

Quality of Australian Canola

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Quality of Australian Canola 2006

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Introduction

Sample Analysis

Canola samples representing the 2006 harvest were received from the bulk handlers in New South Wales, South Australia, Victoria and Western Australia. These samples are representative of the seed collected at each of their receipt points and have been taken to cumulatively represent the Australian harvest. The Department of Primary Industries Australian Oils Research Laboratory has no control over the collection of the samples and all data given is based on the analysis of the samples provided.

Each sample was analysed for oil, protein and glucosinolate concentrations; fatty acid profiles and volumetric grain weights according to the standard AOF methods outlined in the methods section at the back of this book. The Department of Primary Industries Australian Oils Research Laboratory in Wagga Wagga performed all analyses on the samples. Oil and glucosinolate concentrations are reported at 6% moisture in whole seed and protein is reported in oil-free meal at 10% moisture.

Breeding Trials

An excerpt of the 2006 trial results for the “National *Brassica* Improvement Project” funded by the Grains Research and Development Corporation has been included. The project involves trials of potential new cultivars at various sites across New South Wales, South Australia, Victoria and Western Australia. Yield and quality data is collected and used to evaluate a cultivar’s performance under a range of conditions. The quality parameters analysed by the Australian Oils Research Laboratory were oil, protein and glucosinolate concentrations. The quality results from one site in each state have been included to give an indication of the quality ranges for each cultivar. No yield data is published in this booklet.

Weather Production Review

The Season

For the fourth consecutive year, 2006 saw a variable start to the season growing across all Australian canola growing districts.

In Western Australia, most districts received good falls of rain during March which built up subsoil moisture levels and enabled sowings to start on time in the core growing areas. However, below average rainfall during April and early May slowed the completion of sowing and delayed crop emergence in all districts except for the south coast region. Although light falls of rain across most growing districts enabled an estimated 90% of intended plantings to be completed by early June, seedling emergence was slow and patchy in many crops. Below average winter rainfall in all districts, except in the Esperance region, further impacted on crops raising concerns for yield prospects and oil levels. Light falls of rain throughout the spring assisted crops to finish better than expected in all districts, particularly in the southern half of the state, resulting in yields being above the long term average. Although seed oil contents were 2-3% below the record levels achieved in 2005 they were still better than had been expected given the less than ideal conditions that most canola growing areas experienced throughout the season. The final production estimates for Western Australia for the 2006 season were around 365,000 tonnes from a harvested area of 300,000 ha out of the 400,000 ha estimated to have been sown. By comparison the 2005 season production estimates were 600,600 tonnes from an estimated harvested area of 440,000 ha.

In both South Australia and Victoria good falls of rain were received in late April-early May which enabled the planting of early sown crops to begin on time although the need to control weeds prior to sowing caused delays for some growers. Unfortunately later sown crops across most of Victoria and the Lower South East in SA experienced drying conditions due to below average rainfall during June and early July and were slow to germinate and emerge. In contrast to this the Eyre Peninsula in South Australia and the Western Districts in Victoria experienced more favourable conditions during winter setting them up for a potentially good harvest. However, well below spring rainfall across most districts in both states resulted in crops suffering from varying levels of moisture stress during the critical flowering and pod fill stages of growth with a subsequent adverse impact on potential grain yields. The Western Districts in Victoria suffered a severe frost in late November during the late stages of pod development which resulted in many crops being abandoned for harvest. As a consequence of the drought conditions and late frost a high percentage of crops, particularly in Victoria, were either grazed off or cut for hay or silage as growers attempted to salvage some of their growing costs. The adverse finishing conditions had a major impact on final production in both states: in South Australia it was estimated that 110,000 ha out of the 150,000 ha planted was harvested for a total production of 75,000 tonnes of canola seed whilst in Victoria only 75,000 ha out of the 213,000 ha sown was harvested for a total production of 42,000 tonne of seed. By comparison, in the 2005 season 210,000 tonnes were harvested from 150,000 ha in South Australia and 371,000 tonnes from 225,000 ha in Victoria. The adverse conditions of 2006 also resulted in seed oil contents being below average but overall they were slightly better than many growers expected.

The majority of New South Wales experienced an extremely difficult growing season with the seasonal break not occurring until mid June in all districts except the North West region. A significant proportion of the crop in the Central and Southern regions was sown dry prior to the break with germination not commencing until after mid-June. Although crops in the Central and Southern regions received limited and spasmodic falls of rain during winter the absence of subsoil moisture reserves combined with cold ground temperatures had a major adverse impact on plant growth and development. With the continuation of the dry conditions throughout the spring, resulting in 94% of the state being drought declared by October, crop conditions deteriorated resulting in 140,000 ha (78%) of the estimated sown area being either grazed off or cut for hay or silage. Despite winter/spring rainfall in the North West being below average most crops, were sown into soils with reasonable levels of stored subsoil moisture which enabled them to produce satisfactory yields. The final estimated harvest area of 40,000 ha for a total production of 30,000 tonnes of seed indicates the severity of the drought during the NSW growing season. Out of this production, the estimated 6,500 ha of irrigated crop produced 13,000 tonne of seed whilst the estimated 9,500 ha harvested in the North West region produced 11,000 tonnes. By comparison, in 2005 NSW produced 187,000 tonnes of seed from 125,000 ha. Oil contents for the 2006 harvest were also low but as with South Australia and Victoria the average level was slightly better than was anticipated given the extreme conditions experienced during flowering and pod fill.

Because of the difficult growing conditions growers in many districts took a conservative, but realistic, approach to crop nutrition with very few crops receiving either upfront or subsequent in crop nitrogen applications. Whilst this may have had an adverse impact on crop yields and seed oil levels in a more normal season this was not the situation in 2006.

As a consequence of the seasonal conditions, the reported incidence of seedling diseases, especially blackleg, was very low in all states.

Likewise with insect pests there were few problems experienced until the spring when there were reports of stressed crops experiencing a build up of aphids and Diamond Back moth. However, as the worst affected crops were not harvested due to low yield potential no control measures were carried out.

Overall the 2006 season could best be described as being very challenging and, for the eastern states, very disappointing. One positive that came out of a difficult season is that a great deal of information was gathered on the feeding value of failed crops that were grazed off in the paddock or cut for hay/silage and then subsequently fed out to livestock.

Canola in Australia

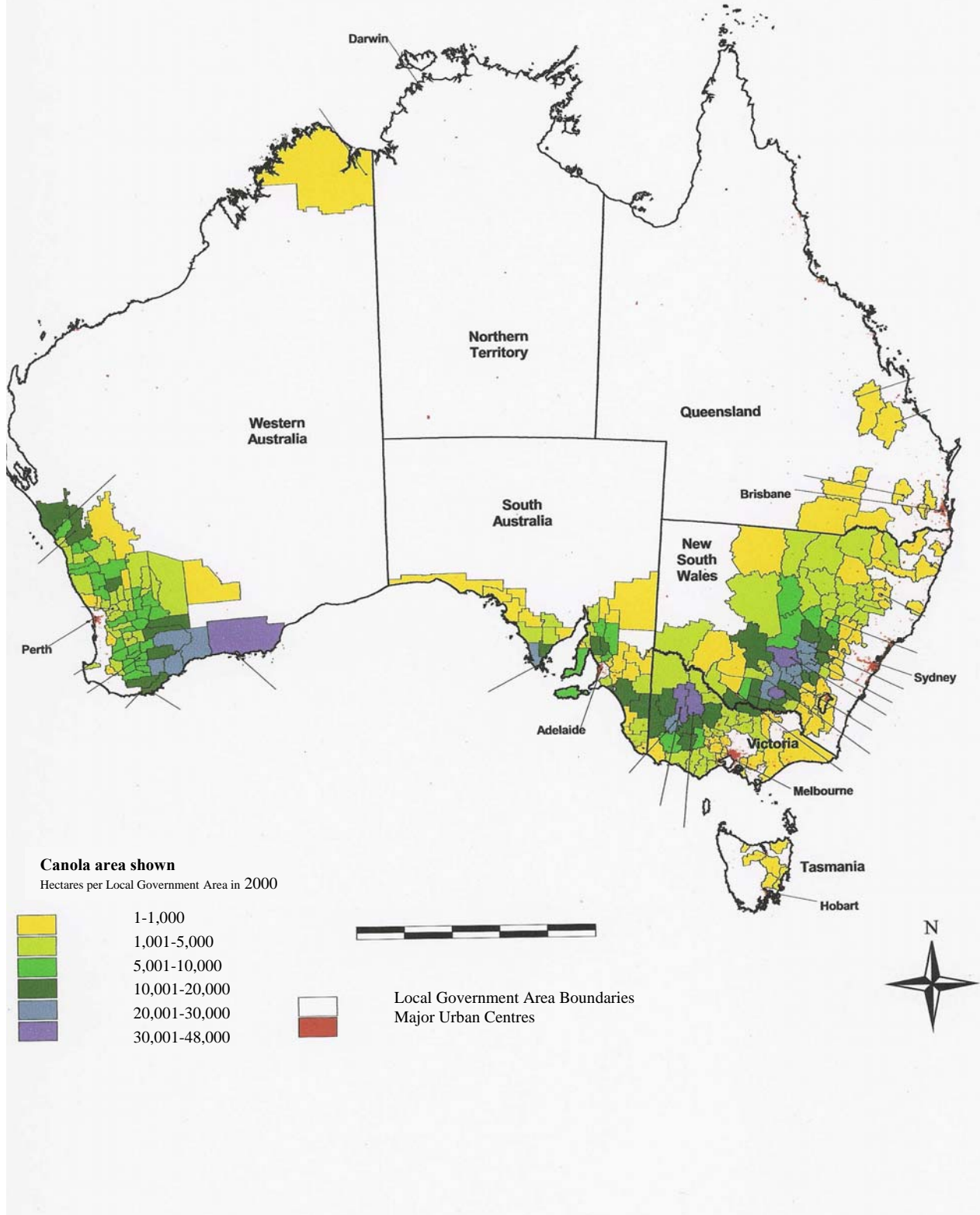


Figure 1: Areas of canola production in Australia
Published with approval of Biotechnology Australia

Yield

The 2006 canola harvest was much smaller than 2005. In 2006 there was 525,000 hectares harvested, which is well down on the 960,000 hectares harvested in 2005. The smaller harvest was compounded by the lower yields, resulting in only 512,000 tonnes harvested compared to the 1,439,000 tonnes harvested in 2005. The yield varied from a state average of 0.6 t/ha in Victoria to 1.2 t/ha in Western Australia. The national yield of 1.0 t/ha was 0.5 t/ha lower than the 2005 average.

Table 1: Canola production in Australia by state 2006

| State | Production (kilotonnes) | Area (kilohectares) | Average Yeild (tonnes/hectare) |
|-------------------|----------------------------|------------------------|-----------------------------------|
| New South Wales | 30 | 40 | 0.8 |
| Victoria | 42 | 75 | 0.6 |
| South Australia | 75 | 110 | 0.7 |
| Western Australia | 365 | 300 | 1.2 |
| Australia | 512 | 525 | 1.0 |

Source: AOF Crop Report January 2007

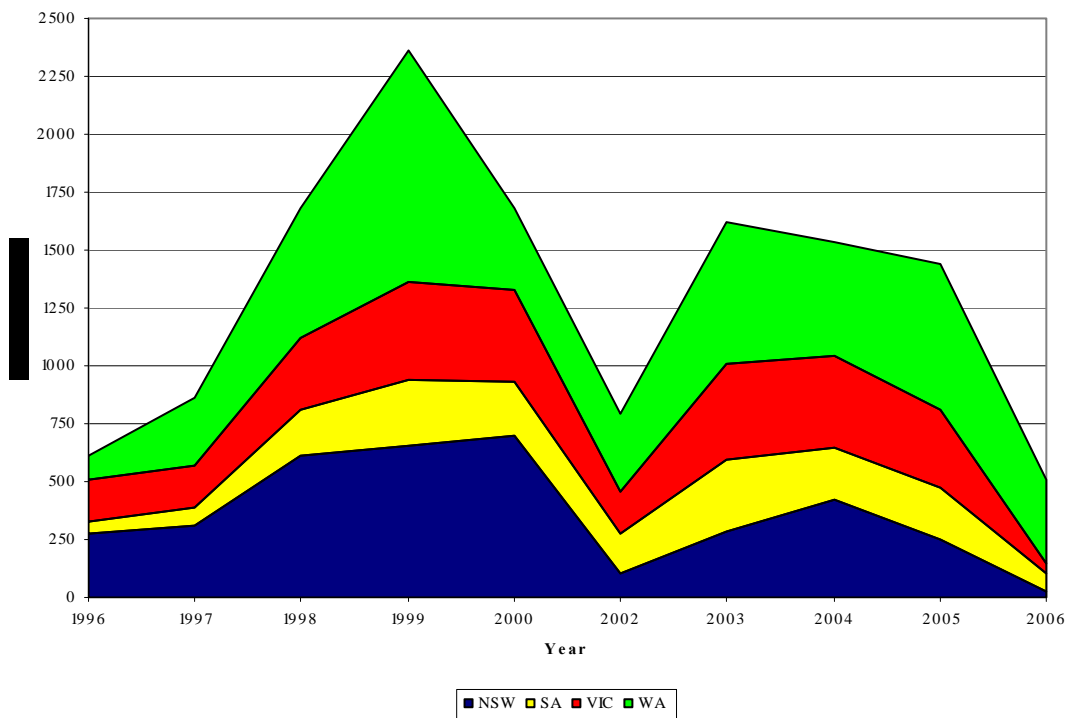


Figure 2: Canola Production in Australia 1996 – 2006

Australian Quality Parameter Summary

The division, state and Australian mean values for all analysis are calculated on the basis of the tonnage that each site represents. However, due to tonnages being confidential information, no individual site tonnages can be reported.

Table 2: Average quality of Australian canola 2006

| Quality Parameter | Australian Mean |
|--|------------------------|
| Oil content, % in whole seed @ 6 % moisture | 42.2 |
| Protein content, % in oil-free meal @ 10 % moisture | 40.1 |
| Glucosinolates, μ moles/g in whole seed @ 6 % moisture | 4 |
| Volumetric grain weights, lbs/b | 55.2 |
| kg/hL | 68.8 |
| Oleic acid concentration (C18:1), % in oil | 60.0 |
| Linoleic acid concentration (C18:2), % in oil | 20.2 |
| Linolenic acid concentration (C18:3), % in oil | 11.1 |
| Erucic acid concentration (C22:1), % in oil | 0.1 |
| Saturated fatty acid concentration, % in oil | 7.2 |
| Iodine Value | 116.8 |

Oil Content

The average oil content for the 2006 harvest was 42.2 %. This was the same as the 2005 harvest. Oil content ranged from a low of 34.7 % at Henty West in New South Wales to a high of 44.9 % at Goroke in Victoria.

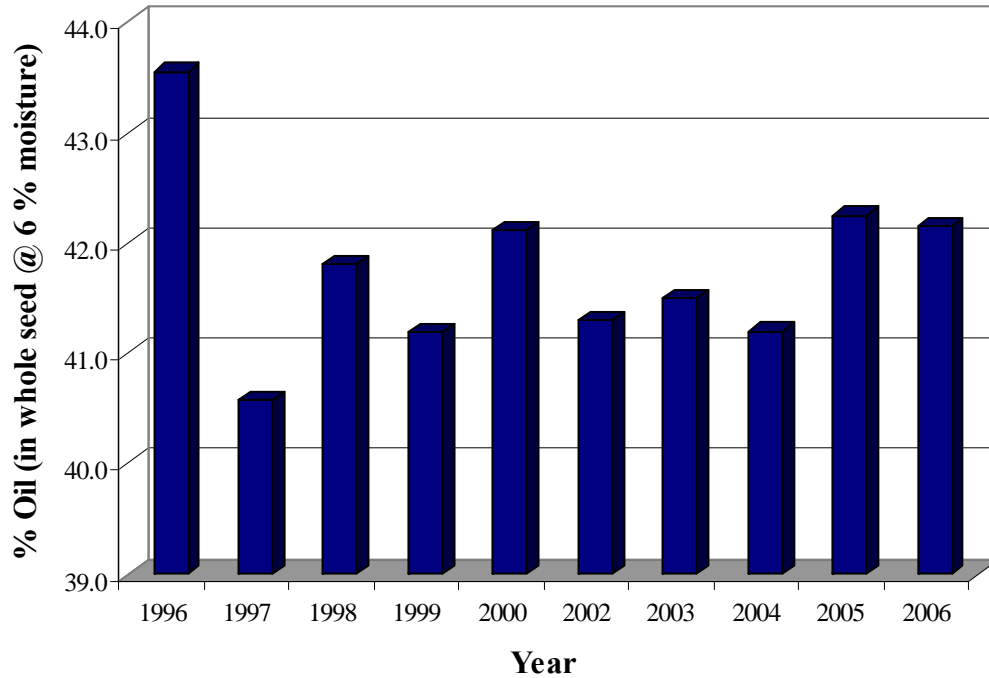


Figure 3: Average Australian oil content 1996 – 2006

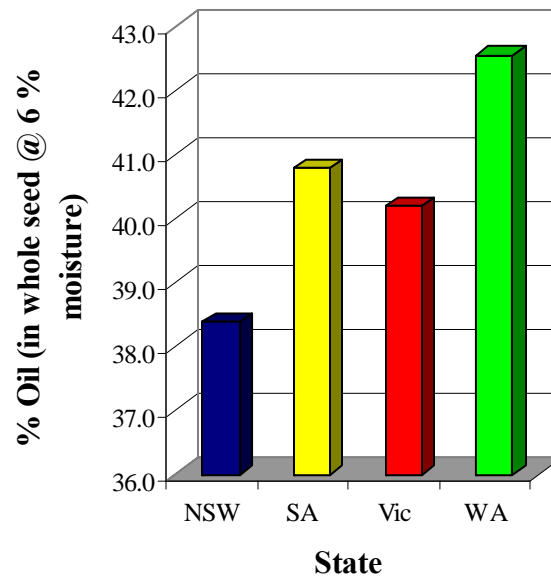


Figure 4: Average oil content by state 2006

Protein Content

The average protein content for the 2006 harvest was 40.1 % in oil free meal. This was an increase of 3.8 % from the 2005. Protein content ranged from 37.0 % at Ravensthorpe in Western Australia to 46.6 % at Temora Sub in New South Wales.

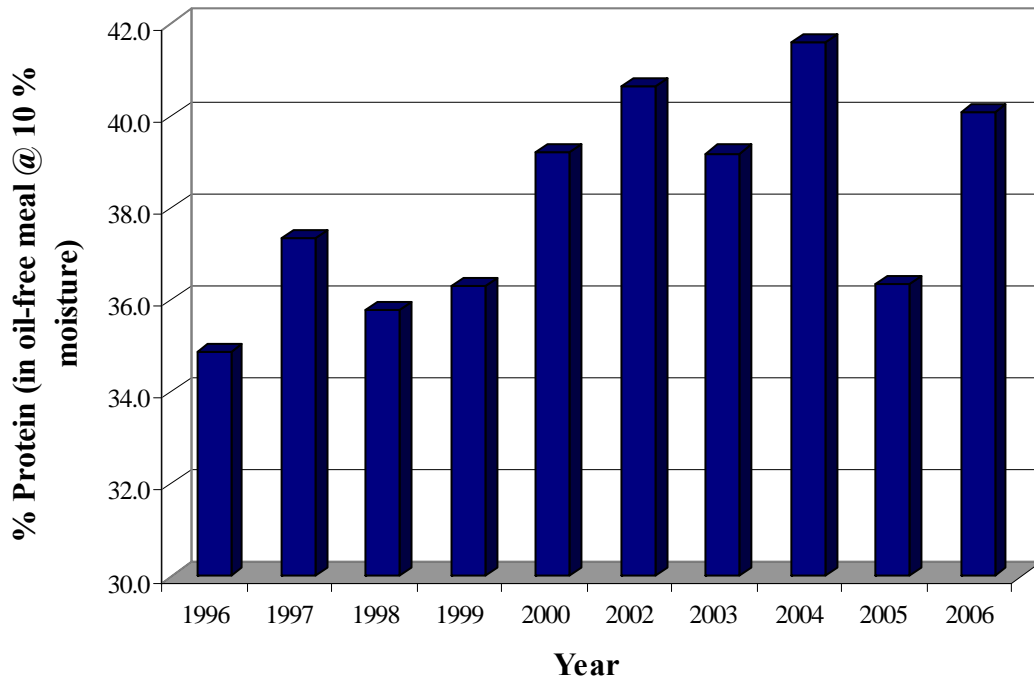


Figure 5: Average Australian protein content 1996 – 2006

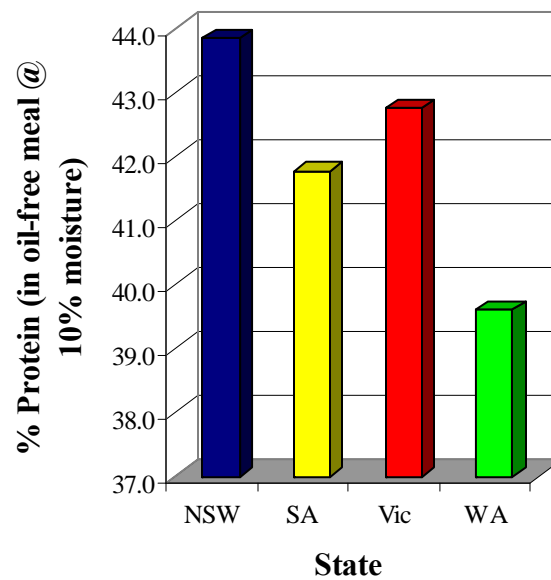


Figure 6: Average protein content by state 2006

Glucosinolate Concentration

The average glucosinolate content for the 2006 harvest was 4 $\mu\text{moles/g}$. This was a decrease of 3 $\mu\text{moles/g}$ from the 2005 harvest and the lowest in the past 10 years. Glucosinolate content ranged from 1 $\mu\text{moles/g}$ at multiple sites in Western Australia to 15 $\mu\text{moles/g}$ at Junee Sub and Caragabal in New South Wales and Marmalake in Victoria.

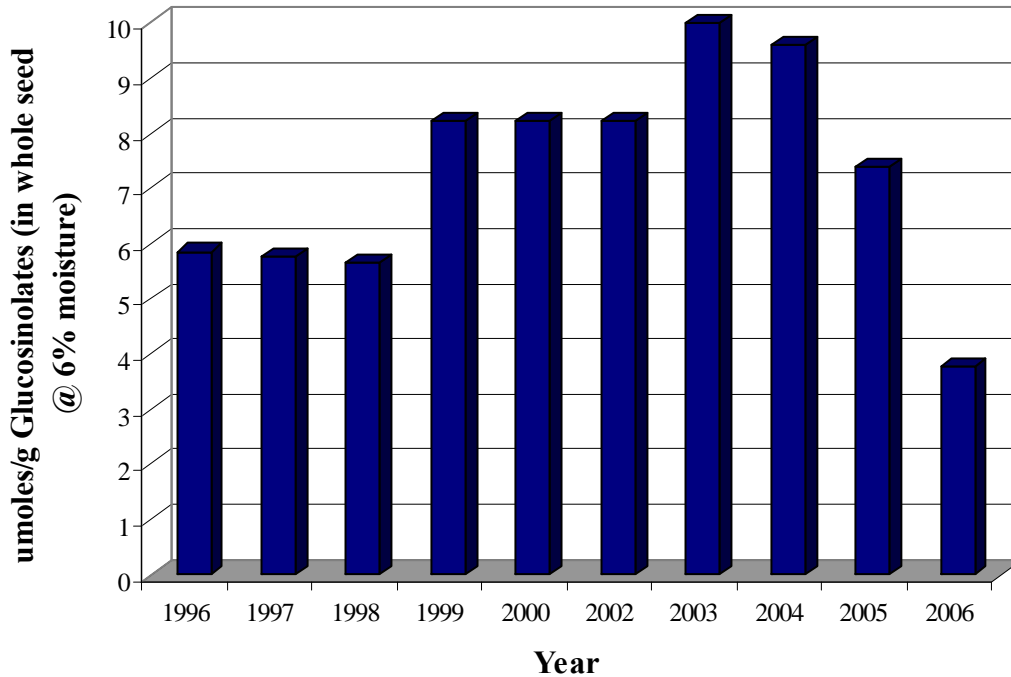


Figure 7: Average Australian glucosinolate content 1996 – 2006

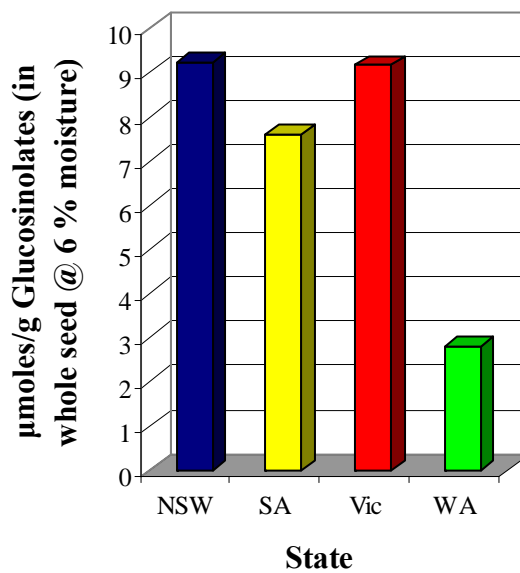


Figure 8: Average glucosinolate content by state 2006

Fatty Acid Composition

Oleic Acid

The average oleic acid (C18:1) concentration in the oil produced from the 2006 harvest was 60.0 %. This was 0.9 % lower than 2005. The concentration ranged from 54.3 % at Mingenew in Western Australia to 61.8 % at Wickepin and Qualeup in Western Australia.

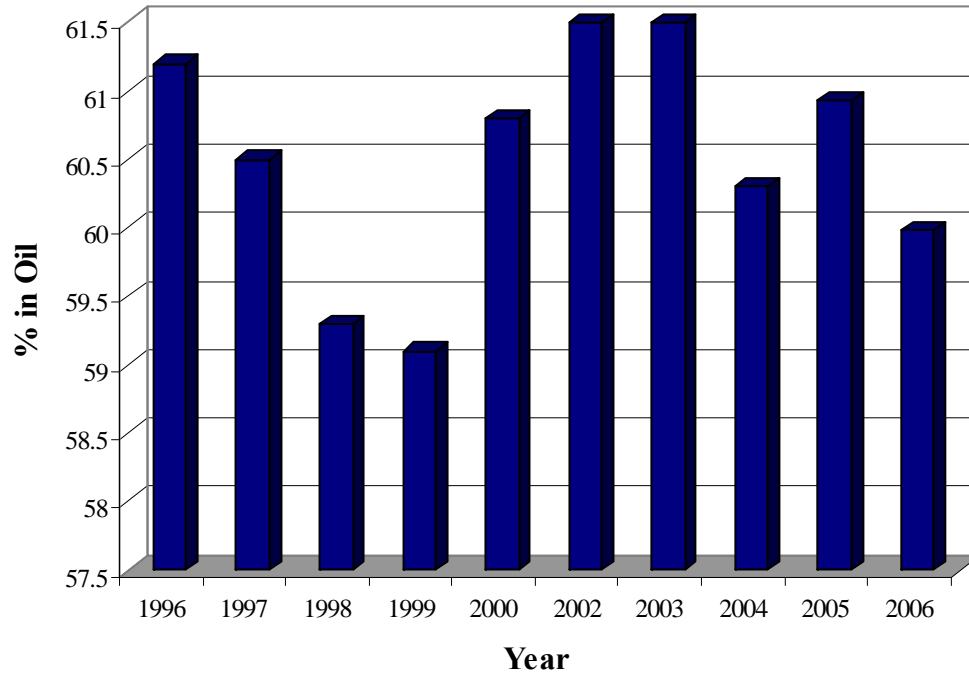


Figure 9: Average Australian oleic acid concentration in canola oil 1996 – 2006

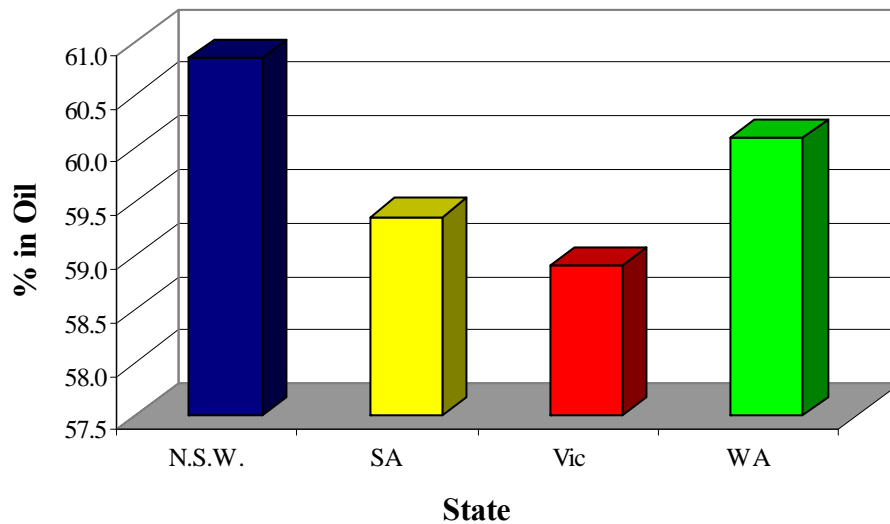


Figure 10: Average oleic acid concentration by state 2006

Fatty Acid Composition

Linoleic Acid

The average linoleic acid (C18:2) concentration in oil produced from the 2006 harvest was 20.2 % this was 0.3 % higher than 2005. The concentration ranged from 18.4 % at Kojoneerup in Western Australia to 24.7 % at Mingenew in Western Australia.

Linolenic Acid

There was an increase of 0.3 % in the linolenic acid (C18:3) concentration to 11.1 %. This was the highest since 2000 and the fourth successive increase. Linolenic acid concentrations ranged from 8.6 % Forbes in New South Wales to 13.5 % at Willaura in Victoria.

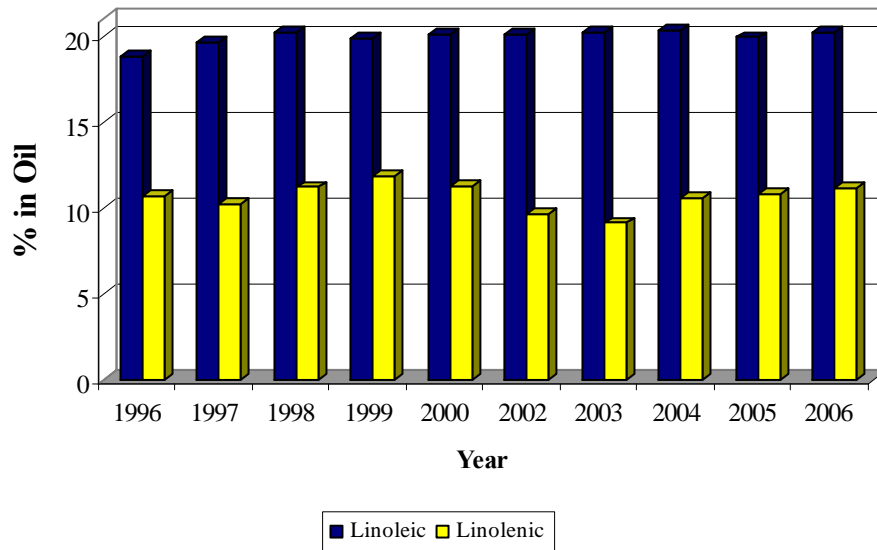


Figure 11: Average Australian linoleic acid and linolenic concentration in canola oil 1996 – 2006

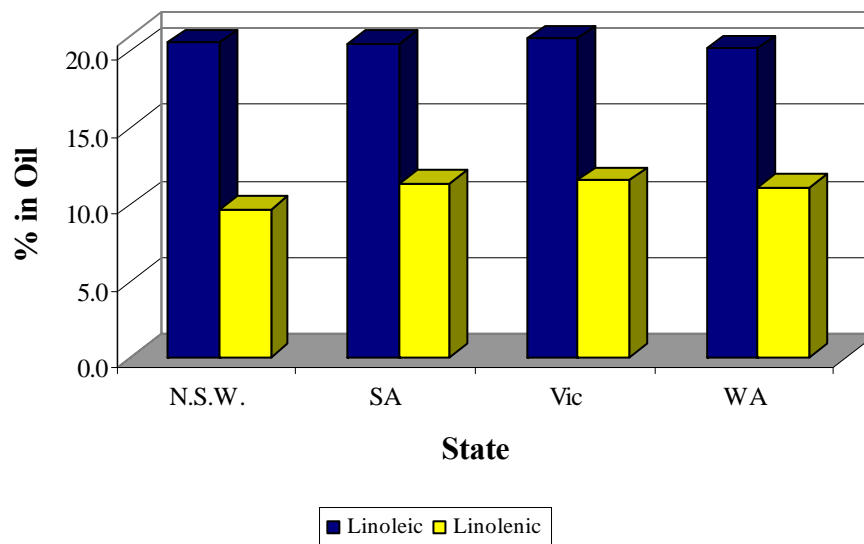


Figure 12: Average linoleic acid and linolenic acid concentration by state 2006

Fatty Acid Composition

Saturated Fatty Acid

The average saturated fatty acid concentration was 7.2 %. This was a 0.2 % increase from the 2005 harvest. Saturated fatty acid concentration ranged from 6.7 % at Frances (Grade – CANO) in South Australia to 8.0 % at Coomandook (Grade – CNLT) in South Australia and Boree Creek in New South Wales.

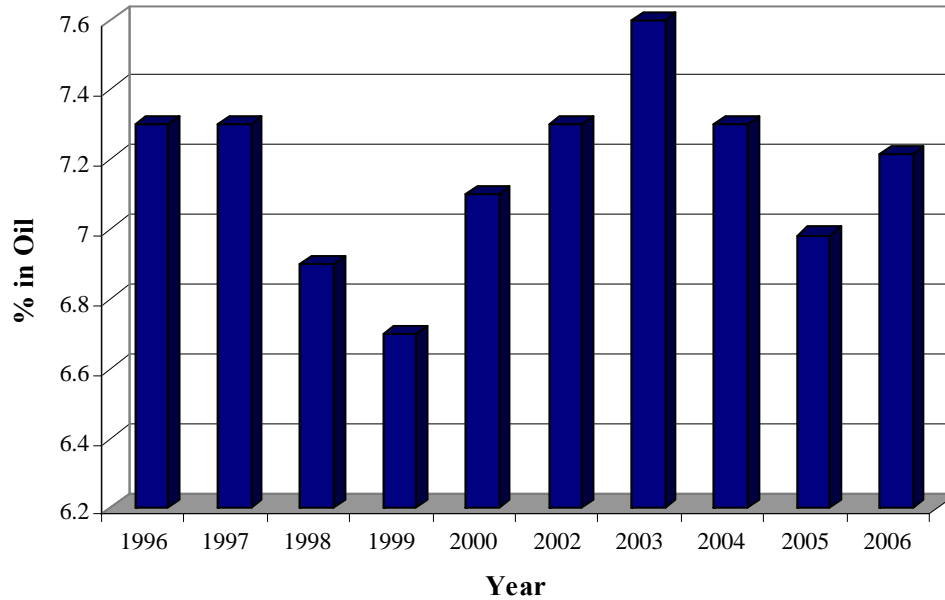


Figure 13: Average Australian saturated fatty acid concentration in canola oil 1996 – 2006

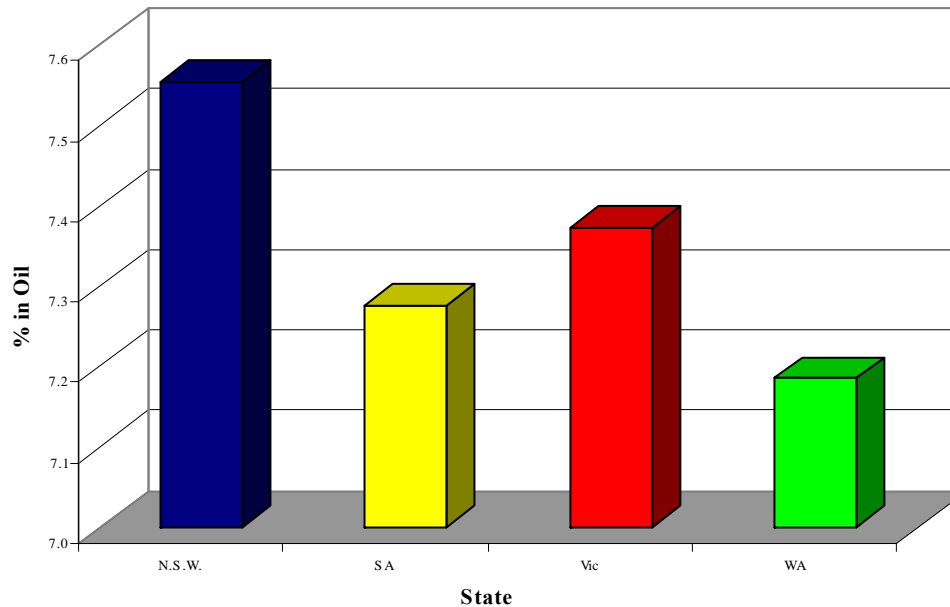


Figure 14: Average saturated fatty acid concentration by state 2006

Quality Data by State

Quality Data – New South Wales

Table 3: Quality Data – New South Wales

| <u>Division/ Region/ Receiveal Site</u> | ¹ Oil | ² Protein | ³ Glucosinolates | ⁴ Grain Weight | |
|---|------------------|----------------------|-----------------------------|---------------------------|-------------|
| | | | | lbs/b | kg/hL |
| <u>Central</u> | | | | | |
| Dubbo | | | | | |
| Balladoran | 37.8 | 44.9 | 11 | 55.4 | 69.0 |
| Parkes | | | | | |
| Bribbaree | 36.0 | 44.1 | 13 | 54.6 | 68.0 |
| Caragabal | 35.0 | 46.2 | 15 | 55.0 | 68.5 |
| Forbes | 41.6 | 45.3 | 10 | 53.0 | 66.0 |
| Milvale | 37.3 | 44.6 | 10 | 55.0 | 68.5 |
| Wagga Wagga | | | | | |
| Boree Creek | 35.0 | 44.2 | 11 | 54.6 | 68.0 |
| Cootamundra | 36.4 | 45.2 | 9 | 55.0 | 68.5 |
| Grong Grong | 35.5 | 44.5 | 14 | 54.6 | 68.0 |
| Harden | 39.4 | 45.6 | 10 | 53.4 | 66.5 |
| Henty West | 34.7 | 45.2 | 14 | 54.6 | 68.0 |
| Junee Sub | 35.1 | 45.1 | 15 | 54.6 | 68.0 |
| Wyalong | | | | | |
| Barellan | 39.3 | 42.9 | 9 | 53.8 | 67.0 |
| Temora Sub | 35.6 | 46.6 | 13 | 54.6 | 68.0 |
| Wyalong | 36.4 | 44.9 | 5 | 55.0 | 68.5 |
| <u>Central Mean</u> | 38.3 | 44.0 | 10 | 54.1 | 67.5 |
| <u>Northern</u> | | | | | |
| Moree | | | | | |
| Moree | 38.7 | 43.8 | 5 | 53.8 | 67.0 |
| Narrabri | | | | | |
| Burren Junction | 35.0 | 42.7 | 11 | 56.6 | 70.5 |
| Willow Tree | 40.7 | 43.9 | 7 | 54.2 | 67.5 |
| <u>Northern Mean</u> | 38.7 | 43.6 | 8 | 54.7 | 68.1 |
| <u>NSW Mean</u> | 38.4 | 43.8 | 9 | 54.3 | 67.7 |

¹ % in whole seed @ 6% moisture, ² % in oil free meal @10% moisture, ³ μmoles/g in whole seed @ 6% moisture

⁴ Volumetric Grain Weights- lbs/b: Pounds per bushel, kg/hL: Kilograms per hectolitre

Quality Data – South Australia

Table 4: Quality Data – South Australia

| <u>Division/ Region/</u> Receiveal Site (Grade) | ¹ Oil | ² Protein | ³ Glucosinolates | ⁴ Grain Weight | |
|--|------------------|----------------------|-----------------------------|---------------------------|-------------|
| | | | | lbs/b | kg/hL |
| Adelaide | | | | | |
| Port Adelaide (CANO) | 40.5 | 42.4 | 5 | 54.3 | 67.7 |
| Eyre Peninsula | | | | | |
| Lock (CANO) | 37.6 | 46.0 | 9 | 53.8 | 67.0 |
| Lower North | | | | | |
| Bowmans (CANO) | 40.3 | 42.8 | 11 | 54.8 | 68.3 |
| Roseworthy (CANO) | 43.5 | 38.6 | 4 | 54.3 | 67.7 |
| Roseworthy (CNLT) | 38.7 | 41.5 | 8 | 51.7 | 64.5 |
| Mid North | | | | | |
| Andrews (CANO) | 39.2 | 43.4 | 4 | 55.2 | 68.8 |
| NSW | | | | | |
| Tatyoan (CANO) | 39.9 | 41.8 | 1 | 54.0 | 67.3 |
| South East | | | | | |
| Coomandook (CANO) | 39.4 | 41.9 | 12 | 53.6 | 66.8 |
| Coomandook (CNLT) | 37.9 | 41.8 | 11 | 49.7 | 62.0 |
| Frances (CANO) | 41.7 | 45.8 | 9 | 52.1 | 65.0 |
| Keith (CANO) | 41.7 | 41.4 | 7 | 54.2 | 67.5 |
| Keith (CNLT) | 38.9 | 42.8 | 10 | 52.1 | 65.0 |
| Wolseley (CANO) | 39.0 | 45.7 | 11 | 53.8 | 67.0 |
| Wolseley (CNLT) | 39.5 | 46.2 | 10 | 53.8 | 67.0 |
| Yorke Peninsula | | | | | |
| Ardrossan (CANO) | 40.1 | 43.0 | 8 | 54.2 | 67.5 |
| Ardrossan (CNLT) | 37.8 | 42.8 | 7 | 52.1 | 65.0 |
| SA Mean | 40.8 | 41.8 | 8 | 54.2 | 67.6 |

¹ % in whole seed @ 6% moisture, ² % in oil free meal @10% moisture, ³ µmoles/g in whole seed @ 6% moisture

⁴ Volumetric Grain Weights- lbs/b: Pounds per bushel, kg/hL: Kilograms per hectolitre

Quality Data – Victoria

Table 5: Quality Data – Victoria

| <u>Division/ Region/ Receiveal Site</u> | ¹ Oil | ² Protein | ³ Glucosinolates | ⁴ Grain Weight | |
|---|--------------------|----------------------|-----------------------------|---------------------------|--------------------|
| | | | | lbs/b | kg/hL |
| <u>Southern</u> | | | | | |
| Horsham | | | | | |
| Berrybank | 40.8 | 43.0 | 9 | 53.8 | 67.0 |
| Beulah | 38.7 | 43.3 | 4 | 54.2 | 67.5 |
| Donald | 41.7 | 42.5 | 9 | 53.8 | 67.0 |
| Goroke | 44.9 | 39.4 | 9 | 53.4 | 66.5 |
| Hamilton | 43.1 | 41.7 | 7 | 53.4 | 66.5 |
| Lillimur | 40.0 | 45.5 | 9 | 53.8 | 67.0 |
| Marmalake | 38.1 | 44.9 | 15 | 53.8 | 67.0 |
| Natimuk | 38.7 | 45.2 | 10 | 53.8 | 67.0 |
| Nhill | 38.7 | 44.7 | 11 | 54.6 | 68.0 |
| Warracknabeal | 36.0 | 43.5 | 10 | 54.6 | 68.0 |
| Westmere | 41.4 | 44.1 | 7 | 54.6 | 68.0 |
| Willaura | 37.3 | 44.0 | 13 | 55.0 | 68.5 |
| Marong | | | | | |
| Borong | 40.4 | 42.7 | 2 | 52.6 | 65.5 |
| Deniliquin | 44.3 | 39.8 | 10 | 53.0 | 66.0 |
| Dookie | 37.5 | 42.8 | 11 | 53.0 | 66.0 |
| Dunolly | 38.1 | 43.9 | 12 | 53.4 | 66.5 |
| Echuca | 40.3 | 42.7 | 12 | 53.4 | 66.5 |
| Elmore | 38.1 | 43.0 | 5 | 53.4 | 66.5 |
| Murchison East | 39.5 | 42.0 | 13 | 52.6 | 65.5 |
| St. James | 37.0 | 43.7 | 13 | 53.8 | 67.0 |
| Tocumwal | 42.0 | 41.7 | 9 | 54.2 | 67.5 |
| Yarawonga | 38.9 | 44.0 | 13 | 54.2 | 67.5 |
| Swan Hill | | | | | |
| Quambatook | 38.4 | 41.3 | 10 | 54.2 | 67.5 |
| <u>Vic Mean</u> | <u>40.2</u> | <u>42.7</u> | <u>9</u> | <u>53.6</u> | <u>66.8</u> |

¹ % in whole seed @ 6% moisture, ² % in oil free meal @10% moisture, ³ μmoles/g in whole seed @ 6% moisture

⁴ Volumetric Grain Weights- lbs/b: Pounds per bushel, kg/hL: Kilograms per hectolitre

Quality Data – Western Australia

Table 6: Quality Data – Western Australia

| <u>Division/ Region/</u> | ⁴ Grain Weight | | | | |
|--------------------------|---------------------------|----------------------|-----------------------------|-------------|-------------|
| Receival Site | ¹ Oil | ² Protein | ³ Glucosinolates | lbs/b | kg/hL |
| Albany | | | | | |
| Albany | 42.8 | 39.9 | 4 | 56.4 | 70.3 |
| Bokal | 42.4 | 39.9 | 1 | 55.0 | 68.5 |
| Cranbrook | 43.2 | 40.2 | 4 | 55.0 | 68.5 |
| Gairdner | 43.4 | 38.9 | 3 | 55.6 | 69.3 |
| Hyden | 41.8 | 38.9 | 7 | 55.6 | 69.3 |
| Jacup | 42.9 | 38.1 | 6 | 55.2 | 68.8 |
| Katanning | 41.4 | 42.2 | 1 | 55.6 | 69.3 |
| Kojoneerup | 42.9 | 41.8 | 4 | 54.4 | 67.8 |
| Kojonup | 41.7 | 39.7 | 7 | 55.0 | 68.5 |
| Newdegate | 42.5 | 37.1 | 7 | 55.4 | 69.0 |
| Qualeup | 42.4 | 39.4 | 5 | 54.4 | 67.8 |
| Tambellup | 40.8 | 41.7 | 5 | 55.0 | 68.5 |
| Wagin | 41.5 | 41.6 | 1 | 55.4 | 69.0 |
| Wellstead | 43.6 | 40.8 | 1 | 55.2 | 68.8 |
| Esperance | | | | | |
| Beaumont | 41.8 | 40.1 | 8 | 55.8 | 69.5 |
| Cascades | 42.6 | 38.5 | 3 | 56.0 | 69.8 |
| Esperance | 42.7 | 39.5 | 1 | 55.8 | 69.5 |
| Lake Varley | 41.7 | 39.3 | 7 | 54.8 | 68.3 |
| Mount Madden | 42.6 | 37.1 | 2 | 55.6 | 69.3 |
| Munglinup | 44.3 | 38.7 | 1 | 55.4 | 69.0 |
| Ravensthorpe | 44.3 | 37.0 | 6 | 55.4 | 69.0 |
| West River | 43.0 | 37.2 | 3 | 55.6 | 69.3 |
| Geraldton | | | | | |
| Mingenew | 35.8 | 38.8 | 13 | 55.2 | 68.8 |
| Kwinana | | | | | |
| Avon | 41.8 | 38.2 | 5 | 55.4 | 69.0 |
| Dale | 41.6 | 38.8 | 7 | 55.2 | 68.8 |
| Kellerberrin | 39.7 | 38.6 | 13 | 56.4 | 70.3 |
| Merredin | 39.6 | 37.4 | 12 | 55.2 | 68.8 |
| MGC | 41.7 | 39.2 | 5 | 55.2 | 68.8 |
| Moora | 40.4 | 39.1 | 9 | 55.6 | 69.3 |
| Narrakine | 41.2 | 41.0 | 2 | 55.2 | 68.8 |
| Quairading | 40.3 | 39.6 | 9 | 55.8 | 69.5 |
| Wickepin | 41.8 | 40.3 | 6 | 55.0 | 68.5 |
| Yerrecoin | 41.1 | 39.5 | 8 | 55.2 | 68.8 |
| York | 41.9 | 39.9 | 5 | 55.2 | 68.8 |
| WA Mean | 42.6 | 39.6 | 3 | 55.5 | 69.2 |

¹ % in whole seed @ 6% moisture, ² % in oil free meal @10% moisture, ³ µmoles/g in whole seed @ 6% moisture

⁴ Volumetric Grain Weights- lbs/b: Pounds per bushel, kg/hL: Kilograms per hectolitre

Fatty Acid Composition by State

Fatty Acid Composition – New South Wales

Table 7: Fatty Acid Composition – New South Wales

| <u>Division/ Region/ Receival Site</u> | <u>14:0</u> | <u>16:0</u> | <u>16:1</u> | <u>18:0</u> | <u>18:1</u> | <u>18:2</u> | <u>18:3</u> | <u>20:0</u> | <u>20:1</u> | <u>22:0</u> | <u>22:1</u> | <u>24:0</u> | <u>24:1</u> | <u>Total</u> | ¹ <u>Sat.</u> | ² <u>Iodine Value</u> |
|--|-------------------|-------------------|-------------------|-------------------|--------------------|--------------------|--------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|---------------------|--------------------------|--------------------------------------|
| <u>Central</u> | | | | | | | | | | | | | | | | |
| Dubbo | | | | | | | | | | | | | | | | |
| Balladoran | 0.1 | 4.3 | 0.3 | 2.0 | 61.1 | 21.1 | 9.3 | 0.5 | 0.9 | 0.3 | 0.0 | 0.2 | 0.1 | 100.0 | 7.2 | 114.3 |
| Parkes | | | | | | | | | | | | | | | | |
| Bribbaree | 0.1 | 4.5 | 0.3 | 2.2 | 59.6 | 20.9 | 10.3 | 0.5 | 1.0 | 0.3 | 0.1 | 0.2 | 0.1 | 100.0 | 7.7 | 115.5 |
| Caragabal | 0.1 | 4.7 | 0.3 | 2.2 | 58.7 | 20.9 | 10.6 | 0.4 | 1.3 | 0.3 | 0.1 | 0.2 | 0.1 | 100.0 | 7.9 | 115.9 |
| Forbes | 0.0 | 4.6 | 0.3 | 2.0 | 61.2 | 21.2 | 8.6 | 0.5 | 1.1 | 0.3 | 0.0 | 0.2 | 0.1 | 100.0 | 7.6 | 112.9 |
| Milvale | 0.1 | 4.4 | 0.3 | 2.1 | 61.1 | 20.3 | 9.6 | 0.5 | 1.0 | 0.3 | 0.1 | 0.1 | 0.1 | 100.0 | 7.6 | 113.9 |
| Wagga Wagga | | | | | | | | | | | | | | | | |
| Boree Creek | 0.1 | 4.9 | 0.3 | 2.0 | 56.6 | 23.5 | 10.5 | 0.5 | 0.9 | 0.3 | 0.1 | 0.2 | 0.1 | 100.0 | 8.0 | 117.9 |
| Cootamundra | 0.1 | 4.5 | 0.3 | 2.1 | 59.6 | 21.1 | 10.4 | 0.5 | 1.0 | 0.3 | 0.0 | 0.2 | 0.1 | 100.0 | 7.6 | 115.9 |
| Grong Grong | 0.1 | 4.6 | 0.3 | 2.0 | 58.4 | 22.6 | 10.3 | 0.5 | 0.5 | 0.3 | 0.0 | 0.2 | 0.1 | 100.0 | 7.6 | 117.2 |
| Harden | 0.1 | 4.3 | 0.3 | 2.0 | 59.2 | 21.0 | 10.8 | 0.6 | 1.1 | 0.3 | 0.1 | 0.2 | 0.1 | 100.0 | 7.5 | 116.7 |
| Henty West | 0.1 | 4.8 | 0.4 | 2.0 | 56.3 | 23.1 | 11.2 | 0.5 | 1.0 | 0.3 | 0.1 | 0.2 | 0.1 | 100.0 | 7.9 | 118.9 |
| Junee Sub | 0.1 | 4.8 | 0.4 | 2.0 | 58.6 | 21.9 | 10.1 | 0.5 | 1.0 | 0.3 | 0.1 | 0.0 | 0.1 | 100.0 | 7.7 | 116.1 |
| Wyalong | | | | | | | | | | | | | | | | |
| Barellan | 0.1 | 4.3 | 0.3 | 2.2 | 60.7 | 20.0 | 10.4 | 0.5 | 1.0 | 0.3 | 0.0 | 0.2 | 0.1 | 100.0 | 7.6 | 115.0 |
| Temora Sub | 0.1 | 4.4 | 0.4 | 2.0 | 59.5 | 21.2 | 10.4 | 0.5 | 1.0 | 0.2 | 0.0 | 0.2 | 0.1 | 100.0 | 7.4 | 116.2 |
| Wyalong | 0.1 | 4.4 | 0.3 | 2.2 | 60.2 | 20.7 | 10.0 | 0.5 | 1.0 | 0.2 | 0.1 | 0.1 | 0.1 | 100.0 | 7.6 | 115.0 |
| <u>Central Mean</u> | <u>0.1</u> | <u>4.4</u> | <u>0.3</u> | <u>2.1</u> | <u>60.2</u> | <u>20.7</u> | <u>10.1</u> | <u>0.5</u> | <u>1.0</u> | <u>0.3</u> | <u>0.0</u> | <u>0.2</u> | <u>0.1</u> | <u>100.0</u> | <u>7.6</u> | <u>115.2</u> |
| <u>Northern</u> | | | | | | | | | | | | | | | | |
| Moree | | | | | | | | | | | | | | | | |
| Moree | 0.1 | 4.3 | 0.3 | 2.1 | 63.4 | 20.0 | 8.2 | 0.4 | 0.9 | 0.2 | 0.0 | 0.1 | 0.1 | 100.0 | 7.2 | 111.4 |
| Narrabri | | | | | | | | | | | | | | | | |
| Burren Junction | 0.1 | 4.5 | 0.3 | 2.6 | 63.6 | 19.3 | 7.1 | 0.8 | 1.0 | 0.3 | 0.0 | 0.2 | 0.1 | 100.0 | 8.5 | 108.0 |
| Willow Tree | 0.1 | 4.2 | 0.3 | 2.0 | 61.2 | 20.5 | 9.5 | 0.5 | 1.1 | 0.3 | 0.1 | 0.1 | 0.1 | 100.0 | 7.2 | 114.2 |
| <u>Northern Mean</u> | <u>0.1</u> | <u>4.3</u> | <u>0.3</u> | <u>2.2</u> | <u>62.4</u> | <u>20.1</u> | <u>8.5</u> | <u>0.6</u> | <u>1.0</u> | <u>0.3</u> | <u>0.0</u> | <u>0.2</u> | <u>0.1</u> | <u>100.0</u> | <u>7.5</u> | <u>111.9</u> |
| <u>NSW Mean</u> | <u>0.1</u> | <u>4.4</u> | <u>0.3</u> | <u>2.2</u> | <u>60.8</u> | <u>20.5</u> | <u>9.7</u> | <u>0.5</u> | <u>1.0</u> | <u>0.3</u> | <u>0.0</u> | <u>0.2</u> | <u>0.1</u> | <u>100.0</u> | <u>7.6</u> | <u>114.2</u> |

¹Sat - Sum of the saturated fatty acids including 14:0, 16:0, 18:0, 20:0 and 24:0

² Iodine Value - Calculated from the fatty acid composition

Fatty Acid Composition – South Australia

Table 8: Fatty Acid Composition – South Australia

| Region/ Receiving Site (Grade) | 14:0 | 16:0 | 16:1 | 18:0 | 18:1 | 18:2 | 18:3 | 20:0 | 20:1 | 22:0 | 22:1 | 24:0 | 24:1 | Total | ¹ Sat. | ² Iodine Value |
|--------------------------------|------------|------------|------------|------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|------------|--------------|-------------------|---------------------------|
| Adelaide | | | | | | | | | | | | | | | | |
| Port Adelaide (CANO) | 0.1 | 4.5 | 0.4 | 2.1 | 58.0 | 21.3 | 11.8 | 0.3 | 1.0 | 0.2 | 0.0 | 0.2 | 0.2 | 100.0 | 7.4 | 118.8 |
| Eyre Peninsula | | | | | | | | | | | | | | | | |
| Lock (CANO) | 0.1 | 4.5 | 0.3 | 2.1 | 58.5 | 21.3 | 11.0 | 0.3 | 1.0 | 0.2 | 0.3 | 0.2 | 0.1 | 100.0 | 7.4 | 117.3 |
| Lower North | | | | | | | | | | | | | | | | |
| Bowmans (CANO) | 0.1 | 4.3 | 0.3 | 2.1 | 60.1 | 20.1 | 11.0 | 0.3 | 1.0 | 0.2 | 0.1 | 0.2 | 0.2 | 100.0 | 7.1 | 116.6 |
| Roseworthy (CANO) | 0.1 | 4.3 | 0.3 | 2.2 | 60.3 | 19.7 | 11.2 | 0.4 | 1.0 | 0.3 | 0.1 | 0.1 | 0.2 | 100.0 | 7.3 | 116.4 |
| Roseworthy (CNLT) | 0.1 | 4.6 | 0.3 | 2.1 | 59.0 | 20.7 | 11.5 | 0.3 | 0.9 | 0.2 | 0.0 | 0.2 | 0.1 | 100.0 | 7.4 | 117.6 |
| Mid North | | | | | | | | | | | | | | | | |
| Andrews (CANO) | 0.1 | 4.4 | 0.3 | 2.1 | 60.3 | 20.1 | 10.8 | 0.3 | 1.0 | 0.2 | 0.1 | 0.2 | 0.1 | 100.0 | 7.3 | 116.0 |
| NSW | | | | | | | | | | | | | | | | |
| Tatyoan (CANO) | 0.1 | 4.6 | 0.3 | 1.9 | 57.8 | 21.5 | 11.9 | 0.3 | 1.0 | 0.3 | 0.0 | 0.1 | 0.2 | 100.0 | 7.4 | 119.0 |
| South East | | | | | | | | | | | | | | | | |
| Coomandook (CANO) | 0.1 | 4.7 | 0.3 | 2.0 | 58.4 | 21.1 | 11.5 | 0.3 | 1.0 | 0.3 | 0.1 | 0.1 | 0.2 | 100.0 | 7.4 | 118.0 |
| Coomandook (CNLT) | 0.1 | 5.0 | 0.4 | 2.2 | 59.3 | 20.5 | 10.5 | 0.3 | 1.0 | 0.2 | 0.1 | 0.2 | 0.2 | 100.0 | 8.0 | 115.1 |
| Frances (CANO) | 0.1 | 4.2 | 0.3 | 1.9 | 59.8 | 19.9 | 12.1 | 0.3 | 1.0 | 0.2 | 0.0 | 0.1 | 0.1 | 100.0 | 6.7 | 118.6 |
| Keith (CANO) | 0.1 | 4.4 | 0.3 | 2.1 | 59.9 | 20.7 | 10.4 | 0.4 | 1.1 | 0.3 | 0.1 | 0.2 | 0.2 | 100.0 | 7.3 | 115.8 |
| Keith (CNLT) | 0.1 | 4.5 | 0.4 | 2.2 | 56.5 | 21.5 | 12.5 | 0.4 | 1.0 | 0.3 | 0.1 | 0.2 | 0.3 | 100.0 | 7.7 | 119.8 |
| Wolseley (CANO) | 0.1 | 4.4 | 0.3 | 2.0 | 58.0 | 20.7 | 12.6 | 0.3 | 1.0 | 0.2 | 0.0 | 0.1 | 0.2 | 100.0 | 7.2 | 119.7 |
| Wolseley (CNLT) | 0.1 | 4.7 | 0.3 | 2.1 | 59.3 | 19.9 | 11.8 | 0.3 | 1.0 | 0.3 | 0.0 | 0.1 | 0.2 | 100.0 | 7.5 | 117.4 |
| Yorke Peninsula | | | | | | | | | | | | | | | | |
| Ardrossan (CANO) | 0.1 | 4.4 | 0.3 | 2.0 | 58.5 | 21.2 | 11.8 | 0.3 | 1.0 | 0.2 | 0.0 | 0.1 | 0.1 | 100.0 | 7.1 | 118.8 |
| Ardrossan (CNLT) | 0.1 | 4.6 | 0.3 | 2.1 | 56.7 | 22.5 | 11.7 | 0.3 | 0.9 | 0.3 | 0.1 | 0.2 | 0.2 | 100.0 | 7.6 | 119.5 |
| SA Mean | 0.1 | 4.4 | 0.3 | 2.1 | 59.4 | 20.5 | 11.4 | 0.3 | 1.0 | 0.3 | 0.1 | 0.1 | 0.2 | 100.0 | 7.3 | 117.4 |

¹Sat - Sum of the saturated fatty acids including 14:0, 16:0, 18:0, 20:0 and 24:0

² Iodine Value - Calculated from the fatty acid composition

Fatty Acid Composition – Victoria

Table 9: Fatty Acid Composition – Victoria

| <u>Division/ Region/ Receival Site</u> | <u>14:0</u> | <u>16:0</u> | <u>16:1</u> | <u>18:0</u> | <u>18:1</u> | <u>18:2</u> | <u>18:3</u> | <u>20:0</u> | <u>20:1</u> | <u>22:0</u> | <u>22:1</u> | <u>24:0</u> | <u>24:1</u> | <u>Total</u> | ¹ <u>Sat.</u> | ² <u>Iodine Value</u> |
|--|-------------------|-------------------|-------------------|-------------------|--------------------|--------------------|--------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|---------------------|--------------------------|--------------------------------------|
| Horsham | | | | | | | | | | | | | | | | |
| Berrybank | 0.1 | 4.5 | 0.2 | 1.8 | 57.8 | 21.4 | 12.4 | 0.4 | 0.9 | 0.2 | 0.0 | 0.1 | 0.1 | 100.0 | 7.1 | 120.1 |
| Beulah | 0.1 | 4.3 | 0.3 | 2.0 | 59.3 | 20.8 | 11.6 | 0.4 | 0.9 | 0.2 | 0.0 | 0.1 | 0.1 | 100.0 | 7.1 | 118.3 |
| Donald | 0.1 | 4.3 | 0.3 | 2.0 | 61.2 | 19.8 | 10.2 | 0.5 | 1.0 | 0.2 | 0.1 | 0.2 | 0.1 | 100.0 | 7.3 | 114.7 |
| Goroke | 0.1 | 4.4 | 0.3 | 1.8 | 60.0 | 18.9 | 12.6 | 0.5 | 0.9 | 0.3 | 0.0 | 0.1 | 0.1 | 100.0 | 7.2 | 118.2 |
| Hamilton | 0.1 | 4.6 | 0.3 | 1.9 | 58.3 | 21.0 | 12.1 | 0.4 | 1.0 | 0.2 | 0.0 | 0.1 | 0.1 | 100.0 | 7.2 | 119.2 |
| Lillimur | 0.1 | 4.3 | 0.3 | 1.9 | 59.7 | 19.9 | 11.8 | 0.5 | 1.0 | 0.2 | 0.1 | 0.1 | 0.1 | 100.0 | 7.1 | 117.9 |
| Marmalake | 0.1 | 4.4 | 0.3 | 2.0 | 58.4 | 20.6 | 12.0 | 0.5 | 1.1 | 0.3 | 0.1 | 0.2 | 0.1 | 100.0 | 7.5 | 118.4 |
| Natimuk | 0.1 | 4.4 | 0.3 | 1.9 | 58.7 | 20.4 | 12.1 | 0.5 | 1.0 | 0.2 | 0.1 | 0.1 | 0.1 | 100.0 | 7.3 | 118.6 |
| Nhill | 0.1 | 4.5 | 0.3 | 2.0 | 58.9 | 20.3 | 12.1 | 0.4 | 1.0 | 0.2 | 0.0 | 0.1 | 0.1 | 100.0 | 7.4 | 118.4 |
| Warracknabeal | 0.1 | 4.5 | 0.3 | 2.1 | 58.5 | 20.9 | 11.6 | 0.5 | 0.9 | 0.3 | 0.1 | 0.2 | 0.1 | 100.0 | 7.6 | 117.8 |
| Westmere | 0.1 | 4.6 | 0.4 | 1.7 | 56.8 | 21.6 | 12.8 | 0.5 | 1.0 | 0.3 | 0.1 | 0.1 | 0.1 | 100.0 | 7.3 | 120.9 |
| Willaura | 0.1 | 4.6 | 0.3 | 1.8 | 56.7 | 20.9 | 13.5 | 0.5 | 1.0 | 0.3 | 0.1 | 0.1 | 0.1 | 100.0 | 7.4 | 121.5 |
| Marong | | | | | | | | | | | | | | | | |
| Borong | 0.1 | 4.3 | 0.3 | 2.2 | 58.5 | 20.9 | 11.5 | 0.5 | 1.0 | 0.2 | 0.1 | 0.1 | 0.1 | 100.0 | 7.5 | 117.9 |
| Deniliquin | 0.1 | 4.3 | 0.3 | 2.1 | 61.7 | 19.3 | 10.1 | 0.5 | 1.1 | 0.3 | 0.1 | 0.1 | 0.1 | 100.0 | 7.3 | 114.1 |
| Dookie | 0.1 | 4.7 | 0.3 | 1.9 | 57.9 | 22.1 | 10.9 | 0.5 | 1.0 | 0.3 | 0.1 | 0.2 | 0.1 | 100.0 | 7.7 | 117.6 |
| Dunolly | 0.1 | 4.6 | 0.3 | 1.9 | 57.8 | 20.9 | 12.3 | 0.5 | 1.1 | 0.3 | 0.1 | 0.1 | 0.1 | 100.0 | 7.5 | 119.2 |
| Echuca | 0.1 | 4.4 | 0.3 | 2.1 | 59.7 | 20.4 | 11.0 | 0.5 | 0.9 | 0.2 | 0.1 | 0.1 | 0.1 | 100.0 | 7.5 | 116.5 |
| Elmore | 0.1 | 4.7 | 0.3 | 2.1 | 57.7 | 21.2 | 11.9 | 0.5 | 0.9 | 0.2 | 0.1 | 0.2 | 0.1 | 100.0 | 7.7 | 118.7 |
| Murchison East | 0.1 | 4.6 | 0.3 | 1.9 | 57.8 | 21.7 | 11.7 | 0.4 | 0.9 | 0.3 | 0.0 | 0.1 | 0.1 | 100.0 | 7.4 | 119.0 |
| St. James | 0.1 | 4.6 | 0.3 | 2.0 | 58.9 | 21.5 | 10.4 | 0.5 | 1.0 | 0.3 | 0.1 | 0.2 | 0.1 | 100.0 | 7.6 | 116.3 |
| Tocumwal | 0.1 | 4.3 | 0.3 | 2.0 | 61.5 | 19.7 | 10.1 | 0.5 | 1.0 | 0.2 | 0.0 | 0.1 | 0.1 | 100.0 | 7.3 | 114.5 |
| Yarawonga | 0.1 | 4.6 | 0.4 | 2.0 | 58.6 | 21.5 | 10.8 | 0.5 | 1.0 | 0.3 | 0.1 | 0.1 | 0.1 | 100.0 | 7.6 | 117.1 |
| Swan Hill | | | | | | | | | | | | | | | | |
| Quambatook | 0.1 | 4.3 | 0.3 | 2.1 | 59.5 | 20.6 | 11.4 | 0.4 | 0.9 | 0.2 | 0.0 | 0.1 | 0.1 | 100.0 | 7.2 | 117.6 |
| <u>Vic Mean</u> | <u>0.1</u> | <u>4.5</u> | <u>0.3</u> | <u>2.0</u> | <u>58.9</u> | <u>20.8</u> | <u>11.5</u> | <u>0.5</u> | <u>1.0</u> | <u>0.3</u> | <u>0.1</u> | <u>0.1</u> | <u>0.1</u> | <u>100.0</u> | <u>7.4</u> | <u>117.9</u> |

¹Sat - Sum of the saturated fatty acids including 14:0, 16:0, 18:0, 20:0 and 24:0

² Iodine Value - Calculated from the fatty acid composition

Fatty Acid Composition – Western Australia

Table 10: Fatty Acid Composition – Western Australia

| Region/ Receival Site | 14:0 | 16:0 | 16:1 | 18:0 | 18:1 | 18:2 | 18:3 | 20:0 | 20:1 | 22:0 | 22:1 | 24:0 | 24:1 | Total | ¹ Sat. | ² Iodine Value |
|--------------------------|------------|------------|------------|------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|------------|--------------|-------------------|---------------------------|
| Albany | | | | | | | | | | | | | | | | |
| Albany | 0.1 | 4.3 | 0.3 | 2.0 | 60.6 | 19.7 | 11.2 | 0.3 | 1.0 | 0.2 | 0.1 | 0.1 | 0.1 | 100.0 | 7.0 | 116.6 |
| Bokal | 0.1 | 4.4 | 0.3 | 2.2 | 61.4 | 19.1 | 10.3 | 0.4 | 1.1 | 0.3 | 0.1 | 0.1 | 0.2 | 100.0 | 7.4 | 114.1 |
| Cranbrook | 0.1 | 4.3 | 0.3 | 2.1 | 61.1 | 19.4 | 10.9 | 0.3 | 1.0 | 0.2 | 0.1 | 0.1 | 0.1 | 100.0 | 7.2 | 115.7 |
| Gairdner | 0.1 | 4.3 | 0.3 | 2.0 | 60.2 | 19.8 | 11.5 | 0.3 | 0.9 | 0.2 | 0.0 | 0.1 | 0.1 | 100.0 | 7.0 | 117.3 |
| Hyden | 0.1 | 4.5 | 0.3 | 1.9 | 58.4 | 21.3 | 11.7 | 0.3 | 0.9 | 0.2 | 0.0 | 0.1 | 0.2 | 100.0 | 7.2 | 118.7 |
| Jacup | 0.1 | 4.4 | 0.3 | 2.1 | 59.9 | 19.9 | 11.7 | 0.3 | 0.9 | 0.2 | 0.0 | 0.1 | 0.1 | 100.0 | 7.2 | 117.6 |
| Katanning | 0.1 | 4.4 | 0.3 | 2.1 | 59.9 | 20.0 | 11.2 | 0.4 | 1.0 | 0.2 | 0.1 | 0.1 | 0.1 | 100.0 | 7.3 | 116.7 |
| Kojoneerup | 0.0 | 4.0 | 0.3 | 2.1 | 61.6 | 18.4 | 11.3 | 0.4 | 1.2 | 0.3 | 0.0 | 0.1 | 0.2 | 100.0 | 7.0 | 115.8 |
| Kojonup | 0.1 | 4.3 | 0.3 | 2.2 | 61.5 | 19.3 | 10.4 | 0.3 | 1.0 | 0.2 | 0.0 | 0.1 | 0.1 | 100.0 | 7.3 | 114.7 |
| Newdegate | 0.1 | 4.5 | 0.3 | 1.8 | 58.7 | 21.2 | 11.5 | 0.3 | 0.9 | 0.3 | 0.0 | 0.1 | 0.2 | 100.0 | 7.2 | 118.3 |
| Qualeup | 0.1 | 4.3 | 0.3 | 2.2 | 61.8 | 19.0 | 10.3 | 0.3 | 1.0 | 0.2 | 0.2 | 0.1 | 0.2 | 100.0 | 7.2 | 114.3 |
| Tembellup | 0.1 | 4.3 | 0.3 | 2.1 | 59.7 | 19.8 | 11.6 | 0.4 | 1.1 | 0.2 | 0.2 | 0.1 | 0.1 | 100.0 | 7.1 | 117.3 |
| Wagin | 0.1 | 4.4 | 0.3 | 2.1 | 60.0 | 20.0 | 11.2 | 0.4 | 1.0 | 0.2 | 0.1 | 0.1 | 0.1 | 100.0 | 7.3 | 116.7 |
| Wellstead | 0.1 | 4.2 | 0.3 | 2.0 | 60.4 | 19.5 | 11.8 | 0.3 | 1.0 | 0.2 | 0.0 | 0.1 | 0.1 | 100.0 | 6.9 | 117.7 |
| Esperance | | | | | | | | | | | | | | | | |
| Beaumont | 0.1 | 4.4 | 0.3 | 2.0 | 59.3 | 20.6 | 11.4 | 0.4 | 1.1 | 0.3 | 0.0 | 0.1 | 0.1 | 100.0 | 7.2 | 117.5 |
| Cascades | 0.1 | 4.5 | 0.3 | 2.0 | 60.0 | 20.5 | 10.8 | 0.3 | 0.9 | 0.2 | 0.0 | 0.1 | 0.1 | 100.0 | 7.3 | 116.4 |
| Esperance | 0.1 | 4.4 | 0.4 | 2.0 | 59.8 | 20.4 | 11.2 | 0.3 | 0.9 | 0.2 | 0.1 | 0.1 | 0.1 | 100.0 | 7.2 | 117.1 |
| Lake Varley | 0.1 | 4.4 | 0.3 | 2.0 | 59.3 | 20.3 | 11.5 | 0.4 | 1.0 | 0.2 | 0.2 | 0.2 | 0.1 | 100.0 | 7.2 | 117.4 |
| Mount Madden | 0.1 | 4.5 | 0.3 | 1.9 | 58.7 | 21.0 | 11.4 | 0.3 | 1.0 | 0.3 | 0.1 | 0.1 | 0.2 | 100.0 | 7.2 | 117.9 |
| Munglinup | 0.1 | 4.4 | 0.3 | 2.0 | 60.5 | 20.0 | 11.0 | 0.3 | 0.9 | 0.2 | 0.0 | 0.1 | 0.1 | 100.0 | 7.1 | 116.5 |
| Ravensthorpe | 0.1 | 4.4 | 0.3 | 2.0 | 59.2 | 20.4 | 11.9 | 0.3 | 0.9 | 0.2 | 0.1 | 0.1 | 0.1 | 100.0 | 7.1 | 118.4 |
| West River | 0.1 | 4.4 | 0.3 | 2.0 | 59.7 | 20.4 | 11.2 | 0.3 | 0.9 | 0.2 | 0.0 | 0.1 | 0.2 | 100.0 | 7.2 | 117.1 |
| Geraldton | | | | | | | | | | | | | | | | |
| Mingenew | 0.1 | 5.2 | 0.4 | 1.8 | 54.3 | 24.7 | 11.5 | 0.4 | 1.0 | 0.3 | 0.0 | 0.1 | 0.1 | 100.0 | 7.8 | 121.0 |
| Kwinana | | | | | | | | | | | | | | | | |
| Avon | 0.1 | 4.7 | 0.4 | 1.9 | 59.1 | 21.4 | 10.5 | 0.4 | 1.0 | 0.3 | 0.0 | 0.1 | 0.2 | 100.0 | 7.5 | 116.5 |
| Dale | 0.1 | 4.5 | 0.3 | 1.9 | 60.4 | 21.0 | 9.9 | 0.3 | 1.0 | 0.3 | 0.0 | 0.1 | 0.1 | 100.0 | 7.2 | 115.4 |
| Kellerberrin | 0.1 | 4.9 | 0.3 | 1.8 | 55.5 | 23.1 | 12.3 | 0.3 | 1.0 | 0.3 | 0.0 | 0.2 | 0.2 | 100.0 | 7.5 | 121.2 |
| Merredin | 0.1 | 4.8 | 0.3 | 1.8 | 56.7 | 22.7 | 11.6 | 0.3 | 1.0 | 0.3 | 0.0 | 0.2 | 0.2 | 100.0 | 7.4 | 119.6 |
| MGC | 0.1 | 4.5 | 0.4 | 2.0 | 60.0 | 20.5 | 10.7 | 0.3 | 1.0 | 0.2 | 0.1 | 0.1 | 0.2 | 100.0 | 7.2 | 116.2 |
| Moora | 0.1 | 4.6 | 0.3 | 1.9 | 58.0 | 22.0 | 11.3 | 0.4 | 1.0 | 0.3 | 0.0 | 0.1 | 0.1 | 100.0 | 7.4 | 118.4 |
| Narrakine | 0.1 | 4.3 | 0.3 | 2.2 | 61.5 | 19.0 | 10.7 | 0.4 | 1.0 | 0.2 | 0.1 | 0.1 | 0.1 | 100.0 | 7.3 | 114.8 |
| Quairadin | 0.1 | 4.8 | 0.3 | 1.8 | 57.4 | 22.3 | 11.3 | 0.4 | 1.0 | 0.3 | 0.0 | 0.1 | 0.1 | 100.0 | 7.5 | 118.7 |
| Wickepin | 0.1 | 4.3 | 0.3 | 2.2 | 61.8 | 18.9 | 10.6 | 0.3 | 0.9 | 0.2 | 0.0 | 0.1 | 0.1 | 100.0 | 7.3 | 114.7 |
| Yerrecoin | 0.1 | 4.5 | 0.3 | 2.0 | 60.6 | 20.6 | 10.0 | 0.3 | 1.0 | 0.2 | 0.0 | 0.1 | 0.1 | 100.0 | 7.4 | 115.0 |
| York | 0.1 | 4.6 | 0.3 | 2.0 | 59.9 | 20.8 | 10.5 | 0.3 | 0.9 | 0.2 | 0.0 | 0.1 | 0.1 | 100.0 | 7.3 | 116.2 |
| WA Mean | 0.1 | 4.4 | 0.3 | 2.0 | 60.1 | 20.1 | 11.1 | 0.3 | 1.0 | 0.2 | 0.1 | 0.1 | 0.1 | 100.0 | 7.2 | 116.7 |

¹Sat - Sum of the saturated fatty acids including 14:0, 16:0, 18:0, 20:0 and 24:0

² Iodine Value - Calculated from the fatty acid composition

National Brassica Improvement Project – Quality Data

Oil Content for 2006 Early Canola Breeding Trials

Table 11: Percentage oil content for 2006 early canola breeding trials (in whole seed at 6 % moisture)

| S2 Early Conventional Trials | | | | | | S2 Early Triazine Trials | | | | | | S2 Clearfield Trials | | | | | |
|------------------------------|------|------|------|------|-------------|--------------------------|------|------|------|------|-------------|----------------------|------|------|------|------|-------------|
| Variety | B | H | L | W | Mean | Variety | B | H | L | M | Mean | Variety | B | H | L | M | Mean |
| AG-OUTBACK | * | * | * | 37.7 | 37.7 | ATR507 | 38.6 | 38.3 | 37.6 | 37.4 | 38.0 | 44C73 | 39.7 | 38.5 | 36.4 | 38.8 | 38.4 |
| AV-JADE | 40.9 | 38.8 | 38.3 | 40.6 | 39.7 | ATR510 | 39.1 | 38.4 | 37.0 | 36.6 | 37.8 | 45Y77 | 39.7 | 37.8 | 36.9 | 40.9 | 38.8 |
| AV-OPAL | 41.3 | 38.8 | 38.2 | 39.1 | 39.3 | ATR511 | 38.5 | 38.5 | 37.8 | 36.9 | 37.9 | 46C76 | * | * | * | 38.2 | 38.2 |
| BLN2026*SL902 | 41.6 | 40.2 | 38.5 | 42.2 | 40.6 | ATR512 | 37.5 | 36.8 | 36.7 | 37.3 | 37.0 | BLN3852CL | 41.6 | 40.4 | 38.7 | 38.7 | 39.8 |
| BLN3224-04W1 | 42.5 | 39.7 | 38.2 | 40.5 | 40.2 | ATR513 | 38.2 | 36.0 | 36.4 | 36.1 | 36.7 | BLN3853CL | 40.1 | 40.7 | 39.2 | 38.6 | 39.6 |
| BLN3346-04M8 | 40.8 | 40.0 | 38.2 | 41.2 | 40.0 | ATR514 | 38.8 | 37.8 | 37.1 | 35.5 | 37.3 | BLN3854CL | 39.0 | 38.5 | 35.3 | 38.5 | 37.8 |
| BLN3868 | 43.3 | 41.5 | 39.6 | 41.8 | 41.5 | ATR-BANJO | 38.5 | 39.9 | 38.3 | 36.0 | 38.2 | BLN3855CL | 39.1 | 39.3 | 36.8 | 39.6 | 38.7 |
| BLN3869 | 40.3 | 39.8 | 38.5 | 39.8 | 39.6 | ATR-STUBBY | 37.5 | 38.2 | 37.2 | 35.4 | 37.1 | BLN3856CL | 39.9 | 41.6 | 40.2 | 38.7 | 40.1 |
| BLN3870 | 39.3 | 40.1 | 38.8 | 39.6 | 39.5 | BLN3356TT-04M3 | 38.2 | 38.9 | 37.7 | 37.0 | 37.9 | BLN3857CL | 40.5 | 40.4 | 37.7 | 39.1 | 39.4 |
| BLN3871 | 41.3 | 41.1 | 39.0 | 41.3 | 40.7 | BLN3835TT | 40.4 | 40.4 | 39.0 | 38.5 | 39.6 | BLN3858CL | 40.5 | 39.6 | 36.7 | 37.8 | 38.7 |
| BLN3872 | 40.7 | 40.1 | 38.1 | 40.4 | 39.8 | BLN3836TT | 39.5 | 40.0 | 39.3 | 37.8 | 39.2 | BLN3859CL | 41.1 | 42.5 | 39.8 | 38.9 | 40.5 |
| BLN3873 | 39.9 | 39.5 | 38.2 | 40.5 | 39.5 | BLN3837TT | 39.4 | 40.5 | 40.1 | 38.0 | 39.5 | WARRIORCL | 38.9 | 38.3 | 36.5 | 38.1 | 38.0 |
| BLN3874 | 41.1 | 39.3 | 38.2 | 40.5 | 39.8 | BLN3838TT | 39.0 | 40.0 | 39.0 | 37.7 | 39.0 | | | | | | |
| BLN3875 | 41.0 | 39.2 | 38.6 | 40.0 | 39.7 | BLN3839TT | 39.9 | 39.1 | 38.9 | 37.1 | 38.7 | | | | | | |
| CC05001 | 40.2 | 39.6 | 38.8 | 40.3 | 39.7 | BLN3840TT | 39.4 | 38.0 | 36.6 | 36.6 | 37.7 | | | | | | |
| CC05002 | 40.4 | 39.2 | 38.0 | 41.0 | 39.6 | BLN3841TT | 39.2 | 38.8 | 37.6 | 37.1 | 38.2 | | | | | | |
| CC05004 | 41.1 | 40.7 | 39.7 | 39.8 | 40.4 | BLN3842TT | 39.7 | 39.1 | 38.8 | 37.8 | 38.8 | | | | | | |
| CC05006 | 40.4 | 39.1 | 38.9 | 40.5 | 39.7 | BRAVOTT | 38.6 | 37.3 | 37.0 | 36.1 | 37.3 | | | | | | |
| CC05015 | 40.5 | 39.3 | 38.4 | 40.5 | 39.7 | SARDI609TT | 39.8 | 39.7 | 38.3 | 36.6 | 38.6 | | | | | | |
| CC05016 | 40.7 | 39.3 | 38.2 | 39.9 | 39.5 | SARDI610TT | 40.5 | * | 38.9 | * | 39.7 | | | | | | |
| CC05018 | 39.7 | 39.0 | 38.1 | 38.1 | 38.7 | SARDI611TT | 40.0 | 37.9 | 37.0 | 36.8 | 37.9 | | | | | | |
| RT008-04M3 | 42.8 | 40.6 | 39.9 | 42.2 | 41.4 | SARDI612TT | 39.8 | 39.5 | 39.1 | 37.9 | 39.1 | | | | | | |
| SARDI601 | 40.9 | 39.7 | 39.4 | 40.6 | 40.2 | SARDI613TT | 39.9 | 39.6 | 39.3 | 38.3 | 39.2 | | | | | | |
| SARDI602 | 41.2 | 39.8 | 39.2 | 40.1 | 40.1 | SARDI614TT | 40.5 | 39.3 | 38.7 | 37.2 | 38.9 | | | | | | |
| SARDI603 | 41.0 | 40.0 | 39.2 | 41.5 | 40.5 | SARDI615TT | 39.5 | 38.6 | 38.2 | 37.7 | 38.5 | | | | | | |
| SARDI604 | 41.4 | 40.4 | 40.2 | 41.8 | 41.0 | SARDI616TT | 39.7 | 38.3 | 37.7 | 36.3 | 38.0 | | | | | | |
| SARDI605 | 41.2 | 38.1 | 38.9 | 40.6 | 39.7 | SARDI617TT | 40.4 | 38.8 | 37.8 | 36.6 | 38.4 | | | | | | |
| SARDI606 | 41.3 | 38.7 | 38.3 | 40.4 | 39.7 | TORNADOTT | 39.8 | 39.2 | 39.0 | 37.3 | 38.8 | | | | | | |
| SARDI607 | 42.1 | 39.6 | 39.0 | 40.9 | 40.4 | | | | | | | | | | | | |
| SARDI608 | 41.5 | 39.1 | 38.5 | 40.4 | 39.9 | | | | | | | | | | | | |

B = Bellata - NSW, H = Horsham - Vic, L = Lameroo - SA, W = Wongan Hills - WA, M = Merredin - WA

Oil Content for 2006 Mid Canola Breeding Trials

Table 12: Percentage oil content for 2006 mid canola breeding trials (in whole seed at 6 % moisture)

| S2 Mid Conventional Trials | | | | | S2 Mid Triazine Trials | | | | | S2 Mid Clearfield Trials | | | | |
|----------------------------|------|------|------|-------------|------------------------|------|------|------|-------------|--------------------------|------|------|------|-------------|
| Variety | K | Ta | Tu | Mean | Variety | K | Ta | Tu | Mean | Variety | K | Ta | Tu | Mean |
| AV-JADE | 46.9 | 40.1 | 41.3 | 42.8 | ATR517 | 42.4 | 40.2 | 39.9 | 40.8 | 44C73 | 44.9 | * | * | 44.9 |
| BLN3876 | 47.5 | 42.3 | 42.1 | 44.0 | ATR518 | 43.2 | 39.5 | 40.0 | 40.9 | 46C76 | 45.1 | 38.8 | 40.7 | 41.5 |
| BLN3877 | 47.4 | 41.6 | 42.1 | 43.7 | ATR519 | 43.0 | 38.8 | 39.6 | 40.5 | BLN3642CL-MO502 | * | * | 41.3 | 41.3 |
| BLN3878 | 47.2 | 41.6 | 42.4 | 43.7 | ATR520 | 43.6 | 40.2 | 41.3 | 41.7 | BLN3860CL | 47.4 | 40.0 | 43.5 | 43.6 |
| BLN3879 | 47.2 | 43.3 | 42.5 | 44.4 | ATR523 | 44.4 | 39.9 | 40.3 | 41.5 | BLN3861CL | 47.0 | 39.3 | 41.3 | 42.5 |
| BLN3880 | 46.8 | 43.1 | 42.9 | 44.3 | ATR524 | 45.1 | 39.7 | 40.0 | 41.6 | BLN3862CL | 46.7 | 40.5 | 41.8 | 43.0 |
| BLN3881 | 47.2 | 42.3 | 42.4 | 44.0 | ATR531 | 45.8 | 39.8 | 41.7 | 42.4 | BLN3863CL | 46.3 | 40.4 | 42.6 | 43.1 |
| BLN3882 | 47.3 | 42.9 | 41.8 | 44.0 | ATR539 | 43.0 | 38.2 | 37.3 | 39.5 | BLN3864CL | 46.4 | 41.9 | 42.5 | 43.6 |
| BLN3883 | 46.6 | 42.6 | 41.5 | 43.6 | ATR-BANJO | 46.2 | * | 36.7 | 41.5 | BLN3865CL | 45.8 | 40.7 | 41.8 | 42.8 |
| CC05021 | 45.9 | 42.6 | 41.7 | 43.4 | ATR-SUMMITT | 44.2 | 39.3 | 38.9 | 40.8 | BLN3866CL | 47.1 | 41.4 | 41.8 | 43.4 |
| CC05024 | 46.9 | 42.4 | 41.8 | 43.7 | BLN3357TT-04W6 | 44.5 | 39.4 | 40.4 | 41.4 | BLN3867CL | 45.9 | 39.5 | 42.1 | 42.5 |
| CC05031 | 47.9 | 43.3 | 43.7 | 45.0 | BLN3780TT | 44.6 | 39.3 | 41.4 | 41.7 | CI06005 | 47.1 | 38.1 | 41.7 | 42.3 |
| CC05032 | 48.3 | 44.7 | 43.2 | 45.4 | BLN3843TT | 44.8 | 39.1 | 40.0 | 41.3 | CI06006 | 46.7 | 40.0 | 42.6 | 43.1 |
| CC05040 | 48.0 | 42.7 | 41.8 | 44.1 | BLN3844TT | 47.5 | 42.2 | 43.0 | 44.2 | CI06007 | 46.9 | 39.2 | 41.0 | 42.4 |
| CC05051 | 46.8 | 42.3 | 43.3 | 44.1 | BLN3845TT | 46.1 | 39.1 | 42.4 | 42.5 | CI06008 | 46.8 | 40.5 | 41.0 | 42.8 |
| CC05055 | 46.7 | 41.9 | 41.5 | 43.3 | BLN3846TT | 47.0 | 43.0 | 43.7 | 44.6 | CI06009 | 44.8 | 37.7 | 38.5 | 40.4 |
| HYOLA 75 | 44.6 | 38.8 | 39.6 | 41.0 | BLN3847TT | 44.4 | 37.8 | 39.9 | 40.7 | CI06010 | 46.0 | 37.5 | 42.3 | 42.0 |
| SKIPTON | 47.1 | 42.8 | 42.7 | 44.2 | BLN3848TT | 44.7 | 39.2 | 40.2 | 41.4 | CI06011 | 45.5 | 36.6 | 37.0 | 39.7 |
| | | | | | BLN3849TT | 46.2 | 41.0 | 40.5 | 42.6 | ROCKETCL | 45.5 | 39.4 | 41.8 | 42.2 |
| | | | | | BRA VOTT | 43.7 | 37.8 | 39.8 | 40.4 | SURPASS603CL | 48.0 | * | * | 48.0 |
| | | | | | SARDI618TT | 45.4 | 39.7 | 40.4 | 41.8 | WARRIORCL | 46.0 | 39.0 | 40.8 | 41.9 |
| | | | | | SARDI619TT | 45.6 | 40.3 | 40.1 | 42.0 | | | | | |
| | | | | | SARDI620TT | 45.3 | 41.0 | 39.9 | 42.1 | | | | | |
| | | | | | SARDI621TT | 45.2 | 40.1 | 40.2 | 41.8 | | | | | |
| | | | | | SARDI622TT | 45.1 | 39.5 | 41.5 | 42.0 | | | | | |
| | | | | | SARDI623TT | 44.1 | 39.4 | 38.9 | 40.8 | | | | | |
| | | | | | SARDI624TT | 46.5 | 38.6 | 40.2 | 41.8 | | | | | |
| | | | | | SARDI625TT | 45.8 | 39.4 | 40.1 | 41.8 | | | | | |
| | | | | | THUNDERTT | 44.2 | 38.5 | 40.9 | 41.2 | | | | | |
| | | | | | TORNADOTT | 45.3 | 39.2 | 40.8 | 41.8 | | | | | |

K = Katanning - WA, Ta = Tamworth - NSW, Tu = Turretfield - SA

Protein Content for 2006 Early Canola Breeding Trials

Table 13: Percentage protein content for 2006 early canola breeding trials (in oil-free meal at 10 % moisture)

| S2 Early Conventional Trials | | | | | | S2 Early Triazine Trials | | | | | | S2 Clearfield Trials | | | | | |
|------------------------------|------|------|------|------|-------------|--------------------------|------|------|------|------|-------------|----------------------|------|------|------|------|-------------|
| Variety | B | H | L | W | Mean | Variety | B | H | L | M | Mean | Variety | B | H | L | M | Mean |
| AG-OUTBACK | * | * | * | 43.7 | 43.7 | ATR507 | 44.9 | 44.6 | 43.5 | 42.7 | 43.9 | 44C73 | 44.4 | 44.0 | 43.5 | 46.6 | 44.6 |
| AV-JADE | 48.1 | 47.0 | 45.9 | 45.8 | 46.7 | ATR510 | 47.5 | 46.0 | 44.8 | 45.5 | 45.9 | 45Y77 | 46.5 | 45.5 | 45.6 | 45.2 | 45.7 |
| AV-OPAL | 48.5 | 48.1 | 46.5 | 46.9 | 47.5 | ATR511 | 46.3 | 45.7 | 44.3 | 44.1 | 45.1 | 46C76 | * | * | * | 43.7 | 43.7 |
| BLN2026*SL902 | 47.0 | 47.3 | 46.4 | 43.4 | 46.0 | ATR512 | 43.8 | 46.2 | 46.0 | 45.1 | 45.3 | BLN3852CL | 46.0 | 46.0 | 46.8 | 45.0 | 46.0 |
| BLN3224-04W1 | 47.5 | 48.7 | 47.2 | 44.1 | 46.9 | ATR513 | 47.1 | 45.5 | 44.3 | 44.8 | 45.4 | BLN3853CL | 48.7 | 46.5 | 46.5 | 44.5 | 46.5 |
| BLN3346-04M8 | 44.7 | 45.2 | 43.9 | 42.9 | 44.2 | ATR514 | 46.6 | 45.6 | 44.4 | 43.3 | 45.0 | BLN3854CL | 45.6 | 44.6 | 44.8 | 44.1 | 44.8 |
| BLN3868 | 47.6 | 47.9 | 46.2 | 45.9 | 46.9 | ATR-BANJO | 45.5 | 46.6 | 46.3 | 45.6 | 46.0 | BLN3855CL | 46.8 | 45.0 | 45.5 | 45.4 | 45.7 |
| BLN3869 | 44.5 | 46.0 | 44.3 | 42.9 | 44.4 | ATR-STUBBY | 44.2 | 44.1 | 42.5 | 41.9 | 43.2 | BLN3856CL | 46.2 | 44.5 | 44.7 | 43.7 | 44.8 |
| BLN3870 | 45.0 | 46.7 | 45.4 | 42.9 | 45.0 | BLN3356TT-04M3 | 47.1 | 48.7 | 46.9 | 44.8 | 46.9 | BLN3857CL | 45.8 | 45.3 | 45.4 | 43.7 | 45.1 |
| BLN3871 | 49.5 | 48.0 | 47.0 | 45.8 | 47.6 | BLN3835TT | 47.2 | 46.1 | 45.7 | 45.2 | 46.0 | BLN3858CL | 46.0 | 45.0 | 45.2 | 43.8 | 45.0 |
| BLN3872 | 45.6 | 46.6 | 46.3 | 42.2 | 45.2 | BLN3836TT | 46.4 | 45.6 | 44.0 | 44.1 | 45.0 | BLN3859CL | 46.2 | 45.4 | 45.3 | 44.9 | 45.5 |
| BLN3873 | 46.2 | 45.2 | 45.0 | 43.7 | 45.0 | BLN3837TT | 46.8 | 46.6 | 44.7 | 44.0 | 45.5 | WARRIORCL | 46.9 | 46.3 | 47.0 | 44.2 | 46.1 |
| BLN3874 | 45.8 | 44.6 | 45.0 | 43.2 | 44.6 | BLN3838TT | 45.2 | 47.0 | 45.5 | 44.8 | 45.6 | | | | | | |
| BLN3875 | 46.2 | 45.3 | 44.6 | 45.1 | 45.3 | BLN3839TT | 45.6 | 45.8 | 44.9 | 43.6 | 45.0 | | | | | | |
| CC05001 | 47.1 | 47.3 | 46.0 | 45.5 | 46.5 | BLN3840TT | 47.0 | 46.7 | 45.9 | 45.6 | 46.3 | | | | | | |
| CC05002 | 44.7 | 44.7 | 43.2 | 43.0 | 43.9 | BLN3841TT | 47.2 | 46.4 | 45.6 | 45.3 | 46.1 | | | | | | |
| CC05004 | 45.8 | 45.8 | 44.8 | 44.2 | 45.2 | BLN3842TT | 46.5 | 46.7 | 45.9 | 45.8 | 46.2 | | | | | | |
| CC05006 | 46.7 | 45.8 | 45.2 | 44.5 | 45.6 | BRAVOTT | 47.0 | 47.1 | 45.9 | 45.1 | 46.3 | | | | | | |
| CC05015 | 46.8 | 46.6 | 45.0 | 44.5 | 45.7 | SARDI609TT | 46.3 | 47.4 | 45.9 | 44.8 | 46.1 | | | | | | |
| CC05016 | 48.0 | 47.4 | 45.7 | 46.5 | 46.9 | SARDI610TT | 46.8 | * | 45.3 | * | 46.0 | | | | | | |
| CC05018 | 44.9 | 45.4 | 43.8 | 43.3 | 44.4 | SARDI611TT | 46.6 | 46.4 | 45.1 | 45.2 | 45.8 | | | | | | |
| RT008-04M3 | 47.1 | 47.4 | 46.1 | 41.5 | 45.5 | SARDI612TT | 47.1 | 47.0 | 46.0 | 45.7 | 46.4 | | | | | | |
| SARDI601 | 48.9 | 48.7 | 48.2 | 46.0 | 48.0 | SARDI613TT | 46.0 | 45.2 | 44.7 | 43.9 | 44.9 | | | | | | |
| SARDI602 | 46.7 | 47.9 | 46.2 | 42.3 | 45.8 | SARDI614TT | 46.6 | 46.7 | 45.6 | 43.9 | 45.7 | | | | | | |
| SARDI603 | 47.5 | 46.7 | 46.1 | 42.7 | 45.7 | SARDI615TT | 46.4 | 48.0 | 46.4 | 44.7 | 46.4 | | | | | | |
| SARDI604 | 47.3 | 47.4 | 46.3 | 44.0 | 46.2 | SARDI616TT | 46.8 | 47.9 | 45.9 | 45.3 | 46.5 | | | | | | |
| SARDI605 | 48.5 | 47.1 | 45.9 | 47.1 | 47.1 | SARDI617TT | 46.4 | 47.8 | 47.2 | 45.5 | 46.7 | | | | | | |
| SARDI606 | 47.8 | 47.9 | 46.3 | 47.4 | 47.3 | TORNADOTT | 46.9 | 46.3 | 45.1 | 45.2 | 45.9 | | | | | | |
| SARDI607 | 46.9 | 47.5 | 45.7 | 44.9 | 46.3 | | | | | | | | | | | | |
| SARDI608 | 48.1 | 47.0 | 46.2 | 46.5 | 46.9 | | | | | | | | | | | | |

B = Bellata - NSW, H = Horsham - Vic, L = Lameroo - SA, W = Wongan Hills - WA, M = Merredin - WA

Protein Content for 2006 Mid Canola Breeding Trials

Table 14: Percentage protein content for 2006 mid canola breeding trials (in oil-free meal at 10 % moisture)

| S2 Mid Conventional Trials | | | | | S2 Mid Triazine Trials | | | | | S2 Mid Clearfield Trials | | | | |
|----------------------------|------|------|------|-------------|------------------------|------|------|------|-------------|--------------------------|------|------|------|-------------|
| Variety | K | Ta | Tu | Mean | Variety | K | Ta | Tu | Mean | Variety | K | Ta | Tu | Mean |
| AV-JADE | 39.4 | 46.5 | 45.8 | 43.9 | ATR517 | 38.9 | 44.8 | 44.7 | 42.8 | 44C73 | 37.3 | * | * | 37.3 |
| BLN3876 | 38.6 | 47.4 | 46.7 | 44.2 | ATR518 | 37.7 | 44.9 | 44.4 | 42.4 | 46C76 | 37.3 | 46.9 | 43.5 | 42.6 |
| BLN3877 | 39.5 | 47.3 | 47.2 | 44.6 | ATR519 | 37.7 | 43.4 | 44.1 | 41.7 | BLN3642CL-MO502 | * | * | 44.8 | 44.8 |
| BLN3878 | 40.9 | 47.3 | 47.6 | 45.3 | ATR520 | 38.4 | 43.3 | 43.7 | 41.8 | BLN3860CL | 38.5 | 48.9 | 47.9 | 45.1 |
| BLN3879 | 38.8 | 46.0 | 44.9 | 43.2 | ATR523 | 39.0 | 45.2 | 46.0 | 43.4 | BLN3861CL | 39.3 | 46.9 | 45.6 | 43.9 |
| BLN3880 | 37.0 | 44.7 | 43.8 | 41.8 | ATR524 | 39.3 | 45.7 | 45.7 | 43.6 | BLN3862CL | 37.6 | 45.9 | 45.1 | 42.9 |
| BLN3881 | 36.7 | 44.4 | 43.3 | 41.4 | ATR531 | 39.6 | 45.1 | 45.5 | 43.4 | BLN3863CL | 39.0 | 48.2 | 47.5 | 44.9 |
| BLN3882 | 37.1 | 44.9 | 45.6 | 42.5 | ATR539 | 38.3 | 44.5 | 44.6 | 42.5 | BLN3864CL | 38.4 | 48.0 | 46.5 | 44.3 |
| BLN3883 | 37.9 | 45.1 | 45.2 | 42.7 | ATR-BANJO | 40.0 | * | 42.9 | 41.5 | BLN3865CL | 38.8 | 46.9 | 44.9 | 43.5 |
| CC05021 | 36.1 | 44.2 | 43.4 | 41.2 | ATR-SUMMITT | 38.2 | 45.6 | 45.7 | 43.2 | BLN3866CL | 40.5 | 48.5 | 46.7 | 45.2 |
| CC05024 | 37.4 | 43.2 | 44.5 | 41.7 | BLN3357TT-04W6 | 38.9 | 45.5 | 46.3 | 43.6 | BLN3867CL | 38.2 | 47.2 | 45.3 | 43.6 |
| CC05031 | 38.7 | 45.0 | 45.8 | 43.2 | BLN3780TT | 40.2 | 46.1 | 47.3 | 44.5 | CI06005 | 37.2 | 45.8 | 43.7 | 42.2 |
| CC05032 | 38.9 | 45.2 | 45.8 | 43.3 | BLN3843TT | 40.6 | 47.7 | 47.6 | 45.3 | CI06006 | 38.9 | 46.0 | 46.4 | 43.7 |
| CC05040 | 38.2 | 43.5 | 45.5 | 42.4 | BLN3844TT | 41.9 | 47.7 | 48.7 | 46.1 | CI06007 | 36.8 | 47.2 | 46.0 | 43.3 |
| CC05051 | 39.5 | 45.1 | 45.7 | 43.4 | BLN3845TT | 41.6 | 46.1 | 47.7 | 45.2 | CI06008 | 38.2 | 45.6 | 44.4 | 42.7 |
| CC05055 | 37.2 | 45.0 | 43.7 | 42.0 | BLN3846TT | 38.6 | 45.2 | 45.8 | 43.2 | CI06009 | 38.0 | 47.0 | 44.9 | 43.3 |
| HYOLA 75 | 37.1 | 44.2 | 45.5 | 42.3 | BLN3847TT | 39.4 | 48.0 | 47.1 | 44.8 | CI06010 | 38.4 | 46.2 | 45.0 | 43.2 |
| SKIPTON | 39.6 | 46.5 | 46.9 | 44.4 | BLN3848TT | 38.8 | 44.7 | 45.9 | 43.1 | CI06011 | 36.8 | 44.3 | 41.0 | 40.7 |
| | | | | | BLN3849TT | 38.1 | 45.0 | 46.3 | 43.1 | ROCKETCL | 38.8 | 47.1 | 45.6 | 43.8 |
| | | | | | BRA VOTT | 37.8 | 45.0 | 45.1 | 42.6 | SURPASS603CL | 39.9 | * | * | 39.9 |
| | | | | | SARDI618TT | 39.1 | 45.9 | 47.1 | 44.1 | WARRIORCL | 38.5 | 47.1 | 45.9 | 43.8 |
| | | | | | SARDI619TT | 39.8 | 47.2 | 46.8 | 44.6 | | | | | |
| | | | | | SARDI620TT | 38.7 | 45.3 | 45.3 | 43.1 | | | | | |
| | | | | | SARDI621TT | 39.9 | 47.0 | 46.6 | 44.5 | | | | | |
| | | | | | SARDI622TT | 40.9 | 46.6 | 46.7 | 44.7 | | | | | |
| | | | | | SARDI623TT | 40.7 | 45.6 | 46.5 | 44.3 | | | | | |
| | | | | | SARDI624TT | 38.3 | 46.3 | 46.7 | 43.8 | | | | | |
| | | | | | SARDI625TT | 39.4 | 47.4 | 48.5 | 45.1 | | | | | |
| | | | | | THUNDERTT | 39.5 | 45.0 | 46.3 | 43.6 | | | | | |
| | | | | | TORNADOTT | 40.1 | 45.6 | 46.2 | 44.0 | | | | | |

K = Katanning - WA, Ta = Tamworth - NSW, Tu = Turretfield - SA

Glucosinolate Concentration for 2006 Early Canola Breeding Trials

Table 15: Glucosinolate concentration for 2006 early canola breeding trials ($\mu\text{moles/g}$ in whole seed at 6 % moisture)

| S2 Early Conventional Trials | | | | | | S2 Early Triazine Trials | | | | | | S2 Clearfield Trials | | | | | | |
|------------------------------|----|----|----|----|------|--------------------------|----|----|----|----|------|----------------------|----|----|----|----|------|--|
| Variety | B | H | L | W | Mean | Variety | B | H | L | M | Mean | Variety | B | H | L | M | Mean | |
| AG-OUTBACK | * | * | * | 9 | 9 | ATR507 | 12 | 8 | 5 | 7 | 8 | 44C73 | 10 | 9 | 7 | 9 | 9 | |
| AV-JADE | 12 | 10 | 6 | 7 | 9 | ATR510 | 15 | 12 | 9 | 11 | 12 | 45Y77 | 12 | 11 | 8 | 8 | 10 | |
| AV-OPAL | 9 | 8 | 6 | 10 | 8 | ATR511 | 11 | 11 | 12 | 10 | 11 | 46C76 | * | * | * | 10 | 10 | |
| BLN2026*SL902 | 12 | 9 | 4 | 9 | 8 | ATR512 | 13 | 6 | 3 | 9 | 8 | BLN3852CL | 12 | 6 | 7 | 10 | 9 | |
| BLN3224-04W1 | 13 | 9 | 12 | 8 | 10 | ATR513 | 17 | 18 | 15 | 13 | 16 | BLN3853CL | 11 | 7 | 5 | 8 | 8 | |
| BLN3346-04M8 | 10 | 4 | 7 | 3 | 6 | ATR514 | 14 | 13 | 11 | 12 | 13 | BLN3854CL | 8 | 6 | 8 | 8 | 7 | |
| BLN3868 | 12 | 1 | 8 | 7 | 7 | ATR-BANJO | 13 | 13 | 11 | 12 | 12 | BLN3855CL | 13 | 9 | 6 | 9 | 9 | |
| BLN3869 | 12 | 8 | 8 | 4 | 8 | ATR-STUBBY | 14 | 15 | 13 | 13 | 14 | BLN3856CL | 12 | 4 | 4 | 9 | 7 | |
| BLN3870 | 13 | 10 | 6 | 7 | 9 | BLN3356TT-04M3 | 12 | 7 | 7 | 8 | 8 | BLN3857CL | 11 | 8 | 7 | 7 | 8 | |
| BLN3871 | 10 | 3 | 6 | 6 | 6 | BLN3835TT | 12 | 8 | 9 | 10 | 10 | BLN3858CL | 11 | 6 | 6 | 8 | 8 | |
| BLN3872 | 13 | 15 | 9 | 9 | 12 | BLN3836TT | 13 | 8 | 8 | 9 | 9 | BLN3859CL | 10 | 4 | 4 | 10 | 7 | |
| BLN3873 | 11 | 9 | 4 | 5 | 7 | BLN3837TT | 12 | 7 | 6 | 8 | 8 | WARRIORCL | 14 | 13 | 10 | 8 | 11 | |
| BLN3874 | 10 | 5 | 7 | 4 | 6 | BLN3838TT | 12 | 7 | 7 | 10 | 9 | | | | | | | |
| BLN3875 | 12 | 6 | 6 | 3 | 7 | BLN3839TT | 9 | 7 | 8 | 7 | 8 | | | | | | | |
| CC05001 | 11 | 10 | 7 | 8 | 9 | BLN3840TT | 13 | 9 | 10 | 10 | 11 | | | | | | | |
| CC05002 | 12 | 9 | 7 | 4 | 8 | BLN3841TT | 13 | 9 | 9 | 11 | 11 | | | | | | | |
| CC05004 | 10 | 8 | 5 | 7 | 7 | BLN3842TT | 14 | 9 | 9 | 9 | 11 | | | | | | | |
| CC05006 | 11 | 9 | 10 | 5 | 9 | BRAVOTT | 14 | 16 | 14 | 14 | 14 | | | | | | | |
| CC05015 | 10 | 12 | 9 | 7 | 9 | SARDI609TT | 12 | 6 | 6 | 9 | 8 | | | | | | | |
| CC05016 | 12 | 6 | 7 | 6 | 8 | SARDI610TT | 11 | * | 10 | * | 11 | | | | | | | |
| CC05018 | 12 | 13 | 10 | 10 | 11 | SARDI611TT | 10 | 8 | 10 | 8 | 9 | | | | | | | |
| RT008-04M3 | 11 | 5 | 6 | 5 | 7 | SARDI612TT | 11 | 6 | 6 | 8 | 8 | | | | | | | |
| SARDI601 | 11 | 8 | 6 | 8 | 8 | SARDI613TT | 15 | 10 | 5 | 9 | 10 | | | | | | | |
| SARDI602 | 10 | 8 | 7 | 4 | 7 | SARDI614TT | 9 | 5 | 3 | 6 | 6 | | | | | | | |
| SARDI603 | 11 | 7 | 6 | 7 | 8 | SARDI615TT | 12 | 6 | 6 | 8 | 8 | | | | | | | |
| SARDI604 | 13 | 7 | 5 | 9 | 8 | SARDI616TT | 12 | 7 | 5 | 8 | 8 | | | | | | | |
| SARDI605 | 11 | 9 | 8 | 6 | 9 | SARDI617TT | 14 | 9 | 9 | 9 | 10 | | | | | | | |
| SARDI606 | 10 | 12 | 5 | 5 | 8 | TORNADOTT | 10 | 5 | 5 | 6 | 7 | | | | | | | |
| SARDI607 | 9 | 9 | 8 | 9 | 9 | | | | | | | | | | | | | |
| SARDI608 | 12 | 9 | 5 | 5 | 8 | | | | | | | | | | | | | |

B = Bellata - NSW, H = Horsham - Vic, L = Lameroo - SA, W = Wongan Hills - WA, M = Merredin - WA

Glucosinolate Concentration for 2006 Mid Canola Breeding Trials

Table 16: Glucosinolate concentration for 2006 mid canola breeding trials ($\mu\text{moles/g}$ in whole seed at 6 % moisture)

| S2 Mid Conventional Trials | | | | | S2 Mid Triazine Trials | | | | | S2 Mid Clearfield Trials | | | | |
|----------------------------|----|----|----|------|------------------------|----|----|----|------|--------------------------|----|----|----|------|
| Variety | K | Ta | Tu | Mean | Variety | K | Ta | Tu | Mean | Variety | K | Ta | Tu | Mean |
| AV-JADE | 7 | 8 | 6 | 7 | ATR517 | 9 | 14 | 9 | 11 | 44C73 | 6 | * | * | 6 |
| BLN3876 | 11 | 6 | 4 | 7 | ATR518 | 10 | 13 | 9 | 11 | 46C76 | 8 | 14 | 8 | 10 |
| BLN3877 | 10 | 8 | 5 | 7 | ATR519 | 10 | 15 | 11 | 12 | BLN3642CL-MO502 | * | * | 4 | 4 |
| BLN3878 | 10 | 9 | 7 | 8 | ATR520 | 12 | 16 | 9 | 13 | BLN3860CL | 7 | 11 | 1 | 6 |
| BLN3879 | 9 | 7 | 3 | 6 | ATR523 | 9 | 15 | 10 | 11 | BLN3861CL | 5 | 14 | 2 | 7 |
| BLN3880 | 9 | 6 | 5 | 6 | ATR524 | 9 | 15 | 11 | 11 | BLN3862CL | 5 | 12 | 4 | 7 |
| BLN3881 | 10 | 5 | 5 | 7 | ATR531 | 7 | 10 | 5 | 7 | BLN3863CL | 6 | 12 | 3 | 7 |
| BLN3882 | 9 | 6 | 5 | 7 | ATR539 | 8 | 11 | 6 | 8 | BLN3864CL | 7 | 11 | 2 | 7 |
| BLN3883 | 8 | 8 | 7 | 8 | ATR-BANJO | 8 | * | 11 | 10 | BLN3865CL | 6 | 11 | 0 | 5 |
| CC05021 | 5 | 7 | 5 | 6 | ATR-SUMMITT | 7 | 6 | 6 | 7 | BLN3866CL | 7 | 11 | 2 | 6 |
| CC05024 | 9 | 6 | 3 | 6 | BLN3357TT-04W6 | 9 | 10 | 9 | 9 | BLN3867CL | 7 | 14 | 3 | 8 |
| CC05031 | 7 | 6 | 4 | 6 | BLN3780TT | 6 | 8 | 5 | 6 | CI06005 | 6 | 16 | 7 | 10 |
| CC05032 | 7 | 4 | 7 | 6 | BLN3843TT | 7 | 6 | 6 | 6 | CI06006 | 10 | 32 | 9 | 17 |
| CC05040 | 7 | 6 | 6 | 6 | BLN3844TT | 7 | 7 | 6 | 6 | CI06007 | 9 | 12 | 4 | 8 |
| CC05051 | 8 | 8 | 4 | 7 | BLN3845TT | 6 | 7 | 2 | 5 | CI06008 | 8 | 12 | 3 | 8 |
| CC05055 | 9 | 6 | 4 | 6 | BLN3846TT | 7 | 7 | 5 | 6 | CI06009 | 9 | 18 | 9 | 12 |
| HYOLA 75 | 8 | 6 | 5 | 6 | BLN3847TT | 9 | 8 | 11 | 9 | CI06010 | 7 | 16 | 1 | 8 |
| SKIPTON | 9 | 10 | 8 | 9 | BLN3848TT | 7 | 10 | 8 | 8 | CI06011 | 9 | 16 | 10 | 12 |
| | | | | | BLN3849TT | 7 | 9 | 7 | 8 | ROCKETCL | 7 | 11 | 2 | 7 |
| | | | | | BRA VOTT | 10 | 16 | 9 | 11 | SURPASS603CL | 6 | * | * | 6 |
| | | | | | SARDI618TT | 8 | 8 | 6 | 7 | WARRIORCL | 7 | 15 | 5 | 9 |
| | | | | | SARDI619TT | 8 | 7 | 5 | 7 | | | | | |
| | | | | | SARDI620TT | 7 | 7 | 6 | 7 | | | | | |
| | | | | | SARDI621TT | 8 | 5 | 5 | 6 | | | | | |
| | | | | | SARDI622TT | 6 | 6 | 6 | 6 | | | | | |
| | | | | | SARDI623TT | 9 | 12 | 10 | 10 | | | | | |
| | | | | | SARDI624TT | 9 | 10 | 9 | 9 | | | | | |
| | | | | | SARDI625TT | 10 | 14 | 9 | 11 | | | | | |
| | | | | | THUNDERTT | 7 | 7 | 4 | 6 | | | | | |
| | | | | | TORNADOTT | 6 | 6 | 4 | 6 | | | | | |

K = Katanning - WA, Ta = Tamworth - NSW, Tu = Turretfield - SA

Definitions

Canola is a term used to describe seed of the species *Brassica napus* or *Brassica campestris*, the oil component of which seed contains less than 2 % erucic acid (C22:1) and the solid component of which seed contains less than 30 micromoles of any one of, or any mixture of, 3-butenyl glucosinolate, 4-pentenyl glucosinolate, 2-hydroxy-3-butenyl glucosinolate and 2-hydroxy-4-pentenyl glucosinolate per gram of air-dry, oil-free solid as measured by the gas chromatographic method of the Canadian Grain Commission (Canola Council, Winnipeg, Manitoba, Canada).

Methods

Moisture Content:

Moisture is determined on whole seed using a 6500 near infrared (NIR) spectrometer calibrated using AOF 4-1.6: “Moisture content of oilseeds oven method”. The moisture contents are used to convert the raw data for oil and protein to the appropriate moisture content for reporting.

Oil Content:

Oil content is determined by NIR calibrated from results obtained using method AOCS Am2-93. Ground seed is extracted on a Goldfische apparatus using hexane for four hours. The sample is reground and extracted for 2 hours. The sample is again ground and extracted for a further 2 hours. The results are reported as a percentage of the seed at 6 % moisture.

Protein Content:

Protein content is determined on whole seed by NIR, calibrated from samples analysed by the LECO elemental analyser using AOF 4-3.3: “Protein, crude, of meals (combustion)”. Results are reported as percent protein (nitrogen x 6.25) and calculated to 10 % moisture in oil-free meal.

Glucosinolate Content:

Total glucosinolate concentration is determined by NIR, calibrated by method AOF 4-1.22: “Glucosinolate content, Glucose method, Canola and Rapeseed”. The method involves an enzymatic hydrolysis to release glucose followed by a colorimetric reaction and determination by a UV-Vis spectrophotometer. The method has compared favourably with the HPLC methodology of the AOCS with the added advantage of speed and economy. Results are reported as μ moles glucosinolates/gram whole seed at 6 % moisture.

Fatty Acid Composition:

Fatty acid composition involves methylation of fatty acids with sodium methoxide, AOF 4-2.18: “Preparation of fatty acid methyl esters”. The methyl esters are then separated on a gas chromatograph using a BPX70 capillary column. Fatty acids are reported as a percentage of the total fatty acids.

Iodine Values:

Iodine values are calculated from the fatty acid profile using AOF 4-2.14: “Iodine value by fatty acid composition”.

Volumetric Grain Weights:

Volumetric grain weights are measured using a Franklin chondrometer and reported as both pounds/bushel and kilograms/hectolitre.

