

Is Biodiesel from Canola an Option for Kangaroo Island?

Background

Biodiesel is a generic name for fuels obtained from vegetable oil or animal fat. The end product is a fuel with very similar properties to pure diesel, but with much better emissions performance and is renewable. Biodiesel can be made from crop-sourced oils and now that a biodiesel plant has been built in Port Adelaide, there is the potential for a new market for oilseeds in South Australia in the future. Biodiesel production can be efficiently “modularised”, so there is also a very real prospect for local production of this fuel on Kangaroo Island in the future.

This trial was conducted to demonstrate to the biodiesel industry the potential of Kangaroo Island canola as a promising feedstock, and will be presented to them as a package with the canola agronomy trial (see “What’s the Best Management Package for Canola?” article). This trial tested the potential of genetics to improve canola production and the canola agronomy trial tested the potential of management to improve production.

What was done

The trial was set up on A. & T. Heinrich’s property in a paddock which had been in long term pasture prior to 2005 and on a site with a reasonably deep soil for the district. The site was sprayed with glyphosate and endosulfan prior to direct drilling Jockey®+Apron®-treated seed @ 5 kg/ha on 28 June. Aphid had broadcast 150 kg single super/ha prior to the break of the season and 100 kg 18:20/ha was applied under each row at seeding.

A mid-season application of nitrogen (50 kg N/ha as broadcast urea) was applied on 14 September (crop just bolting).

Results

Growth and performance of canola in this trial was reasonable with excellent establishment and early vigour. No pest or disease problems were obvious but clover, capeweed and some grasses were present and only controlled late in the season.

The table over the page shows plant numbers, grain yields and oil contents for each canola line in the trial. Although there were some differences between lines in the number of established plants, all lines had more than adequate numbers to produce high yielding crops.

The vigour of lines during the season differed widely with some of the new lines from Pacific looking very good right through the season, but especially later on.

Grain yields from this trial must be treated with some caution because of extensive shattering that had occurred before harvest, especially with some of the early lines (estimates of only 10-20% of intact pods remaining at harvest were recorded for 44C11 and ATR-Beacon). This problem is a universal one with field trials testing different genetic material because it is almost impossible to mechanically harvest the trial at one time with all lines intact and mature.

Oil levels in grain were generally high for all lines but some of the new lines had very high levels as demonstrated in the table overleaf.

Take Home Message

- The results in this trial suggest that there is good promise for ongoing improvement in oil extraction levels from canola and hence their worth to biodiesel (and other oil) markets.
- This trial also shows that the KI environment is conducive to high oil levels in canola which improves their relative value as an oilseed crop.

For further information contact

Nigel Wilhelm, SARDI on 0407 185501 or wilhelm.nigel@saugov.sa.gov.au

Funders/Sponsors

Grains Research Development Corporation and Australian Renewable Fuels Ltd.

Variety		Establish (plants/sq m)	Vigour on 18 Aug ^a	Vigour on 14 Sept ^a	Grain Yield (t/ha)	Oil (%)
44C11	Conventional, early mat, high oil potential (Pioneer)	84	4.0	2.5	1.92 ^b	45.3
46C76	Conventional, mid-late mat, very high oil potential (Pioneer)	92	3.3	2.6	2.22 ^b	46.1
Hyola 61	Conventional, mid mat, very good black leg (Pacific)	66	4.3	3.8	1.99	46.6
H4481	New Pacific line	75	3.8	3.9	1.50	45.7
CB14403	New Pacific line	83	5.0	5.0	2.00	47.3
CB14407	New Pacific line	68	4.8	4.0	1.24	49.2
ATR-Beacon	Triazine tolerant, mid mat, (Dovuro)	69	2.0	2.4	2.36 ^b	43.8
<i>LSD (P=0.05)</i>		<i>13</i>			<i>ns</i>	<i>1.7</i>

^a Vigour score: 0, very poor – 5, very vigorous

^b Plots badly shattered by harvest, so yields only an estimate based on remaining intact pods.

