



2015 GRDC Wheat NVT

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Purpose: The purpose of the canola NVT trials at Dandaragan is to provide growers and their advisors with independent information on the performance of newly released varieties of canola relative to the current commercial varieties grown in the area. The intention is to have two years of data available on the NVT website at the time each new variety is made available for commercial production.

Location: Dandaragan

Soil Type: Loam over heavy clay

Soil Test Results:

Soil Analysis (CSBP)	0-10cm	10-20cm	20-30cm	30-40cm	40-50cm
Colour	GRBR	GRBR	GRBR	GRBR	GRBR
Ammonium Nitrogen mg/Kg	11	3	1	1	1
Nitrate Nitrogen mg/Kg	19	5	2	1	1
Phosphorus Colwell mg/Kg	52	30	12	5	6
Potassium Colwell mg/Kg	282	269	180	233	239
Sulphur mg/Kg	8.9	3	1.6	5	8
Organic Carbon %	2.62	1.41	0.9	0.65	0.54
Conductivity dS/m	0.062	0.032	0.028	0.056	0.073
pH Level (CaCl ₂) pH	5.6	4.4	4.5	5.3	5.7
pH Level (H ₂ O) pH	6.1	5.3	5.6	6.2	6.7
Exc. Aluminium meq/100g	0.026	0.357	0.334	0.108	0.138
Exc. Calcium meq/100g	8.51	4.82	5.99	15.1	15.72
Exc. Magnesium meq/100g	1.15	0.89	1.53	5.29	5.54
Exc. Potassium meq/100g	0.68	0.62	0.41	0.6	0.61
Exc. Sodium meq/100g	0.25	0.22	0.35	1.16	1.27

Rotation: 2014: Canola, 2013: Wheat, 2012: Oats

Growing Season Rainfall (April- October 2015): Growing season rainfall for Dandaragan West weather station (9014): 342.2mm

Long term average growing season rainfall for Dandaragan West weather station (9014): 531.8mm

BACKGROUND SUMMARY

The National Variety Trial (NVT) program is a national program of comparative crop variety testing with standardised trial management, data generation, collection and dissemination.

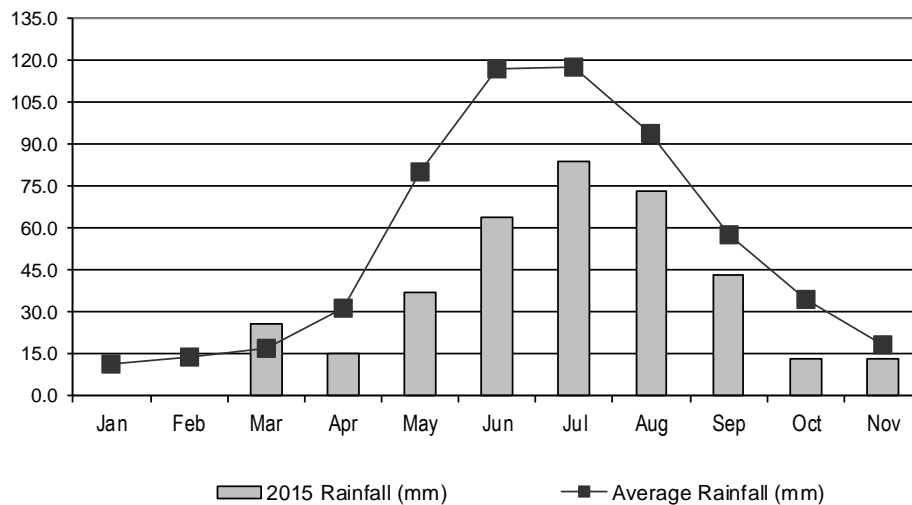
The program is supported by the Australian Government, and growers through the Grains Research & Development Corporation (GRDC) and is managed by the Australian Crop Accreditation System Limited (ACAS). The NVT aims to generate independent information for growers about newly released crop varieties. The NVT System has been developed to complement the plant breeding programs. Breeders will make their release decisions prior to nominating lines for testing programs. NVT will only be testing lines close to commercial release.

TRIAL DESIGN**Plot size:** 1.76m x 10m**Machinery use:** Direct drill with Small Plot Seeder, Knife points and press wheels**Repetitions:** 3**Seeding rates and dates:** 12/05/2015; 75 kg/ha**Treatment rates and dates:**

No.	Date	Maintenance Product Name	Description	Rate	Unit
1	11/05/2015	Chlorpyrifos	Insecticide	1	L/ha
		SpraySeed	Herbicide	3	L/ha
		Trifluralin	Herbicide	2	L/ha
2	12/05/2015	Gusto Gold	Fert - Banded @ sowing	100	kg/ha
		Urea	Fert - Topdressed IBS	50	kg/ha
3	24/06/2015	Alphacypermethrin	Insecticide 6WA-S	0.3	L/ha
		Chlorpyrifos	Insecticide 6WA-S	0.4	L/ha
		Velocity	Herbicide 6WA-S	1	L/ha
		Hasten	Adjuvant	1%	v/v
4	25/06/2015	MCPA	Herbicide 6WA-S	1	L/ha
		Lontrel	Herbicide 6WA-S	0.3	L/ha
5	28/07/2015	Urea	Fert – topdressed 11 WA-S	60	kg/ha
6	12/08/2015	Alphacypermethrin	Insecticide 13 WA-S	0.3	L/ha
		Prosaro	Fungicide 13 WA-S	0.15	L/ha
		Hasten	Adjuvant	1%	v/v
		Urea	Fert – topdressed 13 WA-S	60	kg/ha

2015 Monthly and Average Rainfall Data - Dandaragan West, W.A.

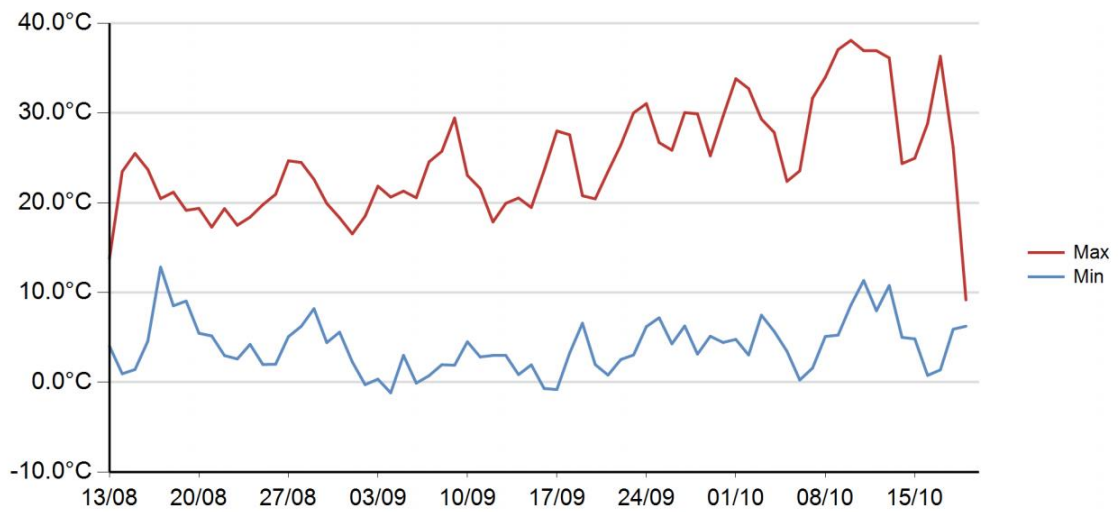
Observations were drawn from Dandaragan West (station 9014).(11.9km away)



2015 Daily Rainfall Data - Dandaragan West, W.A.

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
1			0.0	0.0	2.2	0.0	0.0	21.4	8.8	0.0	0.0
2			0.0	0.0	0.0	↓	2.8	0.0	0.0	0.0	10.0
3			0.0	0.0	0.0	5.6	2.0	0.0	0.0	0.0	
4			0.0	0.0	0.2	0.0	0.2	0.0	0.0	0.0	
5			0.0	0.0	0.0	0.0	0.0	0.0	↓	0.0	
6			0.0	0.0	0.0	0.0	2.0	0.0	↓	0.0	
7			0.0	5.2	0.0	0.0	0.0	0.0	4.6	0.0	
8			0.0	1.0	0.0	0.0	6.4	0.0	0.0	0.0	
9			0.0	2.4	0.0	0.0	0.0	0.0	0.0	0.0	
10			0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	
11			0.0	3.6	0.0	0.0	0.0	0.0	2.0	0.0	
12			0.0	2.0	0.0	0.2	0.0	0.0	25.6	0.0	
13			0.0	1.0	0.0	0.0	0.0	0.0	2.4	0.0	
14			7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
15			5.8	0.0	0.0	0.0	0.0	0.0	0.0	2.4	
16			2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
17			0.0	0.0	13.4	0.0	0.0	4.6	0.0	0.0	
18			0.0	0.0	21.4	6.0	0.0	4.6	0.0	0.0	
19			2.0	0.0	0.0	1.4	11.0	2.8	0.0	2.8	
20			0.0	0.0	0.0	11.0	4.8	10.8	0.0	0.0	
21			0.0	0.0	0.0	30.4	0.0	0.8	0.0	0.0	
22			0.0	0.0	0.0	9.2	0.0	19.0	0.0	0.0	
23			0.0	0.0	0.0	0.0	5.4	0.2	0.0	0.0	
24			0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	
25			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	
26			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
27			8.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
28			0.0	0.0	0.0	0.0	9.0	0.0	0.0	0.0	
29			0.0	0.0	0.0	0.0		0.0	0.0	0.0	
30			0.0	0.0	0.0	0.0		7.2	0.0	0.0	
31			0.0		0.0		39.8	2.0		1.4	
sowing											
2015 Rainfall (mm)			25.6	15.2	37.2	63.8	83.6	73.4	43.4	13.4	13.4
Average Rainfall (mm)	11.0	13.6	16.8	31.4	80.3	117.1	117.5	93.8	57.5	34.2	17.9

Temperature Graph



Event	Comments
Frost Event	This trial experienced frost conditions on the following dates throughout the flowering period: -0.3 °C on Sep 2, -1.2 °C on Sep 4, -0.1 °C on Sep 6, -0.7 °C on Sep 16, -0.8 °C on Sep 17. Interpret results with caution.
Heat Event	This trial experienced extreme heat conditions on the following dates throughout the flowering period: 33.8 °C on Oct 1, 32.7 °C on Oct 2, 34 °C on Oct 8, 37.1 °C on Oct 9, 38.1 °C on Oct 10, 36.9 °C on Oct 11, 36.9 °C on Oct 12, 36.1 °C on Oct 13, 36.3 °C on Oct 17. Interpret results with caution.

RESULTS/STATISTICS

Table 1: Analysis and receival standards

Variety	Predicted Yield t/ha	50 % Flowering year/day	Hectolitre Weight kg/hL	Protein %	Screenings (<2.0mm sieve) %	1000 grain weight g
Cobalt	4.89	244	78.60	12.2	1.20	41.20
Tenfour	4.87	242	79.00	12.4	1.25	47.90
Buchanan	4.69	246	80.80	12.0	0.36	45.10
Magenta	4.61	249	77.60	12.9	1.84	42.80
Bremer	4.49	247	78.60	13.4	0.20	41.60
Hydra	4.43	244	80.00	13.1	0.35	42.80
Scout	4.41	243	80.20	12.7	5.61	44.90
Cosmick	4.39	242	79.40	12.1	1.20	41.00
Fortune	4.39	248	78.00	13.6	1.09	41.20
Trojan	4.35	252	78.80	12.2	1.00	42.30
Scepter	4.32	244	78.80	12.5	2.08	47.70
Cutlass	4.30	258	76.60	12.8	2.37	35.90
Calingiri	4.20	252	77.40	13.1	1.08	43.10
B53	4.17	245	80.20	12.7	0.43	47.20
Cobra	4.16	244	77.40	13.3	0.32	40.50
Jade	4.13	245	76.60	13.7	2.31	39.40
Wedin	4.12	250	74.20	12.4	2.95	39.90
Supreme	4.06	245	78.00	12.3	2.10	37.30
EGA Bonnie Rock	4.01	241	79.20	13.2	2.26	42.40
Harper	3.90	253	72.20	13.4	4.73	36.50
Mace	3.88	242	78.80	13.3	0.24	39.90
Emu Rock	3.86	242	79.00	14.0	1.97	47.00
Yitpi	3.82	262	74.40	13.5	1.61	36.30
Westonia	3.79	242	75.40	12.4	1.64	38.30
Zen	3.79	249	77.80	13.0	1.08	43.10
Justica CL Plus	3.78	251	73.00	12.6	1.58	35.00
Corack	3.71	244	78.40	13.5	0.09	48.30
Grenade CL Plus	3.60	245	74.60	12.9	0.46	39.30
Wyalkatchem	3.60	244	78.80	14.1	0.14	43.50
Impress CL Plus	3.24	241	77.80	14.3	0.97	51.80
Site Mean (t/ha)	4.14					
LSD (t/ha)	0.29					
CV (%)	4.1					
Probability	<0.001					

Table 2: Production values and site mean yields, 2011-2015

Variety	P.V.	Site Mean Yield (t/ha)
<i>Site Mean Yield</i>		3.58
Trojan	113.6	4.07
B53	110.1	3.94
Cosmick	109.2	3.91
Tenfour	108.8	3.90
Scepter	108.8	3.90
Hydra	107.9	3.87
Magenta	107.0	3.83
Cobra	106.3	3.81
Cobalt	106.0	3.80
Cutlass	104.3	3.74
Scout	101.4	3.63
Bremer	100.6	3.60
Zen	100.1	3.59
Corack	100.1	3.59
Westonia	100.0	3.58
EGA Bonnie Rock	99.7	3.57
Espada	99.7	3.57
Supreme	98.2	3.52
Calingiri	98.1	3.51
Mace	97.9	3.51
Jade	97.6	3.50
Wyalkatchem	96.8	3.47
Yitpi	96.4	3.45
Fortune	95.1	3.41
Yandanooka	94.3	3.38
Justica CL Plus	93.5	3.35
Emu Rock	92.9	3.33
Impress CL Plus	91.5	3.28
Kord CL Plus	88.0	3.15
Grenade CL Plus	87.7	3.14

OBSERVATION/ DISCUSSION/ MEASUREMENTS

The trials were sown dry on the 12th May. The trial established well after 35 mm of rainfall fell 5-6 days after sowing but leaf emergence and early tillering were subjected to below average rainfall for May and June. Decent showers from the end July and during August allowed for good crop growth during stem elongation and head emergence however the season experienced a tight finish with warm temperatures and little to no spring rainfall. Despite the finish to the season the site experienced little plant stress and averaged 4.14 t/ha. It is likely the loam over heavy clay soil type retained adequate soil moisture from sparse but heavy rainfall events keeping the PAWC maintained and allowing varieties to yield well.

Variety performance in NVT's are now expressed using the Production Value Plus system. This means a value is assigned against each variety indicating the percentage increase

above or below the long term site average over the last 5 years, e.g., 2011-2015). For instance, Trojan has been the most persistence variety over the last 5 years with an average yield of 4.07 t/ha that is 114% above the average site mean.

Top AH varieties for the West Midlands area were Scepter at and Cobra while top yielding APH varieties were Trojan, Hydra and Magenta. Zen was the best performing noodle wheat and had a 2% yield advantage over Calingiri although other wheats from other segregations have showed a clear yield advantage.

This is the first year Scepter, a Mace replacement, has been evaluated in the NVT system, hence data should be used with caution. Cobra and Magenta are varieties susceptible to low falling numbers after pre-harvest rainfall which may be an issue for some growers.

Top yielding varieties this year for the Dandaragan NVT were Cobalt, Tenfour, Buchanan and Magenta with no significant difference in yield between them while the top yielding noodle wheats were Fortune and Calingiri. There did not appear to be a relationship between yield and flowering which suggests that varieties were not overly affected by frost or heat events and PAWC appeared to be adequate for most varieties to complete grain fill. The season for Dandaragan has favored varieties which were able take advantage of good rainfall events in August and early September. Overall, the site produced grain with high protein levels, with most varieties being able to achieve levels high enough to receive AH or APW classification. Screening also do not appear to be a huge problem which indicates varieties weren't overly affected by the tighter finish to the season. Only Scout and Harper demonstrated a propensity for high screenings.

Cobalt, bred by Edstar Genetics, and was the highest yielding variety at this site and has performed well in WA NVT trials in 2015, however grower interest may be curtailed by the current feed classification. Tenfour, another high performer this year, has also performed consistently in the long term yield analysis for Agzone 2, although grower interest may be piqued by the feed classification.

Buchanan is new to WA and this is its first year in NVT's. It is a specialized APH quality variety from Austgrains Pty Ltd developed for specific supply to Asian markets and at the moment it is grown in QLD and NSW. It is a tall, mid-late maturing variety. With only one years' worth of data the results should be used with caution.

Magenta is a more commonly grown APH variety is known to perform well with a soft finish and little stress and so it has performed well in this trial. It is mid-late maturing high yielding variety with a robust disease package with stem rust (R-MR), leaf rust (R) and yellow spot (MR). Exceptional early vigor and tillering make it a good variety for weed control. However it is at risk of low falling numbers with pre-harvest rainfall which can be a problem for growers in the West Midlands area.

Despite Mace performing below the site average this year it is still the most popular wheat variety in WA. Scepter is a new AH variety developed by Australian Grains Technologies (AGT) as a Mace replacement. Scepter flowers approximately two days later than Mace and was higher yielding than Mace in AGT trials in WA. This is the first year it has been evaluated independently in NVT trials and it yielded significantly higher at 4.32 t/ha compared to Mace at 3.88 t/ha

Fortune an AWN variety was released in 2008 to replace Calingiri. It yields similar to Calingiri with a good disease package however it has already been replaced by Zen. Calingiri is still popular for its ability to adapt to a range of seasons and stresses and has an ability to cope with stress and recover from stress hence it is still one of the more commonly grown noodle wheats.

Zen and Supreme are marketed by Intergrain as good replacements. Zen is performing well as a mid-long season variety and according to long term NVT results it has a higher production value compared to Calingiri. Supreme is mid-short season variety released as a replacement for Arrino, however crop height can become an issue in poor growing seasons or in rocky paddocks.

Impress CL Plus, is Intergrain's new mid-short maturing imidazolinone tolerant wheat with an APW classification. Clearfield varieties are a useful agronomic tool, dependent on weed spectrum of a paddock and plant back periods. It was not one of the top performing varieties in this trial but it has a yield advantage over Justica CL plus when looking at long term NVT results for Agzone 2 however locally it has a lower PV compared to Justica CL. It has a good grain size similar to Wyalkatchem and good yellow spot resistance (MRMS).

PEER REVIEW/REVIEW

Peter Carlton

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