1976 Growing season results report

M L. Poole

Follow this and additional works at: https://researchlibrary.agric.wa.gov.au/rqmsplant

Part of the Agronomy and Crop Sciences Commons, Soil Science Commons, and the Weed Science Commons

Recommended Citation

IMPORTANT DISCLAIMER

This document has been obtained from DAFWA's research library website (researchlibrary.agric.wa.gov.au) which hosts DAFWA's archival research publications. Although reasonable care was taken to make the information in the document accurate at the time it was first published, DAFWA does not make any representations or warranties about its accuracy, reliability, currency, completeness or suitability for any particular purpose. It may be out of date, inaccurate or misleading or conflict with current laws, polices or practices. DAFWA has not reviewed or revised the information before making the document available from its research library website. Before using the information, you should carefully evaluate its accuracy, currency, completeness and relevance for your purposes. We recommend you also search for more recent information on DAFWA's research library website, DAFWA's main website (https://www.agric.wa.gov.au) and other appropriate websites and sources.

Information in, or referred to in, documents on DAFWA's research library website is not tailored to the circumstances of individual farms, people or businesses, and does not constitute legal, business, scientific, agricultural or farm management advice. We recommend before making any significant decisions, you obtain advice from appropriate professionals who have taken into account your individual circumstances and objectives.

The Chief Executive Officer of the Department of Agriculture and Food and the State of Western Australia and their employees and agents (collectively and individually referred to below as DAFWA) accept no liability whatsoever, by reason of negligence or otherwise, arising from any use or release of information in, or referred to in, this document, or any error, inaccuracy or omission in the information.
DEPARTMENT OF AGRICULTURE
Western Australia

RESULTS REPORT
1976 GROWING SEASON

1. 76 BU 15 Sunflower Varieties x Rates of Seeding x Times of Seeding on Busselton Sand at Ruabon.

2. 76 BU 4 Miscellaneous Species x Rates of H.23408 Treeton.

3. 76 AL 36 Rape Varieties under severe blackleg conditions.

4. CB 49 Trials Seed Softening Methods and Effect of harrowing on Emergence.

by M.L. Poole
PLANT RESEARCH DIVISION
76 BU 15 **Sunflowers - Rates of Seeding x Varieties x Times of Planting**

Cooperating Advisers - Stan Dilkes and George Olney.

**AIM**

To test the performance of sunflowers at a range of seeding rates and two times of planting at this site.

**Location:** Ruabon (E. Busselton) Keith Forrest.

**Soil Type:** 1m Busselton sand over clay. This soil type is under water in winter and water remains perched over the clay well into summer. A sunflower trial was conducted on this site to test the proposition that sufficient water was stored plus rainfall to grow a crop.

**Treatments**

<table>
<thead>
<tr>
<th>Variety</th>
<th>Sunfola 68</th>
<th>Hysun 20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seed Rate Kg/ha</td>
<td>1st</td>
<td>2nd</td>
</tr>
<tr>
<td>2.5</td>
<td>25397</td>
<td>37962</td>
</tr>
<tr>
<td>5</td>
<td>44048</td>
<td>56944</td>
</tr>
<tr>
<td>7.5</td>
<td>73809</td>
<td>74999</td>
</tr>
<tr>
<td>10</td>
<td>91667</td>
<td>113888</td>
</tr>
<tr>
<td>12.5</td>
<td>108353</td>
<td>108332</td>
</tr>
</tbody>
</table>

**Results**

1. Plant densities plants/ha

<table>
<thead>
<tr>
<th>Variety</th>
<th>Sunfola 68</th>
<th>Hysun 20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate Kg/ha</td>
<td>1st Top</td>
<td>2nd Top</td>
</tr>
<tr>
<td>2.5</td>
<td>25397</td>
<td>37962</td>
</tr>
<tr>
<td>5</td>
<td>44048</td>
<td>56944</td>
</tr>
<tr>
<td>7.5</td>
<td>73809</td>
<td>74999</td>
</tr>
<tr>
<td>10</td>
<td>91667</td>
<td>113888</td>
</tr>
<tr>
<td>12.5</td>
<td>108353</td>
<td>108332</td>
</tr>
</tbody>
</table>
2. **Flowering Times**

<table>
<thead>
<tr>
<th></th>
<th>September Planting</th>
<th>October Planting</th>
</tr>
</thead>
<tbody>
<tr>
<td>HYSUN 20</td>
<td>2/12</td>
<td>24/12</td>
</tr>
<tr>
<td>Sunfola 68/2</td>
<td>4/12</td>
<td>24/12</td>
</tr>
</tbody>
</table>

3. **Yields Kg/ha. Hand harvested.** Two quadrats each 2m x plot width.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5 Kg/ha</td>
<td>354</td>
<td>242</td>
<td>168</td>
<td>133</td>
</tr>
<tr>
<td>5 Kg/ha</td>
<td>406</td>
<td>248</td>
<td>276</td>
<td>259</td>
</tr>
<tr>
<td>7.5 Kg/ha</td>
<td>431</td>
<td>625</td>
<td>283</td>
<td>201</td>
</tr>
<tr>
<td>10 Kg/ha</td>
<td>332</td>
<td>447</td>
<td>240</td>
<td>245</td>
</tr>
<tr>
<td>12.5 Kg/ha</td>
<td>504</td>
<td>353</td>
<td>204</td>
<td>354</td>
</tr>
</tbody>
</table>

4. **Soil Moisture.** To follow the depletion of soil moisture a September planted high density and a low density plot, and nearby bare soil were sampled for soil moisture. Depths of sampling were 0-10 cm, 50-60 cm and 90-100 cm.

**Soil Moisture % (Gravimetric).**

<table>
<thead>
<tr>
<th>Plot</th>
<th>Depth Sample</th>
<th>24/11</th>
<th>8/12</th>
<th>21/12</th>
<th>29/12</th>
<th>6/1</th>
<th>14/1</th>
</tr>
</thead>
<tbody>
<tr>
<td>High density</td>
<td>5</td>
<td>11.5</td>
<td>5.2</td>
<td>3.5</td>
<td>3.3</td>
<td>2.5</td>
<td>2.6</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>14.0</td>
<td>7.9</td>
<td>5.9</td>
<td>7.1</td>
<td>6.7</td>
<td>5.3</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>16.3</td>
<td>17.4</td>
<td>15.6</td>
<td>19.6</td>
<td>14.7</td>
<td>10.5</td>
</tr>
<tr>
<td>Low density</td>
<td>5</td>
<td>10.5</td>
<td>4.0</td>
<td>3.6</td>
<td>2.4</td>
<td>1.7</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>13.5</td>
<td>8.4</td>
<td>5.7</td>
<td>7.3</td>
<td>5.6</td>
<td>3.8</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>17.0</td>
<td>16.4</td>
<td>16.4</td>
<td>20.9</td>
<td>15.3</td>
<td>10.6</td>
</tr>
<tr>
<td>Bare Soil</td>
<td>5</td>
<td>13.5</td>
<td>11.2</td>
<td>8.6</td>
<td>8.1</td>
<td>4.6</td>
<td>1.4</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>16.0</td>
<td>9.4</td>
<td>6.1</td>
<td>7.0</td>
<td>6.9</td>
<td>4.1</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>17.5</td>
<td>16.7</td>
<td>16.2</td>
<td>18.7</td>
<td>14.8</td>
<td>11.2</td>
</tr>
</tbody>
</table>

(N.B. Grass weeds (Couch) depleting water for last two samplings of bare ground).
Rainfall

<table>
<thead>
<tr>
<th></th>
<th>Av.</th>
<th>1976/77</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept</td>
<td>73</td>
<td>53</td>
</tr>
<tr>
<td>Oct</td>
<td>55</td>
<td>42</td>
</tr>
<tr>
<td>Nov</td>
<td>23</td>
<td>60</td>
</tr>
<tr>
<td>Dec</td>
<td>13</td>
<td>9</td>
</tr>
<tr>
<td>Jan</td>
<td>9</td>
<td>12</td>
</tr>
</tbody>
</table>

Moisture Holding Capacity

<table>
<thead>
<tr>
<th>depth sand texture</th>
<th>moisture %</th>
<th>avail moisture No. (i.e. % of 1/10 atm - % of 15 atm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 cm medium sand</td>
<td>6.6 4.5 2.7</td>
<td>3.9</td>
</tr>
<tr>
<td>50 cm loamy sand</td>
<td>5.7 4.0 2.4</td>
<td>3.3</td>
</tr>
<tr>
<td>100 cm loamy sand</td>
<td>10.5 7.8 5.0</td>
<td>5.5</td>
</tr>
</tbody>
</table>

CONCLUSION The varieties used were both fairly late maturing. November rainfall was well above average and despite the good vigour and health of the crop during the growing season yields were very disappointing. Although seed set was good, seed fill was poor, the crop suffering severe moisture stress in the post flowering period. The soil profile was still quite damp at 100 cm at maturity and obviously the plants were unable to exploit this water. Earlier planting is not possible as the site is waterlogged until early spring. Varieties maturing two weeks earlier are available now and will be tried next year. Oil contents and linoleic acids will be available later.
The original aim of this trial was to measure the performance of a range of crops, in terms of growth and yield, at this high rainfall site. However very heavy ryegrass infestation occurred and the opportunity was taken to try the new post emergence ryegrass herbicide Hoechst 23408.

A reasonably well drained hillside. Sandy loam.

Span rapeseed
Zephyr rapeseed
Norin 20 rapeseed

SV 6823 rapeseed x Hoe 23408 @ 1,31/ha. (+ wetting agent).

Glenelg linseed
Unicrop lupin
Uniharvest lupin
Canary seed.

Varieties were main plots x 3 reps.
Hoe. 23408 applied as Cross strips x 2 reps.

Crop Dry Wt. Crop Yield, WRG dry wt.

<table>
<thead>
<tr>
<th>Crop</th>
<th>Rate Hoe</th>
<th>Clean Seed Kg/ha</th>
<th>Dry Weight Crop Kg/ha</th>
<th>Dry Weight W.R.G. Kg/ha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glenelg</td>
<td>Nil</td>
<td>662</td>
<td>2,224</td>
<td>1,537</td>
</tr>
<tr>
<td>Linseed</td>
<td>1 lt + WA</td>
<td>929</td>
<td>2,580</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>3 lt + WA</td>
<td>948</td>
<td>2,769</td>
<td>Nil</td>
</tr>
<tr>
<td>Norin 20</td>
<td>Nil</td>
<td>559</td>
<td>2,177</td>
<td>1,432</td>
</tr>
<tr>
<td>Rape</td>
<td>1 lt + WA</td>
<td>945</td>
<td>3,514</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>3 lt + WA</td>
<td>901</td>
<td>3,500</td>
<td>0</td>
</tr>
<tr>
<td>Uni-</td>
<td>Nil</td>
<td>1,585</td>
<td>4,670</td>
<td>1,601</td>
</tr>
<tr>
<td>harvest</td>
<td>1 lt + W.A.</td>
<td>2,555</td>
<td>6,956</td>
<td>272</td>
</tr>
<tr>
<td>Lupin</td>
<td>3 lt + W.A.</td>
<td>2,341</td>
<td>6,611</td>
<td>Nil</td>
</tr>
<tr>
<td>Unicrop</td>
<td>Nil</td>
<td>1,877</td>
<td>4,876</td>
<td>1,599</td>
</tr>
<tr>
<td>Lupin</td>
<td>1 lt + W.A.</td>
<td>2,146</td>
<td>5,360</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>3 lt + W.A.</td>
<td>3,203</td>
<td>8,237</td>
<td>Nil</td>
</tr>
</tbody>
</table>

Conclusion. Lupins yielded best with yields around 2500 Kg/ha. The control of ryegrass by H.23408 was outstanding. The herbicide was applied late when the ryegrass was tillering and the crops were 20 cm high and some yield reduction had probably occurred already. Cropping systems using herbicides such as H.23408 in combination with lupins, show great promise in the S.W. region.
76 AL 36/3342 EX Rape Variety Trial

Co-operating Adviser - Steve Trevenan.

**Aim**
To test the performance of a number of rapeseed varieties which have demonstrated tolerance of blackleg.

**Location**
Mettler D. Tillbrook

**Site**
The trial was conducted on rape stubble to maximize disease incidence.

**Design**
15 Varieties x 3 reps.

**Results**
Ratings reflect density and vigour combined (0-5)

<table>
<thead>
<tr>
<th>Variety</th>
<th>Rating 12.8.76</th>
<th>Rating 2.12.76</th>
<th>Shattering 2.12.76</th>
<th>Yields Kg/ha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Span - Till</td>
<td>4</td>
<td>2.2</td>
<td>Nil</td>
<td>546</td>
</tr>
<tr>
<td>Span - Cert</td>
<td>2.5</td>
<td>1.3</td>
<td>Nil</td>
<td>273</td>
</tr>
<tr>
<td>Arlo</td>
<td>1</td>
<td>1.2</td>
<td>7%</td>
<td>276</td>
</tr>
<tr>
<td>SV 823</td>
<td>3.8</td>
<td>45%</td>
<td>497</td>
<td></td>
</tr>
<tr>
<td>Tower</td>
<td>0.5</td>
<td>0.7</td>
<td>0%</td>
<td>0</td>
</tr>
<tr>
<td>Midas</td>
<td>3</td>
<td>3.5</td>
<td>0</td>
<td>625</td>
</tr>
<tr>
<td>Zephyr</td>
<td>1</td>
<td>1.5</td>
<td>0</td>
<td>343</td>
</tr>
<tr>
<td>N 20</td>
<td>4</td>
<td>3.7</td>
<td>40%</td>
<td>506</td>
</tr>
<tr>
<td>N 35</td>
<td>5</td>
<td>3.3</td>
<td>20%</td>
<td>630</td>
</tr>
<tr>
<td>N 32</td>
<td>4</td>
<td>3.7</td>
<td>25%</td>
<td>682</td>
</tr>
<tr>
<td>N 36</td>
<td>3.5</td>
<td>4.2</td>
<td>0(g)</td>
<td>710</td>
</tr>
<tr>
<td>N 40</td>
<td>3</td>
<td>2.6</td>
<td>5%</td>
<td>609</td>
</tr>
<tr>
<td>N 37</td>
<td>5</td>
<td>3.7</td>
<td>0</td>
<td>850</td>
</tr>
<tr>
<td>N 51</td>
<td>4</td>
<td>3.3</td>
<td>15%</td>
<td>528</td>
</tr>
<tr>
<td>Yu Dal</td>
<td>3</td>
<td>5.0</td>
<td>0(g)</td>
<td>549</td>
</tr>
</tbody>
</table>

(g) = still green

**Conclusion**
This trial reaffirms last year's results that several of the new lines are much more tolerant of blackleg than the previously used Canadian varieties. Tower once again performed very poorly and was almost wiped out by the disease. Midas performed best of the commercial varieties. The suspected difference between the low erucic span certified and the high erucic "span - tillbrook" was confirmed. "Span Tillbrook" did show reasonable tolerance. The very good tolerance of Yu dal is interesting. Once again excessive shattering was a problem in several varieties and must be considered a serious disadvantage.
**76 MA 9 Miscellaneous Crop Trial**

Co-operating adviser - John Guimelli

**AIM**
To test the performance of a range of crops at this site.

**Site**.
Manjimup, D. Simcock.

**Details**
Sown 26.8.76 200 Kg/ha super
100 Kg/ha Agran 34:0
Reps. 3

**Results**

<table>
<thead>
<tr>
<th>Variety</th>
<th>Yield Kg/ha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>1187</td>
</tr>
<tr>
<td>Oats</td>
<td>1125</td>
</tr>
<tr>
<td>* Lupins - Ultra</td>
<td>224</td>
</tr>
<tr>
<td>Lupins - Unicrop</td>
<td>876</td>
</tr>
<tr>
<td>Lupins - Uniharvest</td>
<td>718</td>
</tr>
<tr>
<td>Linseed - Glenelg</td>
<td>1359</td>
</tr>
<tr>
<td>Rapeseed - Span</td>
<td>1593</td>
</tr>
<tr>
<td>Rapeseed - Norin 20</td>
<td>1162</td>
</tr>
<tr>
<td>Rapeseed N. 37</td>
<td>1171</td>
</tr>
<tr>
<td>Rapeseed N. 35</td>
<td>1359</td>
</tr>
<tr>
<td>Canary Seed</td>
<td>750</td>
</tr>
<tr>
<td>Sunflower VW II MK</td>
<td>N/A</td>
</tr>
<tr>
<td>Sunflower Hysun 30</td>
<td>N/A</td>
</tr>
<tr>
<td>Sunflower Sunfola 68/2</td>
<td>N/A</td>
</tr>
</tbody>
</table>

* Sown at low rate.

**Conclusion.** Yields low for this site. Reasons not obvious perhaps sown too late. Most profitable crop is Canary Seed.
1. **Seed Softening**

Several methods of artificially softening CB 49 seed have been examined.

a) Treatment with $\text{H}_2\text{SO}_4$

<table>
<thead>
<tr>
<th>$\text{H}_2\text{SO}_4$ Conc.</th>
<th>0.5N</th>
<th>IN</th>
<th>4.5N</th>
<th>9N</th>
<th>18N</th>
<th>36N</th>
</tr>
</thead>
<tbody>
<tr>
<td>hours</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 hrs</td>
<td>7</td>
<td>12</td>
<td>11</td>
<td>12</td>
<td>15</td>
<td>5</td>
</tr>
<tr>
<td>2 hrs</td>
<td>5</td>
<td>7</td>
<td>6</td>
<td>5</td>
<td>9</td>
<td>28</td>
</tr>
<tr>
<td>4 hrs</td>
<td>9</td>
<td>12</td>
<td>8</td>
<td>8</td>
<td>17</td>
<td>99</td>
</tr>
<tr>
<td>6 hrs</td>
<td>8</td>
<td>8</td>
<td>7</td>
<td>6</td>
<td>25</td>
<td>98</td>
</tr>
<tr>
<td>24 hrs</td>
<td>5</td>
<td>3</td>
<td>6</td>
<td>2</td>
<td>45</td>
<td>89</td>
</tr>
</tbody>
</table>

**Notes**
1) No abnormal seedlings at any level.
2) No death at any level.
3) Seed to acid ratio approx. 1:2.

**Conclusion:** Complete softening occurs with 36N $\text{H}_2\text{SO}_4$ treatment for 4 hours. Lower concentrations are not effective.

Batches of 2 bags in an enamel bath were treated in 1976. Germination percentage obtained was 80-95%. Seed was covered completely with acid. Wetting the seed coat with acid was not effective - the seed must be soaked in the acid. The acid can only be used for 2 or 3 batches after which it becomes mucilaginous and carbonized.
The objective of this trial was to examine the effect of renovation (harrowing) on re-establishment of CB 49. Plots were topdressed with 30, 60, 120, 240 Kg/ha of 35% germination CB 49. Appropriate plots were then worked with harrows to partially bury the seed. A-metrazine treatment for grass control was included in the design but was never applied. The trial was on wheat stubble and CB 49 stubble. Germination % of topdressed seed = 40%.

<table>
<thead>
<tr>
<th>Rate of Seed T.D. Kg/ha</th>
<th>Top dressed Plants/m²</th>
<th>Topdressed, harrowed Plants/m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>0.2</td>
<td>3.0</td>
</tr>
<tr>
<td>60</td>
<td>0.2</td>
<td>9.3</td>
</tr>
<tr>
<td>120</td>
<td>0.7</td>
<td>11.0</td>
</tr>
<tr>
<td>240</td>
<td>0.5</td>
<td>20.4</td>
</tr>
</tbody>
</table>

Plots were swamped by wild radish and grass weeds and not harvested.
b) **Fluctuating Temperatures**

The aim of this trial was to attempt to simulate diurnal fluctuations of temperature, known to soften seed, with more rapid fluctuations over a shorter period.

Treatments were

1. \(85^\circ C/\text{Ambient}\) on 4 hr cycle.
2. \(60/15^\circ C\) on 12 hr cycle.

These treatments are obviously opportunistic - we had the ovens available - and this is an exploratory trial.

<table>
<thead>
<tr>
<th>Date</th>
<th>85/ambient</th>
<th>60(^\circ)/15(^\circ)C</th>
<th>Control 15(^\circ)C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Germ</td>
<td>Hard</td>
<td>Abn</td>
</tr>
<tr>
<td>30.7.76</td>
<td>21</td>
<td>77</td>
<td>1</td>
</tr>
<tr>
<td>16.8.76</td>
<td>28</td>
<td>44</td>
<td>2</td>
</tr>
<tr>
<td>27.8.76</td>
<td>22</td>
<td>48</td>
<td>2</td>
</tr>
<tr>
<td>10.9.76</td>
<td>34</td>
<td>36</td>
<td>0</td>
</tr>
<tr>
<td>24.9.76</td>
<td>22</td>
<td>76</td>
<td>0</td>
</tr>
<tr>
<td>8.10.76</td>
<td>6</td>
<td>42</td>
<td>0</td>
</tr>
<tr>
<td>22.10.76</td>
<td>2</td>
<td>51</td>
<td>0</td>
</tr>
</tbody>
</table>

**Comment 1.** The \(85^\circ C/\text{amb.}\) treatment obviously was too severe, with a high percentage of seed Bill.

**2.** \(60/15^\circ C\). increased germ by a small %.

**3.** Trials looking at rapid fluctuation and temperatures in the range 65/15 70/15 75/15 are indicated.

c) **Other Treatments.** Several attempts have been made to soften seed by scarification. The serradella dehuller will bring germination up to 30-40% but the rest of the seed is badly damaged and forms abnormal seedlings. The barley pearler is better, with 50-60% germination, but adjustment is very critical.
Fate of Other Trials

76 AL 35  Rape Varieties under blackleg conditions at Kojaneerup M.H. Hood.

Not worth harvesting due to insect attack (weevils) at one end. Early ratings same as 76 AL 36.

76 AL 37) Sunflower Agronomy trials at Albany - results not available when this went to press.
76 AL 38) 76 AL 39)

76 DE 4. Miscellaneous Crop Trial. Denmark, T. Cytha. Results not yet available.

76 JE 28 Miscellaneous Crops Trial. Not Sown.

Esperance Sunflower Trials. Conducted in conjunction with Ric Madden - separate report available.

Manjimup Sunflower Trial - Conducted in conjunction with Gerry Parlevlich. Separate report being prepared.