

# Yardstick Trials - Trial Report 2019



Corrigin - 14/02/2020

## Wheat:

<b>Specific Location:</b> Corrigin	<b>Sowing Date:</b> 7 June 2019
<b>Varieties:</b> Scepter, Trojan, Devil and Ninja	<b>Harvest Date:</b> 8 December 2019
<b>Previous Crop:</b> Canola	

## Barley:

<b>Specific Location:</b> Corrigin	<b>Sowing Date:</b> 7 June 2019
<b>Varieties:</b> Rosalind, Buff, Spartacus and Planet	<b>Harvest Date:</b> 8 December 2019
<b>Previous Crop:</b> Canola	

## Weather conditions

Event	Comments
Frost Event	This trial experienced frost conditions on the following dates throughout the flowering period: -0.1 °C on 27-Aug, -1.8 °C on 05-Sep, -2.2 °C on 06-Sep, -0.8 °C on 07-Sep, -1.5 °C on 20-Sep, -0.7 °C on 21-Sep. Interpret results with caution.
Heat Event	This trial experienced frost conditions on the following dates throughout the flowering period: 32.3 °C on 09-Sep, 32 °C on 10-Sep, 32 °C on 29-Sep, 32.2 °C on 30-Sep, 32.1 °C on 08-Oct, 32.5 °C on 09-Oct, 32.1 °C on 10-Oct, 32.1 °C on 19-Oct, 32.1 °C on 20-Oct, 32 °C on 21-Oct, 32.3 °C on 22-Oct, 32 °C on 26-Oct, 32.3 °C on 27-Oct, 32.5 °C on 28-Oct, 32 °C on 29-Oct, 32.1 °C on 04-Nov, 32.3 °C on 08-Nov, 32.2 °C on 09-Nov, 32.2 °C on 10-Nov, 32.7 °C on 13-Nov, 32 °C on 14-Nov, 32.5 °C on 15-Nov, 32.1 °C on 16-Nov, 32.2 °C on 17-Nov, 32.2 °C on 18-Nov, 32.7 °C on 19-Nov, 32.1 °C on 23-Nov, 32.3 °C on 24-Nov, 32.6 °C on 26-Nov, 32.2 °C on 27-Nov, 32.3 °C on 01-Dec, 32.5 °C on 02-Dec, 32.2 °C on 03-Dec, 32.5 °C on 04-Dec, 32.1 °C on 05-Dec, 32 °C on 06-Dec, 32.2 °C on 07-Dec, 32.3 °C on 08-Dec, 32.1 °C on 09-Dec, 32.2 °C on 10-Dec. Interpret results with caution.

**Rainfall (mm) Data Source: DPIRD weather station**

## Soil Testing

Soil Classification Details										
<b>Order</b>	Chromosols Chromosols: soils with a strong texture contrast between the topsoil and subsoil. Subsoils are not strongly acid and are not sodic									
<b>Sub-Order</b>	Brown									
<b>Identification Source</b>	CSIRO SoilMapp									
	Depth	Texture	Total Nitrogen	Phosphorous	P Test Type	Organic Carbon	pH (water)	pH (CaCl2)	Conductivity (EC)	ESP
	cm	1 sand, 2 sandy loam, 3 loam, 4 loamy clay, 5 clay	mg/kg	mg/kg		%	pH	pH	dS/m	%
01 Apr 2019	0-10	3.0	26.0	50.00	Colwell	2.0	6.60	6.10	0.1	N/A
01 Apr 2019	10-60	3.0	18.0	41.00	Colwell	1.5	6.10	5.40	0.1	1.55

### Predicta B Results

Predicta B Test	Unit	Result
CCN	eggs/g	0
Stem nematode	nematodes/100g	0
Take-all	pgDNA/g	9
Gga	pgDNA/g	0
R. solani AG8	pgDNA/g	0
F. psuedograminearum test 1	pgDNA/g	0
F. psuedograminearum test 2	pgDNA/g	0
F. culmorum/graminearum	pgDNA/g	0
Pyrenophoratrifici-repentis (YLS)	kDNA copies/g	34
Bipolaris	pgDNA/g	0
Pythium clade f	pgDNA/g	4
Eutiarosporella a tritici-australis	kDNA copies/g	0
Eutiarosporella darliae/psuedodarliae	kDNA copies/g	0
Eyepot	kDNA copies/g	0
Pratylenchus neglectus	nematodes/g soil	13
Pratylenchus thornei	nematodes/g soil	0
Pratylenchus penetrans	nematodes/g soil	0
Pratylenchus quasitereoides	nematodes/g soil	1
Phytophthora medicaginis	kDNA copies/g	0
Didymella pinodes/Phoma pinodella	pgDNA/g	0
Phoma Koolunga	pgDNA/g	0
Macrophomina phaseolina	kDNA copies/g	94
Phoma rabiei	kDNA copies/g	0
S. sclerotiorum	kDNA copies/g	0

### Fertiliser Treatments

	N (Pre)	N (Post)
Decile 1	12	0
Decile 4	12	42
Decile 7	12	58

Results

Wheat

Heat map

Scepter	Scepter	Ninja	Devil	Trojan	Ninja
Devil	Devil	Trojan	Ninja	Trojan	Scepter
Trojan	Trojan	Scepter	Ninja	Scepter	Ninja
Scepter	Devil	Devil	Trojan	Devil	Ninja
Devil	Devil	Devil	Ninja	Ninja	Ninja
Scepter	Scepter	Scepter	Trojan	Trojan	Trojan

Decile 1
Decile 4
Decile 7

1.72	1.97	2.15	2.45	2.25	2.31
1.88	2.35	1.60	1.78	2.21	2.41
2.00	1.63	1.82	2.22	2.22	2.25
2.36	1.95	2.49	2.10	2.47	1.53
1.95	2.10	2.22	1.73	2.07	2.10
1.83	2.09	2.12	1.72	2.13	2.17

Table 1: Crop emergence (0-9) wheat

	Decile 1	Decile 4	Decile 7	Means
<b>Scepter</b>	8.7	8.3	8.3	8.4
<b>Trojan</b>	8.3	8.3	8.3	8.3
<b>Devil</b>	7.7	8.0	8.3	8.0
<b>Ninja</b>	8.7	8.7	8.7	8.7
<b>Means</b>	8.3	8.3	8.4	
	Significance (Variety) P = N.S.		l.s.d (P<0.05) = N.A	
	Significance (Decile) P= N.S.		l.s.d (P<0.05) = N.A.	
	Significance (Variety * Decile) P = N.S		l.s.d (P<0.05) = N.A.	

Table 2: Crop vigour (0-9) wheat

	Decile 1	Decile 4	Decile 7	Means
<b>Scepter</b>	9.0	8.0	9.0	8.7
<b>Trojan</b>	8.3	8.7	8.0	8.3
<b>Devil</b>	7.3	8.3	7.3	7.7
<b>Ninja</b>	8.0	8.3	8.3	8.2
<b>Means</b>	8.2	8.3	8.2	
	Significance (Variety) P = 0.013		l.s.d (P<0.05) = 0.6	
	Significance (Decile) P= N.S.		l.s.d (P<0.05) = N.A.	
	Significance (Variety * Decile) P = N.S		l.s.d (P<0.05) = N.A.	

Table 3: NDVI reading wheat 7 August 2019

	Decile 1	Decile 4	Decile 7	Means
<b>Scepter</b>	0.42	0.37	0.41	0.40
<b>Trojan</b>	0.44	0.46	0.43	0.44
<b>Devil</b>	0.44	0.45	0.49	0.46
<b>Ninja</b>	0.43	0.46	0.50	0.46
<b>Means</b>	0.43	0.44	0.46	
	Significance (Variety) P = 0.024		l.s.d (P<0.05) = 0.042	
	Significance (Decile) P= N.S.		l.s.d (P<0.05) = N.A.	
	Significance (Variety * Decile) P = N.S		l.s.d (P<0.05) = N.A.	

Table 4: NDVI reading wheat 9 September 2019

	Decile 1	Decile 4	Decile 7	Means
<b>Scepter</b>	0.51	0.58	0.57	0.55
<b>Trojan</b>	0.40	0.56	0.53	0.50
<b>Devil</b>	0.42	0.62	0.61	0.55
<b>Ninja</b>	0.44	0.60	0.69	0.57
<b>Means</b>	0.44	0.59	0.60	
	Significance (Variety) P = N.S.		l.s.d (P<0.05) = N.A.	
	Significance (Decile) P <0.001		l.s.d (P<0.05) = 0.053	
	Significance (Variety * Decile) P = N.S		l.s.d (P<0.05) = N.A.	

Table 5: Yield (t/ha) wheat

	Decile 1	Decile 4	Decile 7	Means
<b>Scepter</b>	1.92	2.14	2.25	2.10
<b>Trojan</b>	1.65	2.16	2.13	1.98
<b>Devil</b>	1.93	2.34	2.35	2.21
<b>Ninja</b>	1.68	2.07	2.17	1.97
<b>Means</b>	1.80	2.18	2.22	
	Significance (Variety) P = 0.014		l.s.d (P<0.05) = 0.156	
	Significance (Decile) P <0.001		l.s.d (P<0.05) = 0.135	
	Significance (Variety * Decile) P = N.S		l.s.d (P<0.05) = N.A.	

Table 6: Protein (%) wheat

	Decile 1	Decile 4	Decile 7	Means
<b>Scepter</b>	8.3	9.1	9.4	8.9
<b>Trojan</b>	7.9	9.2	9.7	8.9
<b>Devil</b>	7.5	9.2	9.5	8.7
<b>Ninja</b>	7.8	8.9	9.8	8.8
<b>Means</b>	7.9	9.1	9.6	
	Significance (Variety) P = N.S.		l.s.d (P<0.05) = N.A.	
	Significance (Decile) P <0.001		l.s.d (P<0.05) = 0.53	
	Significance (Variety * Decile) P = N.S		l.s.d (P<0.05) = N.A.	

Table 7: Hectolitre weight (kg/hL) wheat

	Decile 1	Decile 4	Decile 7	Means
<b>Scepter</b>	80.1	80.2	81.0	80.4
<b>Trojan</b>	83.3	82.7	83.2	83.1
<b>Devil</b>	78.5	77.5	78.6	78.2
<b>Ninja</b>	78.3	79.4	77.9	78.5
<b>Means</b>	80.0	80.0	80.2	
	Significance (Variety) P <0.001		l.s.d (P<0.05) = 1.07	
	Significance (Decile) P= N.S.		l.s.d (P<0.05) = N.A.	
	Significance (Variety * Decile) P = N.S		l.s.d (P<0.05) = N.A.	

Table 8: Screenings (%) wheat

	Decile 1	Decile 4	Decile 7	Means
<b>Scepter</b>	4.1	4.9	4.5	4.5
<b>Trojan</b>	3.5	4.4	3.7	3.9
<b>Devil</b>	3.2	5.4	5.3	4.6
<b>Ninja</b>	4.1	4.9	6.3	5.1
<b>Means</b>	3.7	4.9	5.0	
	Significance (Variety) P N.S.		l.s.d (P<0.05) = N.A.	
	Significance (Decile) P= 0.036		l.s.d (P<0.05) = 1.03	
	Significance (Variety * Decile) P = N.S		l.s.d (P<0.05) = N.A.	

**BARLEY**
*Table 1: Heat map*

Planet	Rosalind	Spartacus	Buff	Rosalind	Buff
Spartacus	Spartacus	Planet	Buff	Planet	Rosalind
Buff	Buff	Planet	Planet	Spartacus	Spartacus
Planet	Buff	Spartacus	Rosalind	Rosalind	Rosalind
Spartacus	Spartacus	Spartacus	Planet	Planet	Planet
Rosalind	Rosalind	Rosalind	Buff	Buff	Buff

  

Decile 1
Decile 4
Decile 7

2.33	2.88	2.27	2.39	2.65	2.31
2.68	2.42	2.21	2.06	1.80	2.30
2.37	2.75	2.09	2.48	2.87	2.92
2.08	2.46	2.56	2.80	2.99	2.99
2.36	2.89	2.98	2.15	2.28	2.25
3.06	3.09	2.92	2.14	2.28	2.33

*Table 1: Crop emergence (0-9) barley*

	Decile 1	Decile 4	Decile 7	Means
<b>Rosalind</b>	8.3	9.0	8.0	8.4
<b>Buff</b>	8.7	8.3	8.3	8.4
<b>Spartacus</b>	8.3	8.3	8.3	8.3
<b>Planet</b>	8.3	8.7	8.7	8.6
<b>Means</b>	8.4	8.6	8.3	
	Significance (Variety) P = N.S.		I.s.d (P<0.05) = N.A	
	Significance (Decile) P= N.S.		I.s.d (P<0.05) = N.A.	
	Significance (Variety * Decile) P = N.S		I.s.d (P<0.05) = N.A.	

Table 2: Crop vigour (0-9) barley

	Decile 1	Decile 4	Decile 7	Means
Rosalind	8.7	8.0	7.3	8.0
Buff	8.7	8.7	8.0	8.4
Spartacus	7.3	7.3	7.3	7.3
Planet	8.3	9.0	8.7	8.7
Means	8.3	8.3	7.8	
	Significance (Variety) P = 0.0003		l.s.d (P<0.05) = 0.6	
	Significance (Decile) P= N.S.		l.s.d (P<0.05) = N.A.	
	Significance (Variety * Decile) P = N.S		l.s.d (P<0.05) = N.A.	

Table 3: NDVI reading barley 7 August 2019

	Decile 1	Decile 4	Decile 7	Means
Rosalind	0.33	0.44	0.42	0.40
Buff	0.47	0.46	0.41	0.45
Spartacus	0.46	0.41	0.40	0.43
Planet	0.43	0.45	0.45	0.44
Means	0.43	0.44	0.42	
	Significance (Variety) P = N.S.		l.s.d (P<0.05) = N.A	
	Significance (Decile) P= N.S.		l.s.d (P<0.05) = N.A.	
	Significance (Variety * Decile) P = N.S		l.s.d (P<0.05) = N.A.	

Table 4: NDVI reading barley 9 September 2019

	Decile 1	Decile 4	Decile 7	Means
Rosalind	0.55	0.62	0.66	0.61
Buff	0.55	0.64	0.64	0.61
Spartacus	0.54	0.59	0.60	0.58
Planet	0.57	0.66	0.71	0.65
Means	0.55	0.63	0.65	
	Significance (Variety) P = 0.015		l.s.d (P<0.05) = 0.04	
	Significance (Decile) P <0.001		l.s.d (P<0.05) = 0.03	
	Significance (Variety * Decile) P = N.S		l.s.d (P<0.05) = N.A.	

Table 5: Yield (t/ha) barley

	Decile 1	Decile 4	Decile 7	Means
Rosalind	2.72	2.91	2.93	2.85
Buff	2.19	2.35	2.49	2.34
Spartacus	2.40	2.73	2.86	2.66
Planet	2.01	2.19	2.35	2.19
Means	2.33	2.54	2.66	
	Significance (Variety) P <0.001		l.s.d (P<0.05) = 0.148	
	Significance (Decile) P <0.001		l.s.d (P<0.05) = 0.128	
	Significance (Variety * Decile) P = N.S		l.s.d (P<0.05) = N.A.	

Table 6: Protein (%) barley

	Decile 1	Decile 4	Decile 7	Means
Rosalind	8.5	8.4	8.4	8.4
Buff	8.3	8.2	8.1	8.2
Spartacus	8.5	8.3	8.3	8.4
Planet	8.5	8.4	8.4	8.4
Means	8.5	8.3	8.3	
	Significance (Variety) P <0.001		l.s.d (P<0.05) = 0.07	
	Significance (Decile) P <0.001		l.s.d (P<0.05) = 0.06	
	Significance (Variety * Decile) P = N.S		l.s.d (P<0.05) = N.A.	

Table 7: Colour barley

	Decile 1	Decile 4	Decile 7	Means
<b>Rosalind</b>	65.1	64.7	64.5	64.8
<b>Buff</b>	67.3	66.0	66.0	66.5
<b>Spartacus</b>	66.9	66.7	66.5	66.7
<b>Planet</b>	65.8	64.4	64.2	64.8
<b>Means</b>	66.3	65.5	65.3	
	Significance (Variety) P <0.001		l.s.d (P<0.05) = 0.26	
	Significance (Decile) P <0.001		l.s.d (P<0.05) = 0.23	
	Significance (Variety * Decile) P = 0.002		l.s.d (P<0.05) = 0.45	

Table 8: Hectolitre weight (kg/hL) barley

	Decile 1	Decile 4	Decile 7	Means
<b>Rosalind</b>	65.5	62.0	62.1	63.2
<b>Buff</b>	59.4	56.5	56.2	57.4
<b>Spartacus</b>	67.1	63.9	63.4	64.8
<b>Planet</b>	58.2	56.2	56.5	57.0
<b>Means</b>	62.5	59.7	59.6	
	Significance (Variety) P <0.001		l.s.d (P<0.05) = 1.83	
	Significance (Decile) P= 0.0009		l.s.d (P<0.05) = 1.58	
	Significance (Variety * Decile) P = N.S		l.s.d (P<0.05) = N.A.	

Table 9: <2.5 mm screenings (%) barley

	Decile 1	Decile 4	Decile 7	Means
<b>Rosalind</b>	36.4	63.7	63.3	54.5
<b>Buff</b>	48.9	65.4	66.5	60.3
<b>Spartacus</b>	28.6	60.0	64.7	51.1
<b>Planet</b>	53.0	68.5	66.6	62.7
<b>Means</b>	41.7	64.4	65.3	
	Significance (Variety) P = N.S.		l.s.d (P<0.05) = N.A.	
	Significance (Decile) P <0.001		l.s.d (P<0.05) = 8.32	
	Significance (Variety * Decile) P = N.S		l.s.d (P<0.05) = N.A.	

Table 10: Plump grain (%) barley

	Decile 1	Decile 4	Decile 7	Means
<b>Rosalind</b>	63.6	36.3	36.7	45.5
<b>Buff</b>	51.1	34.6	33.5	39.7
<b>Spartacus</b>	71.4	40.0	35.3	48.9
<b>Planet</b>	47.0	31.5	33.4	37.3
<b>Means</b>	58.3	35.6	34.7	
	Significance (Variety) P = N.S.		l.s.d (P<0.05) = N.A.	
	Significance (Decile) P<0.001		l.s.d (P<0.05) = 8.32	
	Significance (Variety * Decile) P = N.S		l.s.d (P<0.05) = N.A.	