



Department of
Primary Industries

Quality of Australian Canola 2011-12



www.dpi.nsw.gov.au



Quality of Australian Canola 2011

D.E. Seberry, P.A. Parker & J.G. Ayton
Volume No 18
ISSN 1322-9397



Primary
Industries

Index

Figures.....	3
Tables.....	3
Acknowledgments.....	3
Introduction.....	4
Sample Analysis.....	4
Weather Production Review.....	5
The Season.....	5
Yield.....	9
Australian Quality Parameter Summary.....	10
Oil Content.....	11
Protein Content.....	12
Glucosinolate Concentration.....	13
Fatty Acid Composition.....	14
Oleic Acid.....	14
Linoleic Acid.....	15
Linolenic Acid.....	15
Saturated Fatty Acid.....	16
Quality Data by State.....	17
Fatty Acid Composition by State.....	23
National Variety Trials – Quality Data.....	29
Definitions.....	31
Methods.....	31
Moisture Content:.....	31
Oil Content:.....	31
Protein Content:.....	31
Glucosinolate Content:.....	32
Fatty Acid Composition:.....	32
Iodine Values:.....	32
Volumetric Grain Weights:.....	32

Figures

Figure 1: Areas of canola production in Australia.....	8
Figure 2: Canola Production in Australia 2002 – 2011	9
Figure 3: Average Australian oil content 2002 – 2011	11
Figure 4: Average oil content by state 2011	11
Figure 5: Average Australian protein content 2002 – 2011	12
Figure 6: Average protein content by state 2011	12
Figure 7: Average Australian glucosinolate content 2002 – 2011	13
Figure 8: Average glucosinolate content by state 2011	13
Figure 9: Average Australian oleic acid concentration in canola oil 2002 – 2011	14
Figure 10: Average oleic acid concentration by state 2011	14
Figure 11: Average Australian linoleic acid and linolenic concentration in canola oil 2002 – 2011	15
Figure 12: Average linoleic acid and linolenic acid concentration by state 2011	15
Figure 13: Average Australian saturated fatty acid concentration in canola oil 2002 – 2011	16
Figure 14: Average saturated fatty acid concentration by state 2011	16

Tables

Table 1: Canola production in Australia by state 2011.....	9
Table 2: Average quality of Australian canola 2011	10
Table 3: Quality Data – New South Wales	17
Table 4: Quality Data – South Australia.....	19
Table 5: Quality Data – Victoria.....	20
Table 6: Quality Data – Western Australia.....	21
Table 7: Fatty Acid Composition – New South Wales.....	23
Table 8: Fatty Acid Composition – South Australia.....	25
Table 9: Fatty Acid Composition – Victoria.....	26
Table 10: Fatty Acid Composition – Western Australia.....	27
Table 11: NVT Quality Data.....	29

Acknowledgments

The Australian Oilseeds Federation would like to thank Graincorp Operations Limited, Viterro Ltd and the Grainpool Pty Ltd. for providing the canola samples from the 2011 harvest. The assistance from all those involved in the analysis of these samples and compilation of the book is greatly appreciated.

Introduction

Sample Analysis

Canola samples representing the 2011 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 receival points and have been taken to cumulatively represent the Australian harvest. The NSW DPI 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 NSW DPI 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.

Weather Production Review

The Season

Weather and Production Review 2011

The 2011 Season

Similar to the 2010 season, the prospects of mediocre wheat prices combined with a firm price outlook for canola leading up to the start of the sowing period in 2011. This resulted in an increase in the area sown to canola in all growing districts except in West Australia where a small decrease occurred due to a dry start to the season and a lack of stored soil moisture.

Good summer rainfall across New South Wales and Victoria resulted in an excellent and timely start to the 2011 season. However, dry conditions delayed the start of sowing in Western Australia and in some districts in South Australia.

New South Wales: A second summer of above average rainfall following a wet spring resulted in excellent sub soil moisture levels across all districts at the start of the season. Although the majority of the crop was sown within the recommended sowing window some delays were experienced in sections of the north west of the state due to dry surface soil conditions and the south west due to some paddocks being too wet following the high summer rainfall & subsequent flooding. Unfortunately, an extended period of below average rain that began at the start of sowing slowed seedling emergence and impeded overall crop establishment and growth across most districts. Significant mice damage occurred in many seedling crops in the central and south western regions and extensive baiting was required to bring the mice under control. An estimated 12-15,000 ha of crop required resowing due to the impact of the mice. A range of insects including slugs, slaters and crickets caused moderate damage to some crops that had been sown into wetter paddocks in the southern areas of NSW.

Following the dry and cold winter conditions, good spring rainfall resulted in a rapid improvement in growth and overall crop development. The continuation of mild temperatures throughout spring produced a long flowering period and later than normal finish to the season with a subsequent positive impact on crops setting them up for high yields and oil levels.

Good windrowing and harvest conditions occurred across most of the state. However, late rain in parts of the south western region caused weather damage to some crops resulting in a down grading in quality due to low test weight. Likewise in the central western region about 5,000 ha was lost due to flooding of paddocks after crops had been windrowed.

Final estimated production for New South Wales for 2011 was a record 720,000 tonnes from a harvested area of 390,000 ha for an average yield of 1.85 t/ha, which was slightly below the record state average yield of 1.97 t/ha achieved in 2010. By comparison in the 2010 season, final production was estimated at 610,000 tonnes from a harvested area of 310,000 ha.

Victoria: Above average spring and summer rainfall resulting in full sub soil moisture profiles across all districts at the commencement of sowing.

Although sowing was able to commence on time, drying surface soil in the Wimmera and Mallee regions caused some delays to the completion of sowing or crops being sown dry. This also impacted on germination resulting in an initial patchy establishment in many crops. In parts of the

high rainfall Western Districts sowing was delayed due to many paddocks being too wet after the high summer-early autumn rain.

The mice problem experienced in NSW during crop establishment and early seedling growth also extended into Victoria with extensive baiting being required to bring them under control. In the eastern section of the Western Districts, 15% of crops required resowing whilst around 10% of crops required 'hotspots' in paddocks to be resown due to mice damage. Slugs and crickets also caused damage to many crops, particularly where stubble had been retained, in the higher rainfall districts.

Most districts experienced good rainfall and favourable growing conditions during spring which set crops up for above average yields and high oil levels. In the Mallee region the dry sowing and subsequent delayed germination of crops resulted in a reduced level of vegetative growth which encouraged a higher than usual level of direct heading at harvest time.

Final estimated production for Victoria for 2011 was 770,000 tonnes from a harvested area of 370,000 ha out of the 390,000 ha estimated to have been sown producing a yield of 2.08 t/ha. By comparison production figures for the 2010 season were 440,000 tonnes from a harvested area of 240,000 ha.

South Australia: Good surface soil moisture allowed sowing to take place on time in most districts with the Mallee and South East regions being the exceptions. Similar to the East Coast states, subsoil moisture was excellent in all districts; however variable rainfall and drying surface soil during the winter period delayed the ability of many crops to tap into this deeper moisture. Scattered areas across the state also experienced mice problems during crop establishment. Snails, slugs and earwigs also caused some problems in wetter areas.

Good spring rainfall combined with mild temperatures across all growing districts during flowering and pod fill which resulted in a good finish to the season in South Australia. As a consequence yields and oil levels were above average with the state producing its largest canola crop on record.

Final estimated production for South Australia for the 2011 season was 455,000 tonnes from a harvested area of 255,000 ha yielding 1.78t/ha. By comparison production in 2010 was 360,000 tonnes of seed from a harvested area of 200,000 ha.

Western Australia: In contrast to the other states, Western Australia experienced very dry conditions, with the first significant rain falling in most districts in late May, delaying the start of sowing, although many growers took the opportunity to dry sow some crops. A continuation of dry conditions in the central wheat belt reduced the area of canola planted in that region. For the crops that were sown, moderate falls of rain during July and August across most districts, combined with above average temperatures, boosted crop growth going into the spring and improved yield prospects. The normally reliable growing district around Esperance, which had experienced very dry winter conditions, responded to good falls of rain in September lifting yield prospects, although from a lower base level.

Although the harvest commenced slightly earlier than normal across Western Australia widespread storm rain caused some harvest delays but did not result in any significant crop damage.

The final production estimate for Western Australia for the 2011 season were 1,240,000 tonnes from a harvested area of 800,000 ha which was a record harvest for the state. The yield was 1.55 t/ha. By comparison production for the 2010 season was 705,000 tonnes of seed from a harvested area of 845,000 ha.

Insects and Diseases in 2011

The impact of mice damage on newly sown and emerging crops was the most significant problem experienced by many growers in New South Wales, Victoria and South Australia. A large scale baiting program brought the problem under control and also prevented the worrying prospects of a large scale outbreak from occurring in the spring.

A range of insects including snails, slugs, crickets and earwigs also caused problems for growers in some regions across eastern Australia. In many cases the high level of stubble remaining on paddocks following on from a wet spring and summer period provided ideal conditions for these insects to breed as well as making it more difficult for growers to implement control measures.

Despite some reports of sclerotinia being present in some crops in southern NSW, the overall level of disease was low in all canola growing regions across Australia. However, reports of growers sowing consecutive crops of canola in the same paddock are a cause for concern for the whole industry because of the implications for the breakdown of current resistance levels in all canola varieties.

There is increasing interest in the production of High Oleic Low Linolenic (HOLL or Monola) varieties of canola for use by fast food companies/groups in the domestic market. The premium paid for these varieties over normal varieties will ensure an increased production in the future.

Canola in Australia

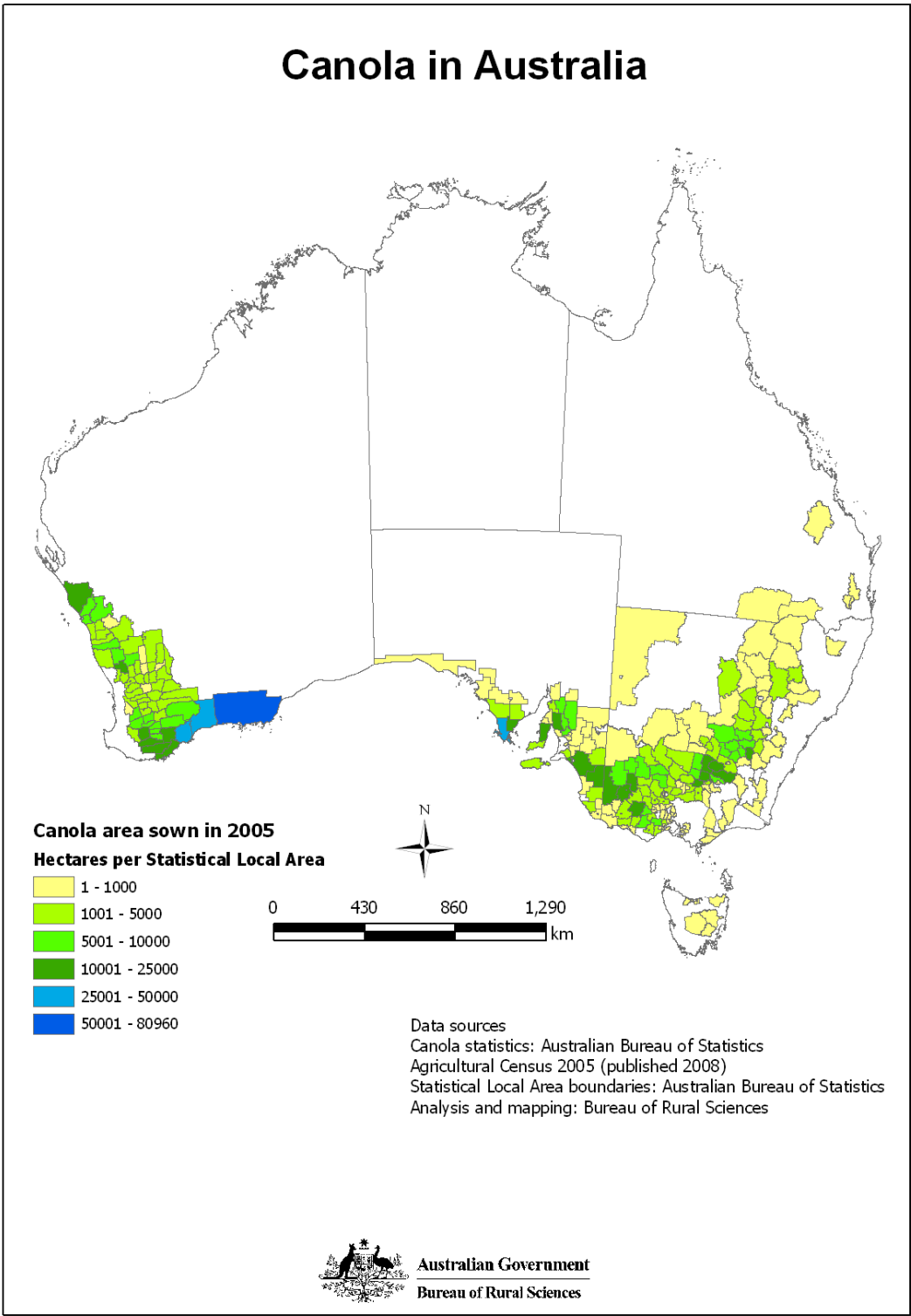


Figure 1: Areas of canola production in Australia
Published with approval of Bureau of Rural Sciences

Yield

The 2011 canola harvest was a record breaking season. The national total production and the production for each of the states was the highest on record and the Victorian yield was also a record high. Of the 1,830,000 hectares planted a record breaking 1,815,000 hectares were harvested; this produced the largest harvest on record of 3,185,000 tonnes of canola.

The national yield of 1.75 t/ha was 0.43 t/ha more than 2010 and second only to the 1992 harvest of 1.90 t/ha. The yield varied from a state average of 1.55 t/ha in Western Australia to 2.08 t/ha in Victoria. The yields from all states were among the highest recorded. Victoria was 0.25 t/ha greater than the previous record of 1.83 t/ha from the 2010 season. Both New South Wales and South Australia were second only to the 2010 record high and Western Australia recorded its third highest yield behind the 2008 and 2007 harvests.

Table 1: Canola production in Australia by state 2011

State	Production (kilotonnes)	Area Harvested (kilohectares)	Average Yield (tonnes/hectare)
New South Wales	720	390	1.85
Victoria	770	370	2.08
South Australia	455	255	1.78
Western Australia	1240	800	1.55
Australia	3185	1815	1.75

Source: AOF Crop Report May 2012

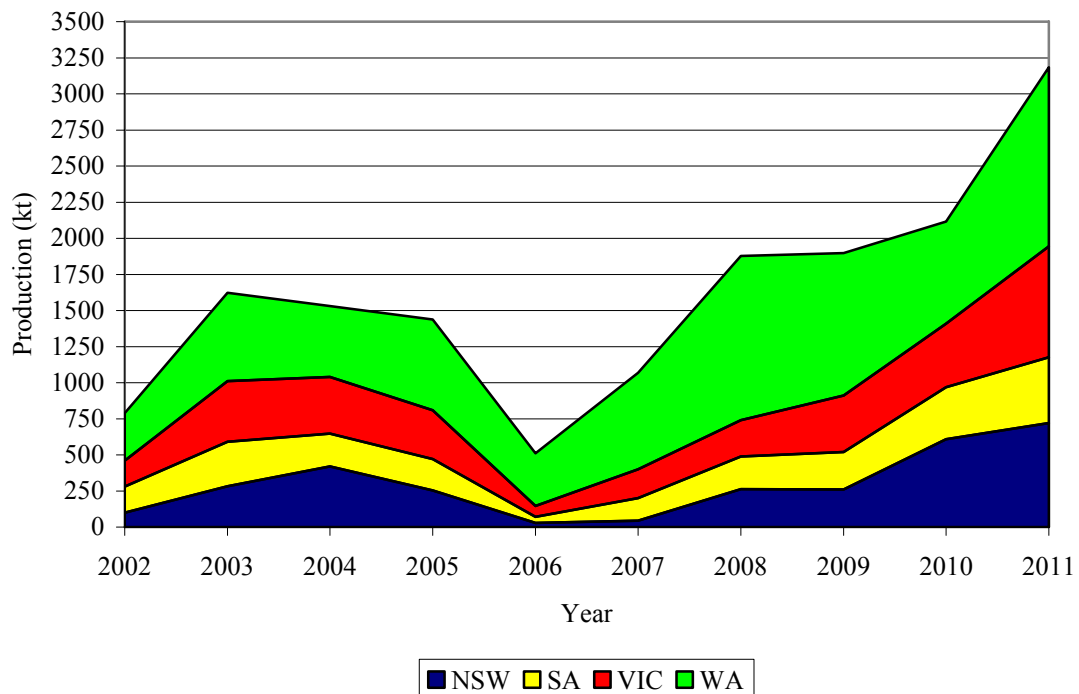


Figure 2: Canola Production in Australia 2002 – 2011

Australian Quality Parameter Summary

The mean regional and state values for all analyses for New South Wales, South Australia and Victoria were calculated on the basis of the tonnage each Site and Grade represents.

This information was not available for Western Australia, so the arithmetic mean instead of the weighted mean is reported.

The Australian mean values were calculated using the sum of the tonnages for each Site and Grade in New South Wales, South Australia and Victoria and the total tonnage for Western Australia.

However, due to tonnages being confidential information, no individual site tonnages can be reported.

Table 2: Average quality of Australian canola 2011

Quality Parameter	Australian Mean
Oil content, % in whole seed @ 6 % moisture	44.0
Protein content, % in oil-free meal @ 10 % moisture	37.9
Glucosinolates, μ moles/g in whole seed @ 6 % moisture	9
Volumetric grain weights, lbs/b	52.9
kg/hL	66.0
Oleic acid concentration (C18:1), % in oil	61.8
Linoleic acid concentration (C18:2), % in oil	18.7
Linolenic acid concentration (C18:3), % in oil	10.4
Erucic acid concentration (C22:1), % in oil	0.2
Saturated fatty acid concentration, % in oil	7.2
Iodine Value	114.1

Oil Content

The average oil content for the 2011 harvest was 44.0 %. This was an increase of 1.1 % from the 2010 harvest and equal to the record high of 2007. Oil content ranged from a low of 40.7 % at Premer in New South Wales and York in Western Australia to a high of 47.2 % at Munglinup in Western Australia.

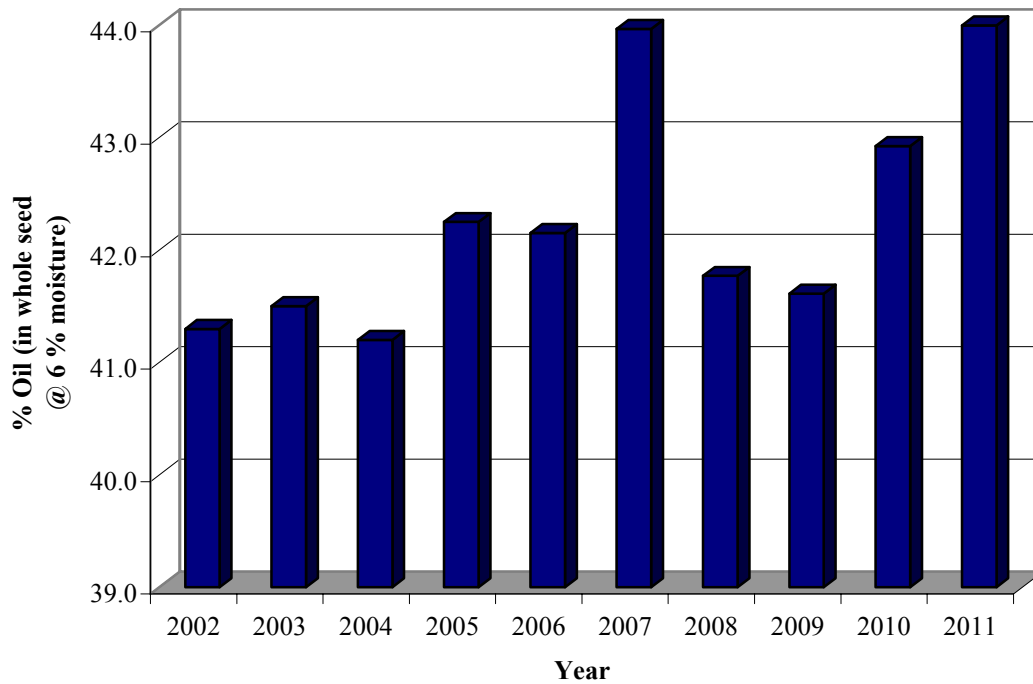


Figure 3: Average Australian oil content 2002 – 2011

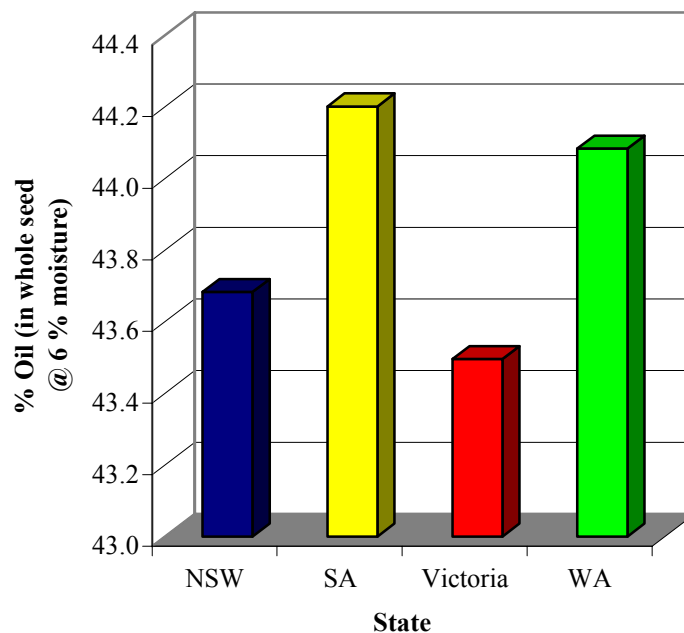


Figure 4: Average oil content by state 2011

Protein Content

The average protein content for the 2011 harvest was 37.9 % in oil free meal. This was a decrease of 2.0 % from the 2010 harvest and the lowest since 2005. Protein content ranged from 35.2 % at Ulamambri in New South Wales to 42.3 % at Nyngan in New South Wales.

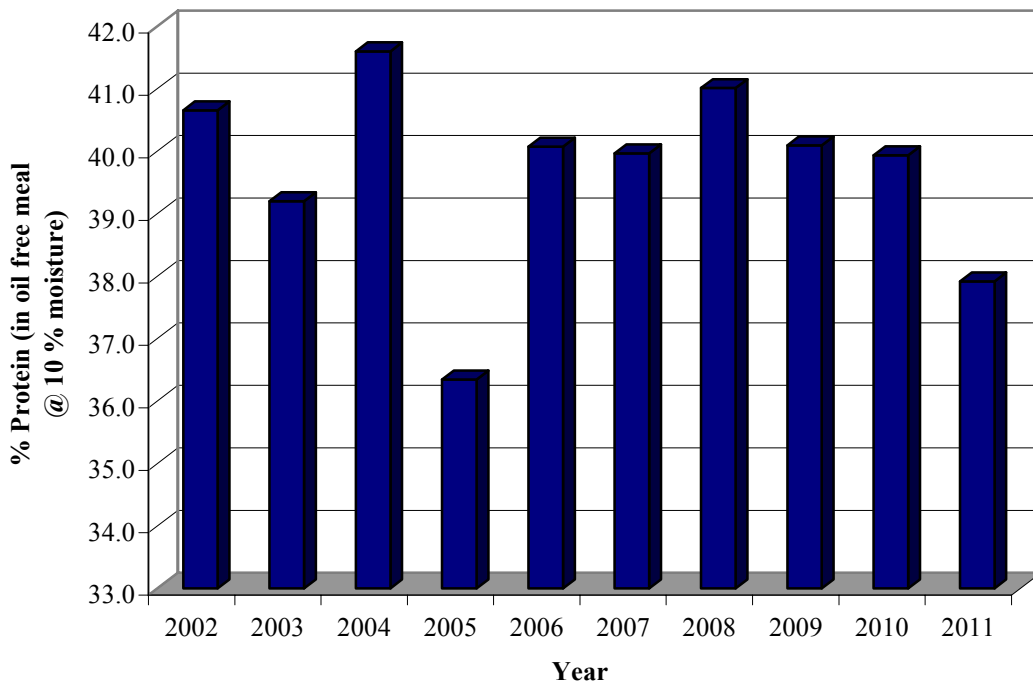


Figure 5: Average Australian protein content 2002 – 2011

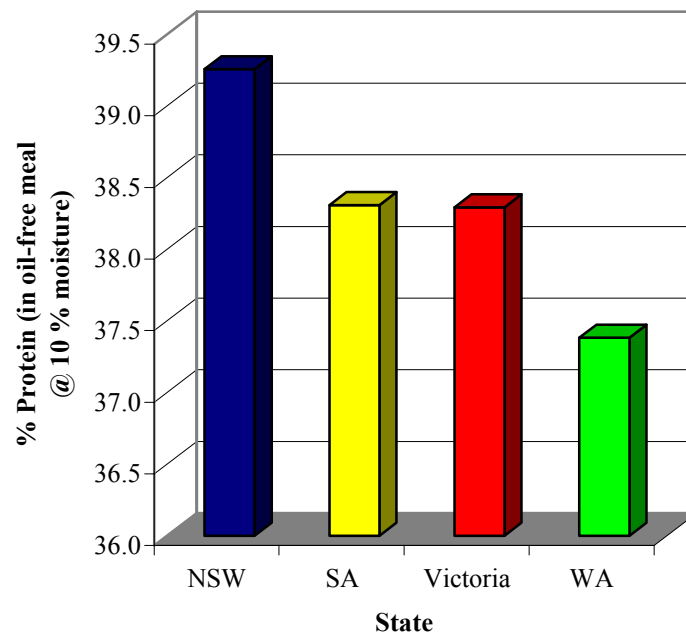


Figure 6: Average protein content by state 2011

Glucosinolate Concentration

The average glucosinolate content for the 2011 harvest was 9 $\mu\text{moles/g}$. This was a decrease of 1 $\mu\text{moles/g}$ from the 2010 season. Glucosinolate content ranged from 6 $\mu\text{moles/g}$ at Greenhills and MGC in Western Australia to 14 $\mu\text{moles/g}$ at York in Western Australia.

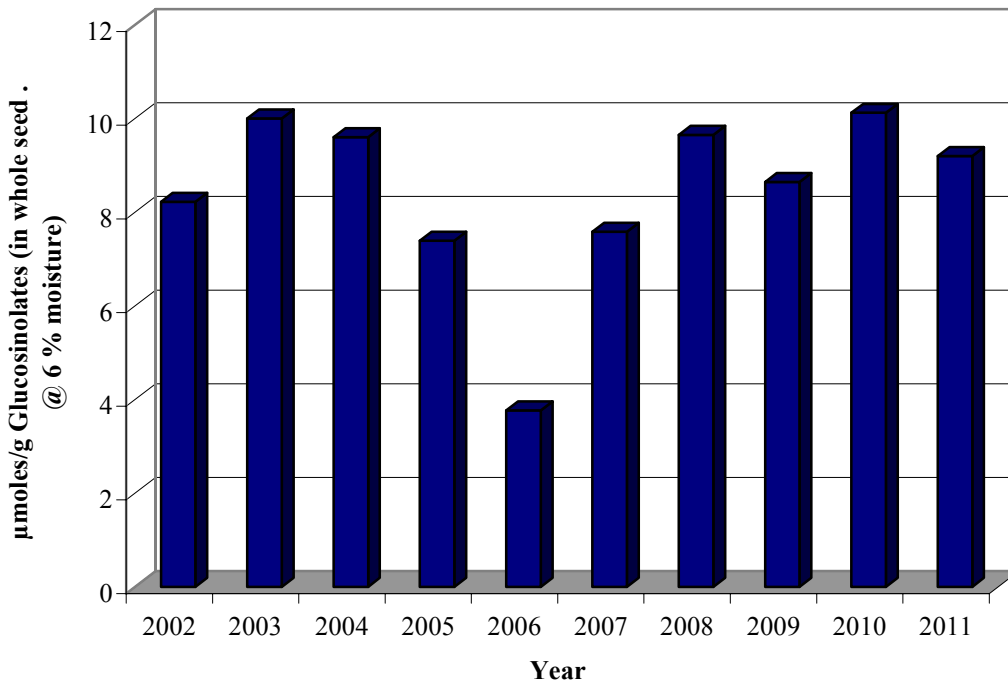


Figure 7: Average Australian glucosinolate content 2002 – 2011

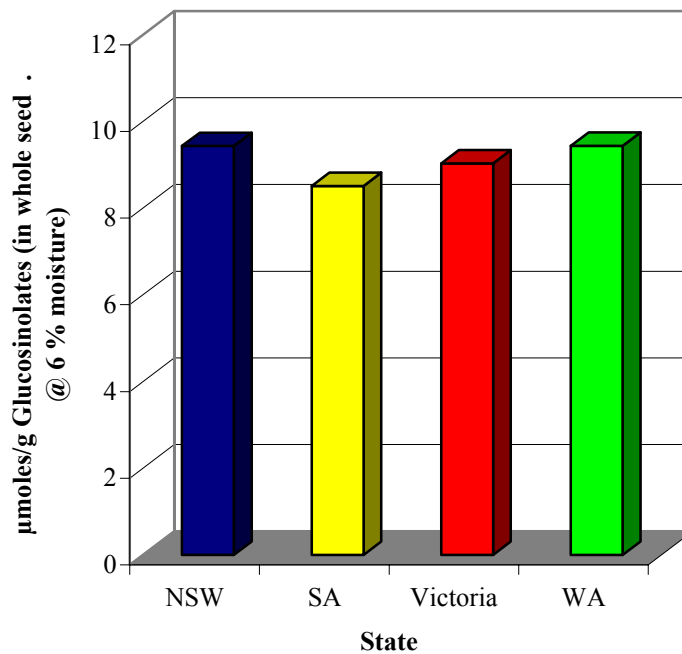


Figure 8: Average glucosinolate content by state 2011

Fatty Acid Composition

Oleic Acid

The average oleic acid (C18:1) concentration in the oil produced from the 2011 harvest was 61.8 %. This was 0.6 % higher than 2010 and the highest recorded since the inception of this book. The oleic concentration ranged from 58.1 % at Warracknabeal in Victoria to 69.5 % at Ulamambri in New South Wales.

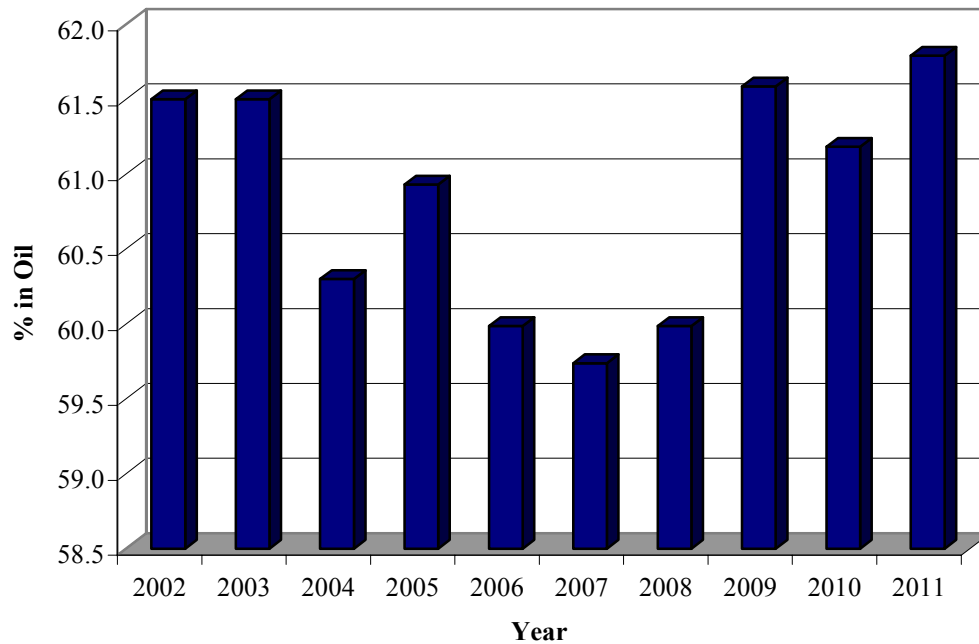


Figure 9: Average Australian oleic acid concentration in canola oil 2002 – 2011

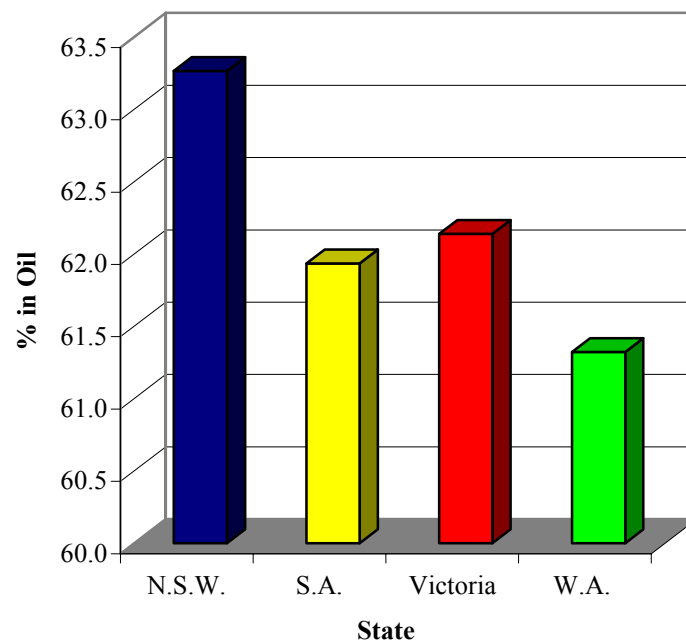


Figure 10: Average oleic acid concentration by state 2011

Linoleic Acid

The average linoleic acid (C18:2) concentration in oil produced from the 2011 harvest was 18.7 %. This was 0.7 % lower than 2010 and the second lowest in the eighteen year history of this book. The concentration ranged from 13.2 % at Ulamambri in New South Wales to 21.3 % at Warracknabeal in Victoria.

Linolenic Acid

The linolenic acid (C18:3) concentration remained constant at 10.4 % from the 2010 harvest. Linolenic acid concentrations ranged from 8.5 % at Culcairn and Temora in New South Wales to 12.2 % at Parilla in South Australia.

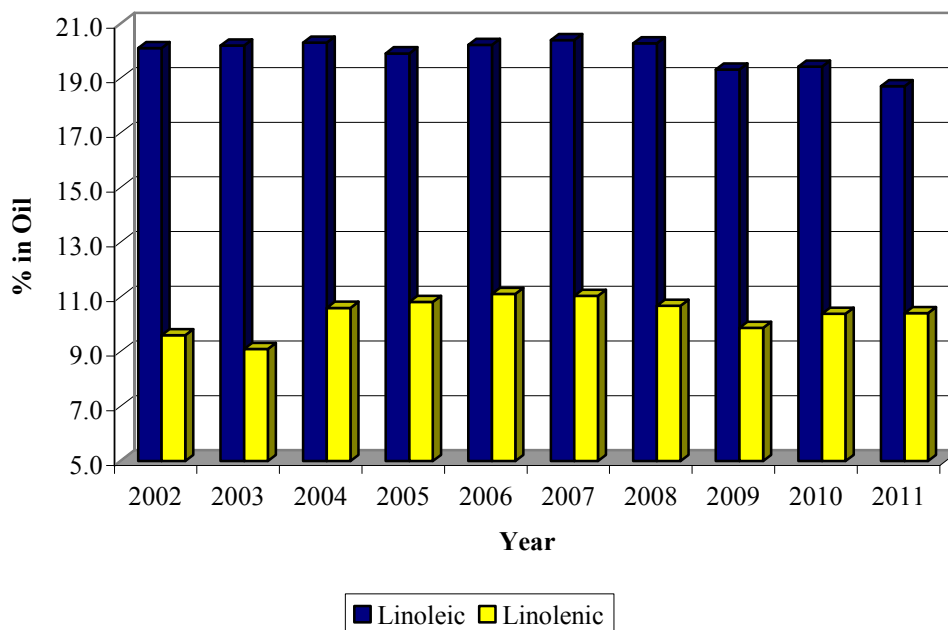


Figure 11: Average Australian linoleic acid and linolenic concentration in canola oil 2002 – 2011

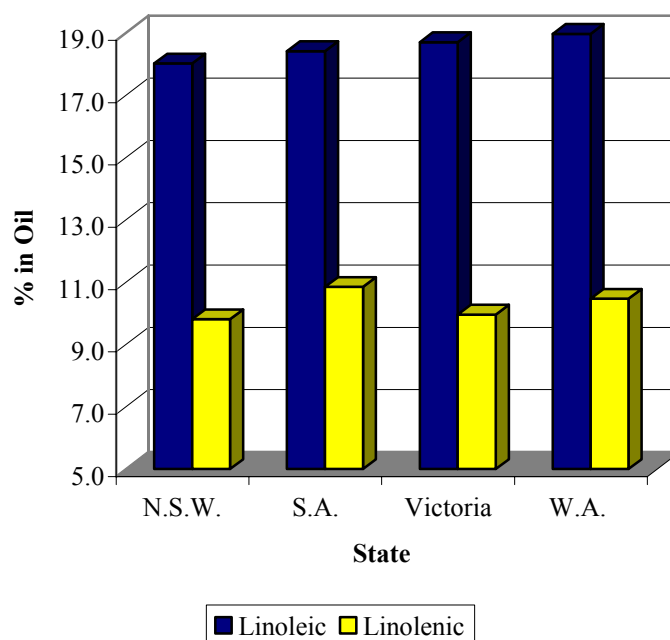


Figure 12: Average linoleic acid and linolenic acid concentration by state 2011

Saturated Fatty Acid

The average saturated fatty acid concentration was 7.2 %. This was a 0.2 % decrease from the 2010 harvest and the lowest since 2006. Saturated fatty acid concentration ranged from 6.8 % at Ungarra in South Australia and Munglinup in Western Australia to 8.0 % at Wangamong in New South Wales (considered a part of GrainCorp's Victorian operation) and York in South Australia.

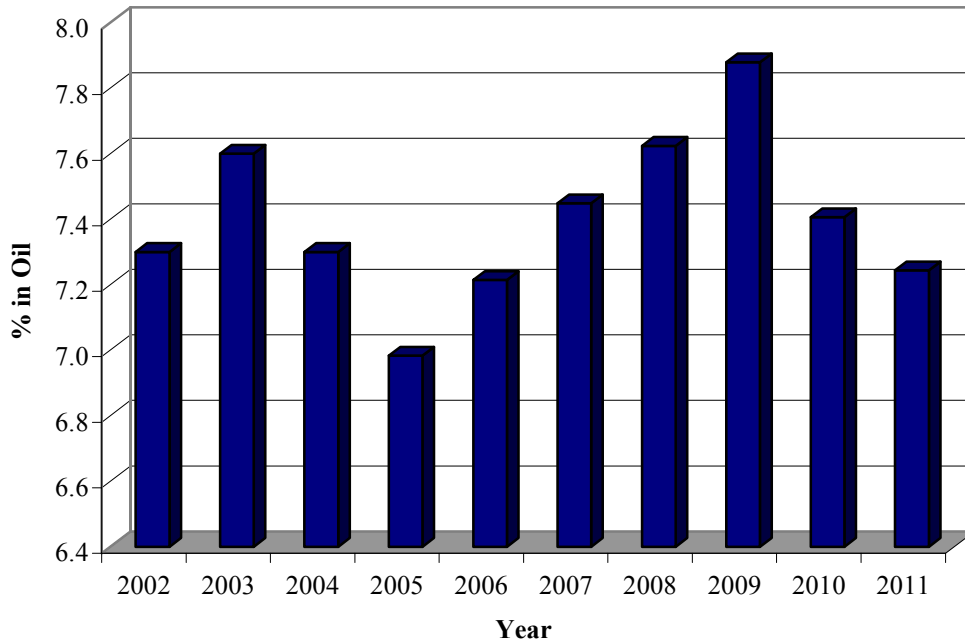


Figure 13: Average Australian saturated fatty acid concentration in canola oil 2002 – 2011

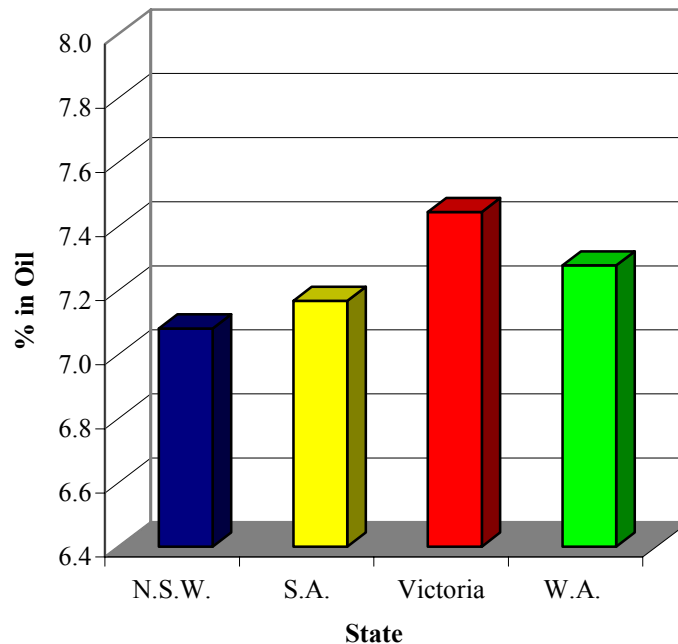


Figure 14: Average saturated fatty acid concentration by state 2011

Quality Data by State

Table 3: Quality Data – New South Wales

<u>Region/ Zone/</u>				³ Glucosinolates	⁴ Grain Weight	
Receiveal Site	Grade	¹ Oil	² Protein	µmoles/g	lbs/b	kg/hL
<u>Northern NSW</u>						
Moree						
Moree	CAN	42.8	40.2	9	53.2	66.3
Werris Creek						
Neilrex	CAN	43.8	37.9	10	52.1	65.0
Premer	CAN	40.7	40.0	9	53.4	66.5
Quirindi	CAN	41.0	40.6	10	53.2	66.3
Ulamambri	CAN	46.0	35.2	11	51.5	64.3
Northern Mean		42.5	40.1	9	53.1	66.2
<u>Central NSW</u>						
Dubbo						
Armatree	CAN	42.0	40.5	10	53.6	66.8
Cumnock	CAN	43.7	37.3	9	52.6	65.5
Cumnock	CTW	44.3	35.9	8	47.3	59.0
Gilgandra	CAN	41.9	38.7	11	52.1	65.0
Manildra	CAN	44.6	38.1	9	52.3	65.3
Manildra	CTW	44.6	37.6	10	49.5	61.8
Mungeribar	CAN	43.5	40.7	10	54.4	67.8
Mungeribar	CANG	43.1	41.2	10	53.4	66.5
Narwonah	CAN	43.5	39.6	12	54.0	67.3
Nyngan	CAN	41.7	42.3	10	54.6	68.0
Wongarbon	CAN	44.0	36.9	11	53.2	66.3
Wongarbon	CTW	43.2	37.1	12	49.1	61.3
Parkes						
Bogan Gate	CAN	45.1	39.8	11	53.6	66.8
Bribbaree	CAN	44.6	38.7	9	53.4	66.5
Caragabal	CAN	44.9	38.6	10	53.4	66.5
Cowra	CAN	44.3	38.8	8	51.7	64.5
Cowra	CTW	44.5	38.2	9	48.3	60.3
Greenethorpe	CAN	44.9	37.5	9	50.1	62.5
Grenfell	CANG	43.5	38.9	9	52.1	65.0
Milvale	CAN	45.0	37.8	9	53.2	66.3
Parkes Sub	CAN	44.2	38.9	10	53.6	66.8
Parkes Sub	CANG	44.9	38.7	9	53.6	66.8
Parkes Sub	CTW	44.9	38.9	11	48.9	61.0
Red Bend	CAN	44.5	39.5	10	53.8	67.0
Wirrinya	CAN	43.1	39.2	11	53.8	67.0
Central Mean		44.1	39.0	10	52.8	65.8
<u>Southern NSW</u>						
Griffith						
Barellan	CAN	43.3	40.5	10	53.5	66.6
Coleambally	CAN	43.2	38.1	10	53.2	66.3
Tabbitta	CAN	42.2	40.2	8	53.5	66.6
Wagga Wagga						
Boorowa	CAN	44.9	38.4	8	51.7	64.4
Boree Creek	CAN	41.3	39.3	11	54.2	67.5
Coolamon	CAN	41.4	40.2	10	53.5	66.6
Cootamundra	CAN	44.0	38.2	9	52.3	65.3

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

Table 3 (Continued): Quality Data – New South Wales

<u>Region/ Zone/</u>		³ Glucosinolates			⁴ Grain Weight	
Receiveal Site	Grade	¹ Oil	² Protein	µmoles/g	lbs/b	kg/hL
Wagga Wagga Continued						
Culcairn	CAN	44.7	38.3	7	51.9	64.8
Harden	CAN	43.9	38.2	10	52.4	65.4
Henty West	CAN	45.3	36.3	8	52.8	65.8
Juneec	CAN	43.4	38.4	8	52.7	65.7
Lockhart	CAN	42.5	39.1	9	53.7	66.9
Matong	CAN	41.1	40.8	9	53.5	66.7
Pleasant Hills	CAN	44.3	39.2	8	54.1	67.4
Rand	CAN	43.3	38.2	8	53.7	66.9
West Wyalong						
Ardlethan	CAN	42.4	40.1	11	54.3	67.6
Maimuru	CAN	45.7	36.3	9	52.2	65.1
Temora	CAN	44.0	38.7	8	52.0	64.8
Wyalong	CAN	43.8	39.4	8	53.0	66.0
Southern Mean		43.5	38.7	9	53.0	66.0
NSW Mean		<u>43.7</u>	<u>39.3</u>	<u>9</u>	<u>52.9</u>	<u>65.9</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

Table 4: Quality Data – South Australia

<u>Region/ Zone/</u>				³ Glucosinolates	⁴ Grain Weight	
Receival Site	Grade	¹ Oil	² Protein	µmoles/g	lbs/b	kg/hL
<u>Port Adelaide</u>						
Adelaide Area						
Pt Adelaide	CANO	44.0	38.4	7	53.6	66.8
Murray Mallee						
Parilla	CANO	43.2	38.8	9	54.8	68.3
Northern Area						
Bowmans	CANO	43.3	39.9	8	54.0	67.3
Caltowie	CANO	44.2	38.6	8	53.0	66.0
Kapunda	CANO	43.0	37.9	8	53.4	66.5
Owen	CANO	43.1	39.0	9	53.4	66.5
Roseworthy	CANO	43.1	39.4	8	54.0	67.3
Tarlee	CANO	43.5	38.2	9	53.4	66.5
South East						
Frances	CANO	44.1	37.5	8	54.2	67.5
Keith	CANO	42.2	39.0	8	54.8	68.3
Millicent	CANO	45.1	37.7	7	53.6	66.8
Tailem Bend	CANO	43.7	38.5	9	54.8	68.3
Wolseley	CANO	42.2	40.7	8	55.0	68.5
Port Adelaide Mean		43.3	39.0	8	54.2	67.6
<u>Port Giles</u>						
Yorke Peninsula						
Ardrossan	CANO	45.2	37.0	9	53.2	66.3
Port Giles Mean		45.2	37.0	9	53.2	66.3
<u>Port Lincoln</u>						
Eyre Peninsula						
Cummins	CANO	45.4	37.4	9	53.6	66.8
Pt Lincoln	CANO	45.8	37.3	9	53.0	66.0
Rudall	CANO	43.3	39.0	8	54.4	67.8
Ungarra	CANO	45.4	37.4	10	54.2	67.5
Yeelanna	CANO	45.6	37.4	9	53.2	66.3
Port Lincoln Mean		45.5	37.4	9	53.3	66.5
<u>Wallaroo</u>						
Northern Area						
Andrews	CANO	44.3	37.9	10	53.4	66.5
Wallaroo Mean		44.3	37.9	10	53.4	66.5
<u>SA Mean</u>		<u>44.2</u>	<u>38.3</u>	<u>9</u>	<u>53.8</u>	<u>67.1</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

Table 5: Quality Data – Victoria

<u>Region/ Zone/</u>				³ Glucosinolates	⁴ Grain Weight	
Receival Site	Grade	¹ Oil	² Protein	µmoles/g	lbs/b	kg/hL
<u>North West Vic</u>						
Horsham						
Horsham	CANG	43.6	40.3	9	52.6	65.5
Lillimur	CANG	41.1	41.1	9	54.6	68.0
Lubeck	CANG	44.7	36.5	8	54.0	67.3
Nhill	CAN	41.7	40.4	9	55.2	68.8
Warracknabeal	CANG	40.8	38.6	8	54.6	68.0
Ouyen						
Ouyen	CAN	42.7	39.7	8	54.2	67.5
Rainbow	CAN	43.2	38.1	8	54.2	67.5
Swan Hill						
Swan Hill	CAN	43.4	38.7	8	54.0	67.3
North West Mean		42.8	39.3	8	54.2	67.5
<u>South East Vic</u>						
Marong East						
Barnes Crossing	CAN	42.5	39.0	12	53.4	66.5
Elmore	CAN	44.2	37.6	9	53.2	66.3
St. James	CANG	44.1	36.8	8	53.6	66.8
Wangamong	CANG	42.5	38.0	12	53.8	67.0
Yarrowonga	CAN	43.0	38.2	10	53.0	66.0
Marong South						
Berrybank	CAN	45.0	37.7	9	52.8	65.8
Donald	CAN	43.7	38.7	8	54.2	67.5
Hamilton	CAN	45.7	37.4	8	52.8	65.8
South East Mean		43.8	37.9	9	53.2	66.3
Victoria Mean		43.5	38.3	9	53.5	66.6

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

Table 6: Quality Data – Western Australia

Port Zone		¹ Oil	² Protein	³ Glucosinolates	⁴ Grain Weight	
Receival Site(s)	Grade			µmoles/g	lbs/b	kg/hL
Albany						
Albany	CAN1	44.9	38.4	9	53.6	66.8
Albany	CAN2	46.4	36.6	9	50.5	63.0
Bokal	CAN1	46.0	37.2	8	52.6	65.5
Borden	CAN1	45.1	37.5	10	53.2	66.3
Cranbrook	CAN1	45.6	37.1	8	53.6	66.8
Cranbrook	CAN2	46.0	37.2	8	52.3	65.3
Gairdner	CAN1	44.3	38.8	11	53.6	66.8
Karlgarin	CAN1	42.5	37.8	11	54.4	67.8
Katanning	CAN1	44.5	37.5	8	54.0	67.3
Kojaneerup	CAN1	45.3	37.8	9	51.3	64.0
Kojonup	CAN1	45.9	37.6	8	53.2	66.3
Lake Grace	CAN1	44.8	37.0	13	53.8	67.0
Newdegate	CAN1	43.2	37.3	12	53.8	67.0
Tambellup	CAG1	44.8	36.3	7	53.0	66.0
Wagin	CAN1	45.1	35.5	11	53.4	66.5
Wellstead	CAG1	45.3	39.3	8	53.6	66.8
Wellstead	CAN1	44.9	40.1	9	52.6	65.5
Albany Mean		45.0	37.6	9	53.1	66.1
Esperance						
Beaumont	CAN1	43.5	39.9	12	53.4	66.5
Cascades	CAN1	44.7	40.8	11	51.9	64.8
Esperance	CAG1	44.3	38.5	10	54.6	68.0
Esperance	CAG2	42.5	38.7	11	55.0	68.5
Lake Varley	CAN1	43.0	37.4	12	54.2	67.5
Mount Madden	CAN1	43.2	38.5	13	54.2	67.5
Munglinup	CAG1	46.3	39.1	8	52.1	65.0
Munglinup	CAN1	47.2	38.7	11	51.1	63.8
Ravensthorpe	CAN1	44.6	38.6	11	52.8	65.8
Esperance Mean		44.4	38.9	11	53.2	66.4
Geraldton						
Carnamah	CAN1	44.5	38.0	11	54.0	67.3
Geraldton	CAG1	44.8	38.4	8	51.9	64.8
Geraldton	CAG2	46.0	38.6	9	52.3	65.3
Geraldton	CAN1	45.2	38.8	10	53.2	66.3
Geraldton	CAN2	43.5	38.3	10	53.6	66.8
Mingenew	CAN1	45.0	37.5	10	53.4	66.5
Northampton	CAN1	45.1	38.5	11	53.4	66.5
Three Springs	CAG1	46.2	36.1	7	53.4	66.5
Yuna	CAN1	44.4	38.9	11	52.8	65.8
Geraldton Mean		45.0	38.1	10	53.1	66.2
Kwinana						
Avon	CAN1	44.9	37.2	9	53.8	67.0
Brookton	CAN1	45.7	36.9	8	53.8	67.0
Bulyee	CAN1	44.3	37.0	10	53.8	67.0
Calingiri	CAN1	45.9	37.4	9	53.2	66.3
Calingiri	CAN2	45.2	37.9	8	52.6	65.5
Carrabin	CAN1	41.3	39.5	12	54.2	67.5
Dale	CAN1	46.8	36.6	7	54.0	67.3
Greenhills	CAG1	46.0	37.0	6	52.6	65.5
Hines Hill	CAN1	43.2	39.1	12	54.0	67.3

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

Table 6 (Continued): Quality Data – Western Australia

Port Zone					³ Glucosinolates	⁴ Grain Weight	
Receiveal Site(s)	Grade	¹ Oil	² Protein		µmoles/g	lbs/b	kg/hL
Kwinana Continued							
Kalannie	CAN1	42.8	38.6		12	53.8	67.0
Kellerberrin	CAN1	45.8	37.7		8	54.2	67.5
Koorda	CAN1	44.3	39.0		9	53.8	67.0
Kwinana	CAN1	45.8	37.4		8	54.6	68.0
Manmanning	CAG1	45.8	37.5		7	52.6	65.5
Mclevie	CAN1	44.8	37.8		11	53.4	66.5
Mgc	CAN1	46.7	38.3		6	52.8	65.8
Miling	CAN1	44.7	39.1		9	53.4	66.5
Mogumber	CAN1	43.9	39.7		8	54.2	67.5
Moora	CAN1	44.9	38.3		9	53.4	66.5
Narrakine	CAN1	45.7	37.3		8	53.8	67.0
Nembudding	CAN1	43.1	38.3		12	54.0	67.3
Quairading	CAN1	45.1	37.3		9	53.8	67.0
Regans Ford	CAN1	46.1	38.4		8	53.0	66.0
Wickepin	CAN1	44.8	36.7		10	54.0	67.3
Wogarl	CAN1	42.0	38.1		12	54.6	68.0
Wongan Hills	CAG1	45.8	36.0		7	53.8	67.0
Yarding	CAG1	42.2	36.7		13	55.0	68.5
Yerecoin	CAN1	45.9	37.4		9	53.4	66.5
York	CAG1	44.2	38.6		8	53.4	66.5
York	CAG2	40.7	39.4		14	53.2	66.3
York	CAN1	46.4	36.2		9	53.4	66.5
Kwinana Mean		43.3	36.6		9	51.9	64.7
W.A. Mean		44.1	37.4		9	52.6	65.5

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

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

Fatty Acid Composition by State

Table 7: Fatty Acid Composition – New South Wales

Region/ Zone/ Receival 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
Northern NSW																	
Moree																	
Moree	CAN	0.1	3.8	0.3	2.2	64.1	16.8	10.5	0.6	1.2	0.2	<0.1	0.1	0.1	100	7.0	113.0
Werris Creek																	
Neilrex	CAN	0.1	4.2	0.3	2.3	61.5	19.5	9.4	0.7	1.2	0.3	<0.1	0.2	0.1	100	7.8	112.6
Premier	CAN	0.1	4.0	0.3	2.3	63.7	18.1	9.2	0.7	1.2	0.3	<0.1	0.2	0.1	100	7.4	111.3
Quirindi	CAN	0.1	4.0	0.3	2.2	63.1	17.8	9.7	0.7	1.3	0.3	0.2	0.1	0.1	100	7.3	112.1
Ulamambri	CAN	<0.1	3.8	0.3	1.8	69.5	13.2	8.6	0.7	1.4	0.4	0.1	0.1	0.2	100	6.9	106.4
Northern Mean		0.1	3.8	0.3	2.2	64.0	17.0	10.3	0.6	1.2	0.2	0.0	0.1	0.1	100	7.1	112.7
Central NSW																	
Dubbo																	
Armatree	CAN	0.1	4.1	0.3	2.0	61.6	18.9	10.9	0.5	1.1	0.2	0.2	0.1	0.1	100	7.0	115.4
Cumnock	CAN	0.1	4.2	0.3	2.0	62.7	19.1	9.7	0.5	1.0	0.2	<0.1	0.1	0.1	100	7.1	113.4
Cumnock	CTW	0.1	4.1	0.3	2.1	64.4	17.4	9.0	0.7	1.2	0.3	0.1	0.2	0.2	100	7.4	110.4
Gilgandra	CAN	0.1	4.2	0.3	2.2	60.5	20.1	10.5	0.6	1.0	0.2	0.1	0.1	0.2	100	7.4	115.4
Manildra	CAN	0.1	4.2	0.3	2.1	63.3	18.2	9.5	0.6	1.2	0.2	0.1	0.1	0.1	100	7.3	112.0
Manildra	CTW	0.1	4.1	0.3	2.1	64.8	17.0	9.1	0.6	1.2	0.3	0.1	0.1	0.2	100	7.3	110.3
Mungeribar	CAN	0.1	4.1	0.3	1.9	60.2	19.9	11.3	0.5	1.1	0.2	0.1	0.1	0.2	100	7.0	117.0
Mungeribar	CANG	0.1	4.2	0.3	2.0	61.3	18.7	11.1	0.6	1.2	0.3	0.1	0.1	0.2	100	7.2	115.5
Narwonah	CAN	0.1	4.1	0.3	1.8	63.7	17.4	10.4	0.5	1.1	0.3	<0.1	0.1	0.2	100	6.9	113.3
Nyngan	CAN	0.1	4.0	0.3	2.2	61.0	19.0	11.3	0.5	1.1	0.2	0.1	0.1	0.1	100	7.1	116.2
Wongarbon	CAN	0.1	4.0	0.3	1.9	64.9	16.5	9.8	0.6	1.2	0.3	0.1	0.1	0.2	100	7.0	111.4
Wongarbon	CTW	0.1	4.0	0.3	2.1	64.6	17.0	9.5	0.6	1.2	0.2	<0.1	0.1	0.1	100	7.2	111.2
Parkes																	
Bogan Gate	CAN	0.1	4.1	0.3	1.8	62.9	17.9	10.3	0.6	1.4	0.3	0.3	0.1	0.2	100	6.9	113.4
Bribbaree	CAN	0.1	4.1	0.3	1.9	62.7	18.8	9.4	0.5	1.4	0.2	0.4	0.1	0.1	100	6.9	112.6
Caragabal	CAN	0.1	4.1	0.3	1.8	65.4	16.6	9.4	0.6	1.2	0.3	0.1	0.1	0.1	100	6.9	110.8
Cowra	CAN	0.1	4.1	0.3	2.1	64.6	17.6	8.6	0.6	1.3	0.2	0.3	0.1	0.1	100	7.2	110.0
Cowra	CTW	0.1	4.1	0.3	2.0	64.6	17.8	8.7	0.5	1.2	0.2	0.2	0.1	0.1	100	7.1	110.5
Greenethorpe	CAN	0.1	4.0	0.3	2.1	64.0	17.7	9.1	0.6	1.3	0.2	0.4	0.1	0.1	100	7.1	111.1
Grenfell	CANG	0.1	4.4	0.3	2.1	63.3	18.7	8.9	0.6	1.1	0.2	<0.1	0.1	0.2	100	7.5	111.3
Milvale	CAN	0.1	4.1	0.3	2.0	64.4	17.7	8.8	0.6	1.3	0.2	0.3	0.1	0.1	100	7.1	110.6
Parkes Sub	CAN	0.1	4.2	0.3	1.9	63.9	17.7	9.7	0.5	1.1	0.3	0.1	0.1	0.2	100	7.0	112.3
Parkes Sub	CANG	0.1	4.3	0.3	1.9	62.1	19.6	9.5	0.5	1.1	0.2	<0.1	0.1	0.2	100	7.2	113.4
Parkes Sub	CTW	0.1	4.2	0.3	1.9	62.9	18.8	9.1	0.6	1.3	0.3	0.3	0.1	0.2	100	7.3	111.8
Red Bend	CAN	0.1	4.2	0.3	1.9	61.8	19.2	9.9	0.6	1.4	0.2	0.4	0.1	0.1	100	7.0	113.8
Wirrinya	CAN	0.1	4.1	0.3	1.9	64.4	17.7	9.3	0.6	1.2	0.3	0.1	0.1	0.1	100	7.0	111.5
Central Mean		0.1	4.1	0.3	2.0	63.0	18.3	9.8	0.6	1.2	0.2	0.2	0.1	0.1	100	7.1	112.8
Southern NSW																	
Griffith																	
Barellan	CAN	0.1	4.2	0.3	2.0	62.4	19.1	9.7	0.5	1.1	0.2	0.1	0.1	0.1	100	7.1	113.4
Coleambally	CAN	0.1	4.2	0.3	2.1	65.6	16.6	8.6	0.7	1.2	0.3	<0.1	0.1	0.2	100	7.5	109.0
Tabbita	CAN	0.1	4.3	0.3	2.1	61.8	18.6	10.5	0.6	1.2	0.2	<0.1	0.1	0.1	100	7.4	114.2
Wagga Wagga																	
Boorowa	CAN	0.1	4.1	0.3	2.2	64.5	17.4	8.9	0.6	1.3	0.3	0.2	0.1	0.1	100	7.3	110.2
Boree Creek	CAN	0.1	4.3	0.3	2.0	63.1	18.5	9.3	0.6	1.2	0.3	0.1	0.1	0.1	100	7.4	112.0
Coolamon	CAN	0.1	4.3	0.3	2.1	62.8	19.0	8.8	0.7	1.2	0.3	0.2	0.1	0.2	100	7.6	111.3
Cootamundra	CAN	0.1	4.2	0.3	2.2	63.6	18.2	8.9	0.6	1.2	0.3	0.2	0.1	0.1	100	7.5	110.8
Culcairn	CAN	0.1	4.2	0.3	1.9	62.4	19.6	8.5	0.6	1.4	0.2	0.5	0.1	0.1	100	7.2	111.6
Harden	CAN	0.1	4.2	0.3	2.2	63.5	18.1	9.2	0.6	1.1	0.2	0.1	0.1	0.1	100	7.5	111.4
Henty West	CAN	0.1	4.2	0.3	2.1	63.2	18.6	9.0	0.6	1.2	0.3	0.2	0.1	0.1	100	7.4	111.4

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

Table 7 (Continued): Fatty Acid Composition – New South Wales

<u>Region/ Zone/</u>																	¹ Sat.	² Iodine Value
Receiveal 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			
Wagga Wagga Continued																		
Junee	CAN	0.1	4.2	0.3	2.1	63.2	18.7	8.6	0.6	1.4	0.2	0.5	0.1	0.1	100	7.3	110.9	
Lockhart	CAN	0.1	4.3	0.3	2.0	61.9	19.3	9.2	0.7	1.3	0.3	0.2	0.1	0.2	100	7.5	112.3	
Matong	CAN	0.1	4.1	0.3	2.2	63.3	18.0	9.6	0.6	1.3	0.2	0.1	0.1	0.1	100	7.4	112.0	
Pleasant Hills	CAN	0.1	4.2	0.3	2.0	62.6	19.2	8.8	0.6	1.3	0.2	0.4	0.1	0.1	100	7.2	111.7	
Rand	CAN	0.1	4.2	0.3	2.0	61.8	19.8	8.9	0.6	1.4	0.3	0.4	0.1	0.1	100	7.3	112.4	
West Wyalong																		
Ardlethan	CAN	0.1	4.1	0.3	2.0	64.3	17.9	8.8	0.6	1.3	0.2	0.2	0.1	0.1	100	7.1	110.8	
Maimuru	CAN	0.1	4.0	0.3	2.1	66.1	16.0	9.0	0.7	1.2	0.3	0.1	0.1	0.1	100	7.2	109.5	
Temora	CAN	0.1	4.2	0.3	1.9	63.4	18.6	8.5	0.6	1.5	0.2	0.5	0.1	0.1	100	7.1	110.8	
Wyalong	CAN	0.1	4.0	0.3	1.9	62.9	18.7	9.2	0.6	1.6	0.2	0.4	0.1	0.1	100	6.9	112.2	
Southern Mean		0.1	4.2	0.3	2.1	63.3	18.4	9.0	0.6	1.3	0.3	0.2	0.1	0.1	100	7.3	111.4	
N.S.W. Mean		0.1	4.1	0.3	2.0	63.3	18.0	9.8	0.6	1.2	0.2	0.2	0.1	0.1	100	7.1	112.6	

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

Table 8: Fatty Acid Composition – South Australia

<u>Zone/ Region/</u> Receiveal 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
<u>Port Adelaide</u>																	
Adelaide Area																	
Pt Adelaide	CANO	0.1	4.4	0.3	2.0	61.0	19.0	11.3	0.5	1.0	0.2	0.1	0.1	0.1	100	7.3	115.9
Murray Mallee																	
Parilla	CANO	0.1	4.5	0.3	2.0	58.5	20.2	12.2	0.5	1.0	0.2	0.1	0.1	0.2	100	7.4	118.5
Northern Area																	
Bowmans	CANO	0.1	4.2	0.3	1.9	61.8	18.4	11.0	0.6	1.1	0.2	0.1	0.1	0.2	100	7.1	115.1
Caltowie	CANO	0.1	4.2	0.3	1.9	63.1	18.5	9.4	0.6	1.2	0.2	0.2	0.1	0.1	100	7.0	112.4
Kapunda	CANO	0.1	4.2	0.3	1.9	63.7	17.7	9.6	0.6	1.2	0.3	0.2	0.1	0.1	100	7.2	111.9
Owen	CANO	0.1	4.3	0.3	1.9	62.8	18.0	10.0	0.6	1.2	0.2	0.3	0.1	0.1	100	7.3	112.7
Roseworthy	CANO	0.1	4.4	0.3	1.9	61.3	18.7	11.0	0.6	1.2	0.2	0.1	0.1	0.2	100	7.2	115.2
Tarlee	CANO	0.1	4.3	0.3	2.0	62.7	18.3	9.9	0.6	1.2	0.3	0.1	0.1	0.2	100	7.4	112.7
South East																	
Frances	CANO	0.1	4.2	0.3	2.1	64.2	17.1	9.8	0.6	1.1	0.2	0.1	0.1	0.2	100	7.3	111.7
Keith	CANO	0.1	4.4	0.3	2.2	62.0	18.8	10.3	0.5	0.9	0.2	<0.1	0.1	0.2	100	7.4	113.9
Millicent	CANO	0.1	4.2	0.3	2.0	61.3	18.9	10.8	0.6	1.1	0.3	<0.1	0.1	0.2	100	7.4	115.0
Tailem Bend	CANO	0.1	4.3	0.3	2.0	60.7	19.2	11.3	0.5	1.0	0.2	0.1	0.1	0.1	100	7.2	116.3
Wolseley	CANO	0.1	4.2	0.3	2.1	62.8	17.9	10.4	0.6	1.1	0.2	<0.1	0.1	0.1	100	7.4	113.3
Port Adelaide Mean		0.1	4.3	0.3	2.0	61.6	18.7	10.8	0.6	1.1	0.2	0.1	0.1	0.2	100	7.2	114.9
<u>Port Giles</u>																	
Yorke Peninsula																	
Ardrossan	CANO	0.1	4.2	0.3	1.9	64.0	17.0	10.4	0.6	1.1	0.2	<0.1	0.1	0.2	100	7.0	112.9
Port Giles Mean		0.1	4.2	0.3	1.9	64.0	17.0	10.4	0.6	1.1	0.2	<0.1	0.1	0.2	100	7.0	112.9
<u>Port Lincoln</u>																	
Eyre Peninsula																	
Cummins	CANO	0.1	4.4	0.3	1.8	60.8	19.2	11.3	0.5	1.1	0.3	<0.1	0.1	0.2	100	7.1	116.2
Pt Lincoln	CANO	0.1	4.3	0.3	1.8	61.8	18.2	11.2	0.5	1.1	0.3	0.1	0.1	0.2	100	7.1	115.3
Rudall	CANO	0.1	4.4	0.3	2.0	59.3	20.1	11.8	0.5	1.0	0.2	0.2	0.1	0.1	100	7.2	117.8
Ungarra	CANO	0.1	4.1	0.3	1.7	63.5	17.2	10.8	0.5	1.2	0.3	0.1	0.1	0.2	100	6.8	114.0
Yeelanna	CANO	0.1	4.2	0.3	1.8	63.2	17.3	11.0	0.5	1.1	0.3	<0.1	0.1	0.2	100	6.9	114.2
Port Lincoln Mean		0.1	4.3	0.3	1.8	61.4	18.6	11.2	0.5	1.1	0.3	0.1	0.1	0.2	100	7.1	115.7
<u>Wallaroo</u>																	
Northern Area																	
Andrews	CANO	0.1	4.2	0.3	1.8	65.5	16.3	9.4	0.6	1.2	0.3	0.1	0.1	0.2	100	7.1	110.4
Port Giles Mean		0.1	4.2	0.3	1.8	65.5	16.3	9.4	0.6	1.2	0.3	0.1	0.1	0.2	100	7.1	110.4
S.A. Mean		0.1	4.3	0.3	1.9	61.9	18.4	10.8	0.6	1.1	0.2	0.1	0.1	0.2	100	7.2	114.7

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

Table 9: Fatty Acid Composition – Victoria

<u>Region/ Zone/</u> Receiveal 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
North West Vic																	
Horsham																	
Horsham	CANG	0.1	4.5	0.3	2.2	63.7	17.1	9.6	0.7	1.3	0.3	<0.1	0.1	0.1	100	7.9	110.7
Lillimur	CANG	0.1	4.3	0.3	2.2	63.4	17.1	10.2	0.7	1.2	0.3	<0.1	0.2	0.1	100	7.6	112.1
Lubeck	CANG	0.1	4.6	0.3	2.0	60.6	19.6	10.4	0.7	1.2	0.3	<0.1	0.1	0.1	100	7.8	114.4
Nhill	CAN	0.1	4.2	0.3	2.2	63.1	17.9	10.0	0.6	1.2	0.2	<0.1	0.1	0.1	100	7.4	112.7
Warracknabeal	CANG	0.1	4.8	0.3	1.9	58.1	21.3	11.0	0.7	1.3	0.3	<0.1	0.2	0.2	100	7.8	117.0
Ouyen																	
Ouyen	CAN	0.1	4.4	0.3	2.0	60.2	19.3	11.5	0.5	1.1	0.2	0.1	0.1	0.1	100	7.3	116.4
Rainbow	CAN	0.1	4.2	0.3	2.2	62.7	18.5	9.9	0.6	1.1	0.2	<0.1	0.1	0.1	100	7.4	113.0
Swan Hill																	
Swan Hill	CAN	0.1	4.3	0.3	2.0	60.4	19.3	11.3	0.6	1.1	0.2	<0.1	0.1	0.1	100	7.3	116.2
North West Mean		0.1	4.3	0.3	2.1	61.7	18.7	10.6	0.6	1.1	0.2	0.0	0.1	0.1	100	7.4	114.4
South East Vic																	
Marong East																	
Barnes Crossing	CAN	0.1	4.4	0.3	1.8	60.4	20.1	10.3	0.7	1.3	0.3	0.1	0.1	0.2	100	7.4	115.0
Elmore	CAN	0.1	4.4	0.3	1.9	61.8	19.3	9.8	0.7	1.2	0.3	0.1	0.1	0.2	100	7.4	113.5
St. James	CANG	0.1	4.4	0.3	2.1	61.7	19.4	9.4	0.7	1.3	0.3	<0.1	0.1	0.2	100	7.7	112.6
Wangamong	CANG	0.1	4.6	0.3	2.2	62.2	19.0	9.0	0.7	1.2	0.3	<0.1	0.2	0.2	100	8.0	111.3
Yarrowonga	CAN	0.1	4.2	0.3	2.0	62.5	18.8	9.2	0.7	1.3	0.3	0.2	0.1	0.1	100	7.4	112.0
Marong South																	
Berrybank	CAN	0.1	4.2	0.3	1.9	63.9	17.1	10.1	0.7	1.3	0.3	<0.1	0.1	0.2	100	7.2	112.3
Donald	CAN	0.1	4.1	0.3	2.3	64.0	17.3	9.7	0.7	1.2	0.2	<0.1	0.1	0.1	100	7.5	111.5
Hamilton	CAN	0.1	4.3	0.3	1.9	61.6	18.7	10.7	0.6	1.2	0.3	0.1	0.1	0.1	100	7.3	114.7
South East Mean		0.1	4.3	0.3	2.0	62.3	18.7	9.7	0.7	1.3	0.3	0.1	0.1	0.1	100	7.5	112.7
Victoria Mean		0.1	4.3	0.3	2.0	62.1	18.7	10.0	0.7	1.2	0.3	0.1	0.1	0.1	100	7.4	113.2

¹Sat - Sum of the saturated fatty acids including 14:0, 16:0, 18:0, 20:0 and 24:0² Iodine Value - Calculated from the fatty acid composition

Table 10: Fatty Acid Composition – Western Australia

Port Zone/ Receival Site(s)	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
Albany																	
Albany	CAN1	0.1	4.2	0.3	1.9	61.4	18.9	10.9	0.6	1.2	0.3	0.1	0.1	0.1	100	7.1	115.3
Albany	CAN2	0.1	4.0	0.3	1.9	62.7	18.3	10.3	0.6	1.2	0.3	0.0	0.1	0.1	100	7.0	113.9
Bokal	CAN1	0.1	4.3	0.3	1.9	61.7	19.0	10.5	0.6	1.1	0.3	0.1	0.1	0.1	100	7.2	114.7
Borden	CAN1	0.1	4.2	0.3	1.8	61.5	18.6	10.7	0.6	1.3	0.4	0.3	0.1	0.1	100	7.2	114.6
Cranbrook	CAN1	0.1	4.2	0.3	1.9	61.3	18.9	10.8	0.6	1.2	0.3	0.1	0.1	0.1	100	7.1	115.2
Cranbrook	CAN2	0.1	4.1	0.3	1.9	61.2	18.8	11.0	0.6	1.2	0.3	0.3	0.1	0.1	100	7.1	115.4
Gairdner	CAN1	0.1	4.2	0.3	1.8	60.5	19.3	11.1	0.6	1.3	0.4	0.2	0.1	0.1	100	7.2	115.9
Karlgarin	CAN1	0.1	4.3	0.3	1.9	61.1	19.6	10.1	0.6	1.3	0.3	0.2	0.1	0.1	100	7.3	114.3
Katanning	CAN1	0.1	4.3	0.3	1.9	61.5	18.7	10.6	0.6	1.3	0.3	0.2	0.1	0.1	100	7.2	114.5
Kojaneerup	CAN1	0.1	4.0	0.3	2.0	62.0	18.0	11.1	0.6	1.3	0.3	0.2	0.1	0.1	100	7.1	114.7
Kojonup	CAN1	0.1	4.3	0.3	1.9	61.3	18.8	10.9	0.6	1.2	0.3	0.1	0.1	0.1	100	7.2	115.2
Lake Grace	CAN1	0.1	4.2	0.3	1.8	62.1	18.5	10.5	0.6	1.3	0.3	0.1	0.1	0.2	100	7.2	114.1
Newdegate	CAN1	0.1	4.3	0.3	1.8	61.6	19.1	10.2	0.6	1.3	0.3	0.2	0.1	0.1	100	7.2	114.2
Tambellup	CAG1	0.1	4.5	0.3	2.0	60.5	19.3	10.7	0.6	1.2	0.4	0.2	0.1	0.1	100	7.6	114.8
Wagin	CAN1	0.1	4.3	0.3	1.9	61.4	18.7	10.5	0.7	1.4	0.4	0.2	0.1	0.2	100	7.5	114.0
Wellstead	CAG1	0.1	4.4	0.3	1.8	60.5	19.4	11.0	0.6	1.3	0.3	0.0	0.1	0.2	100	7.3	115.7
Wellstead	CAN1	0.1	4.0	0.3	1.9	61.3	18.3	11.4	0.6	1.3	0.3	0.3	0.1	0.1	100	7.0	115.8
Albany Mean		0.1	4.2	0.3	1.9	61.4	18.8	10.7	0.6	1.3	0.3	0.2	0.1	0.1	100	7.2	114.8
Esperance																	
Beaumont	CAN1	0.1	4.2	0.3	1.7	60.7	19.0	10.8	0.7	1.5	0.4	0.4	0.1	0.2	100	7.2	115.1
Cascades	CAN1	0.1	4.0	0.3	1.7	60.5	19.2	11.2	0.6	1.4	0.4	0.3	0.1	0.2	100	6.9	116.2
Esperance	CAG1	0.1	4.7	0.3	1.8	58.9	20.3	11.3	0.6	1.3	0.3	0.0	0.2	0.2	100	7.7	116.8
Esperance	CAG2	0.1	4.7	0.4	1.9	59.1	20.3	10.7	0.7	1.3	0.4	0.3	0.2	0.1	100	7.8	115.6
Lake Varley	CAN1	0.1	4.4	0.3	1.8	61.0	19.3	10.0	0.7	1.4	0.4	0.3	0.2	0.2	100	7.5	113.6
Mount Madden	CAN1	0.1	4.2	0.3	1.8	61.0	19.0	10.7	0.7	1.5	0.3	0.2	0.1	0.2	100	7.1	115.0
Munglinup	CAG1	0.1	4.4	0.3	1.9	60.4	19.2	11.0	0.6	1.3	0.3	0.2	0.1	0.1	100	7.4	115.4
Munglinup	CAN1	0.1	4.0	0.3	1.7	62.2	18.2	10.9	0.6	1.4	0.3	0.1	0.1	0.1	100	6.8	114.9
Ravensthorpe	CAN1	0.1	4.2	0.3	1.8	61.4	18.8	10.7	0.6	1.4	0.4	0.2	0.1	0.1	100	7.1	114.8
Esperance Mean		0.1	4.3	0.3	1.8	60.6	19.3	10.8	0.6	1.4	0.4	0.2	0.1	0.2	100	7.3	115.3
Geraldton																	
Carnamah	CAN1	0.1	4.3	0.3	1.8	61.5	18.8	10.1	0.7	1.4	0.4	0.3	0.1	0.2	100	7.4	113.5
Geraldton	CAG1	0.1	4.2	0.3	1.9	60.2	19.8	10.7	0.6	1.4	0.4	0.2	0.1	0.2	100	7.3	115.6
Geraldton	CAG2	0.1	4.1	0.3	1.9	61.0	19.3	10.7	0.6	1.3	0.3	0.2	0.1	0.2	100	7.0	115.3
Geraldton	CAN1	0.1	4.1	0.3	1.8	61.3	19.1	10.5	0.7	1.5	0.3	0.1	0.1	0.2	100	7.0	114.9
Geraldton	CAN2	0.1	4.1	0.3	1.7	60.1	19.7	10.8	0.6	1.5	0.4	0.4	0.1	0.2	100	7.1	115.8
Mingenew	CAN1	0.1	4.2	0.3	1.8	61.0	19.0	10.5	0.7	1.4	0.4	0.3	0.1	0.2	100	7.3	114.6
Northampton	CAN1	0.1	4.1	0.3	1.7	60.5	19.5	11.0	0.6	1.4	0.4	0.2	0.1	0.1	100	7.0	116.0
Three Springs	CAG1	0.1	4.2	0.3	2.0	61.2	19.7	10.1	0.6	1.3	0.3	0.0	0.1	0.1	100	7.3	114.4
Yuna	CAN1	0.1	4.3	0.3	1.8	61.8	19.2	9.6	0.7	1.4	0.4	0.3	0.1	0.1	100	7.3	113.0
Geraldton Mean		0.1	4.2	0.3	1.8	60.9	19.4	10.4	0.7	1.4	0.4	0.2	0.1	0.2	100	7.2	114.8
Kwinana																	
Brookton	CAN1	0.1	4.3	0.3	1.9	62.3	18.4	10.0	0.6	1.2	0.4	0.2	0.1	0.1	100	7.4	113.1
Bulyee	CAN1	0.1	4.2	0.3	1.9	61.9	18.6	10.1	0.7	1.3	0.4	0.3	0.1	0.1	100	7.4	113.4
Calingiri	CAN1	0.1	4.1	0.3	1.9	62.3	18.3	10.2	0.6	1.4	0.3	0.3	0.1	0.1	100	7.2	113.4
Calingiri	CAN2	0.1	4.2	0.3	1.9	61.9	18.7	10.1	0.7	1.3	0.4	0.2	0.1	0.1	100	7.3	113.5
Carrabin	CAN1	0.1	4.3	0.3	1.8	60.1	20.2	10.4	0.6	1.4	0.3	0.2	0.1	0.1	100	7.3	115.5
Carrabin	CAN2	0.1	4.2	0.3	1.9	61.8	18.6	10.4	0.6	1.3	0.4	0.2	0.1	0.1	100	7.2	114.0
Dale	CAN1	0.1	4.3	0.3	1.9	62.2	18.7	10.1	0.6	1.2	0.3	0.2	0.1	0.1	100	7.2	113.6
Greenhills	CAG1	0.1	4.2	0.3	2.0	62.5	18.5	9.9	0.6	1.2	0.3	0.1	0.1	0.1	100	7.4	112.9
Hines Hill	CAN1	0.1	4.3	0.3	1.9	61.6	19.0	10.0	0.6	1.4	0.4	0.3	0.1	0.1	100	7.3	113.6
Kalannie	CAN1	0.1	4.2	0.3	1.8	60.3	19.4	10.9	0.6	1.5	0.3	0.2	0.2	0.2	100	7.2	115.6
Kellerberrin	CAN1	0.1	4.1	0.3	1.9	62.5	18.4	10.1	0.6	1.3	0.3	0.1	0.1	0.1	100	7.2	113.4

¹Sat - Sum of the saturated fatty acids including 14:0, 16:0, 18:0, 20:0 and 24:0² Iodine Value - Calculated from the fatty acid composition

Table 10 (Continued): Fatty Acid Composition – Western Australia

Port Zone/ Receival Site(s)		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
Kwinana Continued																		
Koorda	CAN1		0.1	4.3	0.3	1.9	61.8	18.3	10.9	0.6	1.2	0.3	0.3	0.1	0.1	100	7.2	114.7
Kwinana	CAN1		0.1	4.2	0.3	1.9	62.1	18.5	10.3	0.6	1.2	0.3	0.2	0.1	0.1	100	7.2	113.9
Manmanning	CAG1		0.1	4.2	0.3	2.2	62.7	18.1	10.0	0.6	1.2	0.3	0.2	0.1	0.1	100	7.5	112.6
McLevie	CAN1		0.1	4.2	0.3	1.9	61.3	19.0	10.5	0.7	1.5	0.3	0.1	0.1	0.1	100	7.3	114.5
MGC	CAN1		0.1	4.2	0.3	1.9	61.6	18.9	10.5	0.6	1.2	0.3	0.2	0.1	0.1	100	7.2	114.5
Miling	CAN1		0.1	4.2	0.3	1.9	60.7	19.2	10.7	0.7	1.5	0.3	0.0	0.1	0.2	100	7.4	115.0
Mogumber	CAN1		0.1	4.3	0.3	2.0	60.8	19.4	10.5	0.6	1.3	0.3	0.3	0.1	0.1	100	7.4	114.6
Moora	CAN1		0.1	4.3	0.3	1.9	61.1	19.2	10.2	0.7	1.4	0.4	0.3	0.1	0.1	100	7.4	114.1
Narrakine	CAN1		0.1	4.2	0.3	1.9	62.5	18.3	10.0	0.6	1.3	0.3	0.2	0.1	0.1	100	7.3	113.1
Nembudding	CAN1		0.1	4.2	0.3	1.8	61.7	18.8	10.3	0.7	1.4	0.3	0.1	0.1	0.1	100	7.3	114.0
Quairading	CAN1		0.1	4.1	0.3	1.9	61.6	18.7	10.5	0.6	1.3	0.3	0.3	0.1	0.1	100	7.1	114.5
Regans Ford	CAN1		0.1	4.1	0.3	1.9	61.8	18.3	10.4	0.7	1.4	0.4	0.3	0.1	0.1	100	7.3	113.8
Wickepin	CAN1		0.1	4.2	0.3	1.9	62.6	18.1	10.0	0.7	1.3	0.4	0.3	0.1	0.1	100	7.4	112.7
Wogarl	CAN1		0.1	4.3	0.3	1.8	60.4	19.7	10.3	0.7	1.4	0.4	0.3	0.2	0.1	100	7.5	114.7
Wongan Hills	CAG1		0.1	4.3	0.3	2.1	61.1	19.6	10.3	0.6	1.2	0.3	0.0	0.1	0.1	100	7.5	114.4
Yarding	CAG1		0.1	4.4	0.3	2.0	60.1	20.1	10.3	0.7	1.2	0.3	0.2	0.2	0.1	100	7.7	114.7
Yerecoin	CAN1		0.1	4.3	0.3	1.9	61.4	19.1	10.4	0.7	1.4	0.3	0.1	0.1	0.1	100	7.3	114.4
York	CAG1		0.1	4.3	0.3	2.1	62.1	18.7	9.7	0.7	1.2	0.3	0.2	0.2	0.1	100	7.6	112.7
York	CAG2		0.1	4.5	0.4	2.2	61.6	19.2	9.3	0.7	1.2	0.4	0.2	0.2	0.1	100	8.0	112.0
York	CAN1		0.1	4.2	0.3	1.8	61.8	18.8	10.2	0.6	1.3	0.4	0.3	0.1	0.1	100	7.2	113.8
Kwinana Mean			0.1	4.2	0.3	1.9	61.6	18.9	10.2	0.6	1.3	0.3	0.2	0.1	0.1	100	7.3	113.9
W.A. Mean			0.1	4.2	0.3	1.9	61.3	19.0	10.5	0.6	1.3	0.3	0.2	0.1	0.1	100	7.3	114.4

¹Sat - Sum of the saturated fatty acids including 14:0, 16:0, 18:0, 20:0 and 24:0² Iodine Value - Calculated from the fatty acid composition

National Variety Trials – Quality Data

Table 11: NVT Quality Data

Variety	Oil (% in whole seed @ 6 % moisture)			Protein (% in oil free meal @ 10 % moisture)			Glucosinolates (µmoles/g in whole seed @ 6 % moisture)		
	NSW	SA	WA	NSW	SA	WA	NSW	SA	WA
	07H5003	45.1	*	*	40.7	*	*	9	*
08H5050	43.0	43.8	*	40.2	38.7	*	16	16	*
08H5052	45.2	43.7	*	41.3	40.3	*	12	15	*
08H5061C	44.6	43.8	*	41.1	39.5	*	12	11	*
08H5067C	45.5	44.5	*	39.0	39.4	*	12	11	*
AN10R5001	43.2	41.3	44.1	38.6	36.7	38.1	9	9	8
AN11R5180	44.2	42.6	45.2	41.1	37.6	39.7	8	9	8
ATR Cobbler	43.4	42.8	45.0	40.0	38.8	39.4	13	12	12
ATR Gem (NT0107)	45.3	46.2	48.0	38.3	38.2	37.4	5	4	5
ATR Snapper	47.0	46.2	47.8	39.0	37.8	38.4	4	3	6
ATR Stingray	45.1	44.9	45.7	40.3	39.4	40.1	4	3	6
AV Garnet	44.4	46.0	*	38.6	36.6	*	12	11	*
Bonanza TT	42.9	43.1	44.5	41.2	39.3	40.4	6	4	6
CB Agamax	43.3	43.9	*	38.4	36.5	*	7	7	*
CB Eclipse RR	42.4	42.4	43.5	39.1	36.8	38.1	8	8	7
CB Jardee HT	43.1	42.7	45.1	38.9	38.1	37.9	8	7	7
CB Junee HT	43.2	42.3	44.4	39.9	38.7	39.1	6	6	7
CB Mallee HT	42.3	40.9	42.6	39.5	38.7	39.1	11	9	10
CB Scaddan	42.1	41.7	43.6	39.2	38.5	38.1	6	5	6
CB Telfer	42.9	42.1	45.2	41.8	40.1	41.3	5	5	5
CBWA-106	42.3	42.2	43.7	40.2	38.8	40.0	8	7	7
CBWA-107	42.3	41.7	43.9	38.9	38.2	38.5	8	6	7
CHYB-1297 RR	42.0	42.3	43.7	40.0	37.9	39.1	14	13	10
CHYB-144	40.8	41.7	42.1	39.5	37.1	40.3	7	6	5
CHYB-147 HT	42.5	43.1	43.9	37.7	38.0	39.2	6	6	6
CHYB-148 HT	43.1	45.3	46.4	38.6	38.0	38.9	7	5	8
CHYB-1721 RR	42.8	*	43.2	37.2	*	39.3	7	*	7
CHYB-187	45.1	45.9	*	39.9	38.3	*	5	5	*
Crusher TT	43.2	43.1	44.7	38.4	37.9	37.5	13	11	12
GT Cobra	*	*	45.7	*	*	38.5	*	*	8
GT Cougar	43.3	*	44.9	35.9	*	35.6	12	*	11
GT Mustang	44.3	*	47.0	38.0	*	37.5	12	*	10
GT Scorpion	40.8	40.5	42.5	38.8	37.3	38.4	14	15	11
GT Taipan	42.0	40.8	44.1	39.0	37.1	38.6	5	8	5
GT Viper	*	*	46.4	*	*	37.5	*	*	5
HC1050	44.3	*	46.9	37.9	*	37.1	13	*	10
HC1065	42.7	*	46.0	39.6	*	39.9	16	*	11
Hyola 404RR	46.8	46.3	47.3	39.9	37.5	39.9	8	10	8
Hyola 433	45.0	45.3	*	39.4	38.6	*	9	9	*
Hyola 444TT	44.1	43.6	44.8	41.4	41.4	41.4	7	7	9
Hyola 474CL	44.8	44.2	45.7	40.4	39.7	38.3	10	10	10
Hyola 50	45.3	45.4	*	39.2	37.8	*	7	6	*
Hyola 505RR	46.7	45.1	47.2	41.0	39.5	40.7	7	8	7
Hyola 555TT	43.7	43.5	44.1	40.1	39.8	40.1	9	9	11
Hyola 575CL	44.4	44.1	45.6	40.2	39.2	38.6	9	8	8
Hyola 751TT	43.4	43.6	44.4	39.6	39.3	39.7	7	6	8
Jackpot TT	*	*	49.1	*	*	35.5	*	*	4
M1662	*	44.5	46.1	*	38.8	39.8	*	12	11
M8664	*	*	46.2	*	*	41.3	*	*	7

* Variety not grown in state.

Table 11 (Continued): NVT Quality Data

Variety	Oil (% in whole seed @ 6 % moisture)			Protein (% in oil free meal @ 10 % moisture)			Glucosinolates (μ moles/g in whole seed @ 6 % moisture)		
	NSW	SA	WA	NSW	SA	WA	NSW	SA	WA
	M8730	*	*	46.1	*	*	40.2	*	*
Monola 506TT (NL0437)	44.8	44.2	46.0	41.1	40.3	39.6	5	4	6
Monola 605TT (NL0305)	43.0	43.3	45.6	39.8	39.3	38.2	10	7	9
Monola 707TT (NL0587)	41.9	42.9	*	42.3	41.5	*	5	4	*
Monola 76TT	45.2	45.0	47.4	39.7	39.4	38.2	6	5	6
Monola 77TT	45.2	45.9	*	40.4	39.5	*	4	3	*
NG0517	44.3	43.8	*	39.1	37.1	*	9	10	*
NG0520	44.4	42.5	*	37.7	36.6	*	5	5	*
NT0174	*	*	48.8	*	*	36.7	*	*	6
Pioneer 07N406I	45.6	44.8	47.4	38.6	39.2	37.1	8	7	7
Pioneer 08N102I	41.8	43.2	43.2	41.0	37.1	40.4	11	11	11
Pioneer 10N523R	43.9	*	46.1	38.9	*	37.8	8	*	7
Pioneer 10N535R	44.5	*	46.1	40.1	*	39.2	14	*	11
Pioneer 10N560R	44.1	*	46.3	40.8	*	40.1	6	*	5
Pioneer 10N572R	45.6	*	46.7	38.4	*	38.1	6	*	5
Pioneer 10N589R	41.9	43.3	44.2	42.2	36.8	45.0	7	7	7
Pioneer 43C80	42.2	43.7	46.3	42.1	37.6	40.4	7	5	7
Pioneer 44C79	43.1	44.8	44.3	42.8	38.1	41.6	8	5	7
Pioneer 44Y84	45.0	44.7	46.4	39.2	38.2	37.4	8	7	7
Pioneer 45Y21	43.5	43.1	43.0	44.6	38.6	43.6	9	10	11
Pioneer 45Y22	43.8	*	45.5	37.2	*	36.9	9	*	8
Pioneer 45Y82	43.6	43.5	45.5	39.4	38.9	37.1	9	7	8
Pioneer 46Y20	46.0	*	47.5	39.2	*	38.8	7	*	7
Pioneer 46Y83	45.1	44.6	47.6	38.5	38.9	36.1	8	6	7
RT123	45.4	46.8	*	39.4	37.1	*	9	7	*
SMHC102CL	44.4	43.9	46.1	38.4	37.4	36.8	8	7	7
SMHC105CL	45.3	42.6	*	37.0	39.0	*	7	7	*
SMHC111CL	44.6	44.3	46.0	39.2	38.4	37.7	9	8	9
T98060	46.2	47.5	46.8	39.2	39.9	40.1	6	5	8
T98074	*	47.0	47.4	*	38.6	38.9	*	6	9
Tawriffic TT	45.1	44.2	46.2	40.5	39.5	40.0	6	5	7
Thumper TT	44.4	44.5	45.9	40.7	39.7	40.1	7	5	7
Victory V3001	43.2	*	*	38.7	*	*	15	*	*
Victory V5001	44.3	42.5	*	39.8	38.0	*	15	14	*
Juncea Canola									
JBOT-800371	40.8	40.6	41.0	44.7	41.7	46.9	18	20	20
JBOT-800407	39.7	39.3	40.3	46.1	41.7	47.6	12	14	12
JO7Z-01904	40.1	43.7	43.3	45.6	43.5	48.3	14	12	17
SARDI515M	45.1	46.0	*	45.2	39.6	*	15	11	*
SARDI725M	*	44.7	*	*	40.6	*	*	21	*
SARDI727M-BO807	*	44.0	*	*	40.0	*	*	16	*
SARDI745M-BO802	*	43.2	*	*	40.2	*	*	19	*
SARDI906M	*	43.6	*	*	38.4	*	*	18	*
SARDI918M	*	45.1	*	*	37.4	*	*	14	*
SARDI935M	*	44.8	*	*	37.6	*	*	16	*
SARDI938M	*	45.4	*	*	37.4	*	*	18	*
Xceed Oasis CL	42.1	46.6	43.0	46.2	42.3	48.3	13	8	10

* Variety not grown in state.

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 (meal) 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).

The term Juncea Canola is used for mustard (*Brassica juncea*) varieties which have oil and meal quality similar to canola. Fatty acid profiles of the oil and the level of and types of glucosinolates in the meal all meet the quality specifications for canola.

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, protein and glucosinolates to the appropriate moisture content for reporting.

Oil Content:

Oil content is determined by NIR, calibrated from results obtained using method AOCS Am2-93 “Determination of Oil Content in Oilseeds”. Oil is extracted from ground seed on either a Foss Soxtec™ 2050 or a Büchi B-811 Extraction System 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 a methanolic solution of potassium hydroxide. The method is based on IOC COI/T.20/Doc. No. 24 2001: “Preparation of the Fatty Acid Methyl Esters from Olive Oil and Olive-Pomace Oil”. 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.



Department of
Primary Industries



Australian Oilseeds
Federation