% of flowers with sterile anthers. (all nil) or maturity. Consequently we found the different generations of ATR Bonito produced similar seed yield and oil percentage to each other and to newly purchased commercial seed.

Keeping seed from a hybrid TT crop will reduce crop performance, but the financial effect will depend on your canola yield – we suggest you keep growing OP canola

Previous work has shown that keeping seed from hybrid canola can lead to variability in flowering, increase in the number of flowers with anther sterility, reduced disease resistance, reduced vigour and reduced yield of 25-30% (Potter et. al. 2009, Kudnig et. al 2010).

The majority of the previous experiences were in high yielding situations (>1.8t/ha) or comparisons kept the seed rates of F1 hybrids and retained hybrid seed (called here Generation 2) the same. Whereas in WA canola is widely grown in areas with lower yield potential and farmers are likely to grade Generation 2 hybrid seed and sow it at a similar rate to OP varieties. In this series at eight sites over three years, yields ranged from 0.9-1.8t/ha (mean = 1.3t/ha) and when we compared graded Generation 2 or 3 hybrid seed at a target density of 40 plants/m² to commercial hybrid seed sown at 20-25 plants/m² we found that 80% of the time seed yields were either statistically the same or higher. Seed yields of Generation 2 hybrids were on average 50kg/ha (4%) lower yielding than commercial hybrid seed treatments. These are lower losses than that found by previous researchers in higher rainfall environments. 86% of the time gross margins from plots sown to graded Generation 2 or 3 hybrid seed sown at a target of 40 plants/m² were equal to or higher than commercial first Generation hybrid seed sown at 20-25 plants/m².

Generation 2 and 3 hybrid plants produced male sterile flowers (up to 9%) resulting in some pod gaps on the main flowering raceme – however podding commenced further up the raceme and the plants sometimes compensated with larger seeds. We also noticed Generation 2 and 3 hybrids sometimes produced earlier flowering individual plants. There was very low disease pressure in our low rainfall experiments therefore we cannot comment on the disease resistance of Generation 2 or 3 hybrids.

In all of our experiments we compared commercial and retained generation hybrids to OP varieties. In the majority of experiments choosing to grow an OP variety and sowing at a target of 40 plants/m² produced higher yields and returns than any of the hybrid treatments. Our conclusion is that farmers should keep growing OP varieties in lower rainfall areas.
Wide row spacing and precision seeding for the northern agricultural region

Martin Harries, Mark Seymour, Bob French and Sally Sprigg, DPIRD.

Key messages

- Trials have shown that canola can be grown in rows 50cm apart without compromising yield in the north.
- Precision seeding may save seed input costs and improve yield.

Background

Growers in the northern agricultural region are interested in growing canola in wide rows. To determine whether this is a good option, several trials were implemented from 2014–2016 looking at a range of agronomic aspects.

Growers involved in these trials consider benefits other than yield to be important in deciding to use wide rows; reduced fuel costs at seeding (approximately 30%), better stubble handling and improved crop safety of incorporation by sowing (IBS) herbicides.

Weed control and paddock erosion risks need to be taken into account for growers using wide rows and low plant densities.

Row spacing

To test the effects of row spacing, five trials were conducted around the Binnu area in 2014 comparing canola grown in narrow and wide rows at various seeding rates. These included small plot and farmer sown replicated trials.

Wide rows (approximately 50cm) yielded 97% of narrow rows (approximately 25cm) over a yield range from 1.0 to 1.6 t/ha. Row spacing and seed rate combinations were tested and the wide row, low seeding rate combination was the highest yielding treatment in three of the five trials. This has opened the way to refine agronomic packages for wide rows and investigate the usage of precision seeders to reduce up front input costs.
the 0.3 and 0.5 kg/ha seeding rates had plant populations of less than 10 plants/m². There was a trend of lower yield at lower seeding rates but this was not statistically significant (Table 1).

Table 1. Measurements of plant density, growth and yield from precision sown trial at Ogilvie 2015.

<table>
<thead>
<tr>
<th>Seed rate (kg/ha)</th>
<th>GM ($)</th>
<th>Plants /m²</th>
<th>Yield (kg/ha)</th>
<th>Pods/plant</th>
<th>Seed Oil%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.31</td>
<td>$820</td>
<td>5</td>
<td>2198</td>
<td>1622</td>
<td>47.6</td>
</tr>
<tr>
<td>0.54</td>
<td>$875</td>
<td>8</td>
<td>2315</td>
<td>790</td>
<td>47.6</td>
</tr>
<tr>
<td>1.01</td>
<td>$860</td>
<td>15</td>
<td>2312</td>
<td>357</td>
<td>47.8</td>
</tr>
<tr>
<td>2.50</td>
<td>$883</td>
<td>40</td>
<td>2463</td>
<td>136</td>
<td>47.5</td>
</tr>
<tr>
<td>Lsd</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F Prob</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>P &lt; 0.001</td>
</tr>
</tbody>
</table>

Also of note is that the trials were on 50cm row spacing and yields of over 2.4t/ha were achieved. This yield is well above the long term average for canola in the district and indicates that in this environment canola can yield well in favourable seasons when sown at wide row spacing.

There was a high level of plant plasticity observed with many more pods on plants in lower density plots; with over ten times as many pods on plants in the 0.31kg treatment compared to the 2.5t/ha treatment (Table 1). The gross margin was similar for the 2.5kg/ha, 1.0kg/ha and 0.5kg/ha treatments, showing that seed costs could be reduced without impacting profit.

Uniform seed placement

To understand potential benefits of precision seeding, DPIRD investigated the effect of uniform plant spacing on yield in a trial at Wongan Hills in 2016. Plants were arranged in four plant densities, 80, 40, 20 and 10 plants/m² and at each density plants were spaced at even distances apart, to mimic a precision seeder, or unevenly, as occurs with a conventional air seeder (Figures 4 and 5). The even spaced plots were achieved by using a high sowing rate with the air seeder, then hand thinned to the required even spacing.