody>
</table>

**Net Return**

Production Cost = $175/ha + seed cost ($0.5/kg)
Grain = $500/t (2015); $400/t (2013)
New Varieties

2014

LSD (P<0.05) var = 0.18

$303/ha

$211/ha

AF09169
AF07125
PBA Zahra
AF09167
PBA Samira
Farah
Nura
AF10089

Drought Tolerant Line
New Varieties

2015 Curyo

$150/ha

SD(P<0.05) var = 0.16

Flower ~ 10 Days earlier
Mature earlier

Variety

AF12025  AF12038  AF12028  AF09169  AF12045  PBA Samira  Farah  AF07125  AF09167  AF10089  Nura  PBA Zahra
Looking Forward

Drought Proofing Beans
- The whole package
- The whole system

✓ Improved yield – grain and biomass
✓ Disease resistance
✓ Early Flowering
✓ Novel Herbicide Tolerance
✓ Smaller seed?

✓ Early Sowing
✓ Sow Rate and Row Space
✓ Improved Inoculants
✓ Novel Weed Management
✓ Crop Nutrition and Growth Regulants
✓ ‘Multi Purpose’
  ✓ 15-20kgN/t biomass
  ✓ Finishing Lambs
Acknowledgements

Grains Research & Development Corporation (GRDC) for financial support in partnership with DEDJTRVic, SARDI and NSW DPI.

Technical support – Jason Ellifson, Mick Brady, Keisha Savage, Russel Argall (DEDJTR)

Pulse Australia – Mary Raynes

Grower Collaborators – A Crook (Kulwin); P&B Doran (Curyo); C Bartlett (Pimpinio);

Grower Groups and Private Agronomy Consultants