

# Mixed cereal grazing trials – across site analysis 2004 – 2009, Southern NSW

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## Key Points

- Oats produced higher mean dry matter yields at the first dry matter assessment.
- Barley and triticale varieties produced higher dry matter amounts at the second dry matter assessment.
- Barley, oats and triticale produced comparable total dry matter results.
- Triticale and barley varieties produced higher grain recovery yields than the wheat and oat varieties.
- Total dry matter was higher in the Northern trial set.
- Grain yields higher in the Southern trial set.

## Trial aim

Industry and Investment NSW fund and manage a set of Mixed Cereal Grazing trials. They are sown annually at a range of locations in NSW.

The aim of the trials is to compare amounts of dry matter produced by each variety and their recovery after grazing for grain production.

## Trial details

40 winter cereal varieties (3 barley varieties, 10 oats varieties, 5 triticale varieties and 22 wheat varieties) were sown at a range of locations.

The southern sites included Cowra, Culcairn, Galong, Temora, Finley, Goulburn and Gunning. The northern sites included Binnaway, Cumnock, Curban, Merrygoen, Purlewaugh, Scone, Somerton and Wongarbron.

The trials were sown as small plots using a complete randomised block design with three replicates.

## Trial management

The trials were sown as early as the season permitted. Seeding rates were based on recommendations in the Winter Crop Variety Sowing Guide 2009.

Fertiliser was applied according to individual site requirements. The aim was to supply enough fertiliser to achieve 4000 to 5000 kg/ha total dry matter production and 2000 to 3000 kg/ha grain yields.

Weed control varied according to individual site's needs.

## Measurements

To sow, graze and harvest each variety to suit its individual maturity and vernalisation requirements is impracticable. The trial was managed to suit the majority of entries.

The three measurements taken were:

- Dry matter 1 (DM1) prior to first grazing
- Dry matter 2 (DM2) prior to second grazing
- Grain yield

Dry matter was measured using a capacitance probe and calibrated to quadrat cuts. The timing of the measurements was different at each site and determined by the season. All varieties were measured on the same day. Therefore there were slight differences in growth stage of the individual varieties.

Harvest occurred as soon as practical and when the majority of varieties reached full maturity, grain quality was not measured.

## Grazing

The type and class of livestock used to graze the trials depended on the co-operator's enterprise. First grazing generally occurred from 8 weeks after sowing and completed within 7 days.

The timing of the second grazing was determined by the season. Fewer sites received a second grazing.

## Trial results and discussion

The results reported are the across sites or Multi Environment Trial (MET) analysis of the southern site data from 2004-2009.

Table 1 shows the average dry matter and grain yield for the four crop types, this gives a general indication of crop performance. Please note the small number of varieties which have contributed to the barley and triticale averages.

Tables 2 to 4 present the variety data in 3 tables – dry matter 1, dry matter 2 and grain yield. Each table shows the data as an average, a percentage of the trial mean, and as a percentage of a wheat, oat or triticale standard.

Table 1: Average dry matter and grain yield for the crop types.

SOUTHERN NSW		Average		
		DM1	DM2	Grain yield
Barley	3 varieties	2061	2368	3527
Oats	10 varieties	2285	2004	2462
Triticale	5 varieties	2043	2214	3806
Wheat	22 varieties	1541	1787	3307

The results show that oats produced higher average dry matter yields at the first dry matter assessment. The five highest yielding varieties were all oats – Taipan, Drover, Eurabbie, Graza\_80 and MA6878W.

However, by the second assessment, wheat and barley produced higher average dry matter. The five highest yielding varieties at the second assessment were MA6878W oats, Urambie barley, Tobruk triticale, Yambla barley and GS5092 barley.

The total dry matter produced over the season was comparable for barley, oats and triticale.

Triticale and barley produced higher grain recovery yields than the oat varieties. The wheat varieties produced the lowest grain yields. The five highest grain yields were produced by Tobruk triticale, Endeavour triticale, Urambie barley, AT573 triticale and Beaufort wheat.

When the two trial sets were compared, total dry matter was higher in the Northern trial set, while grain yields higher in the Southern trial set.

When selecting a suitable variety a number of factors need to be considered. The information in this publication assists with the forage and grain production quantities.

### Further reading

Grain quality and disease reactions were not examined in this trial. This information, along with variety descriptions can be found in the *Winter Crop Variety Sowing Guide 2010*.

There is also a companion sheet – *Mixed cereal grazing trials – across site analysis 2004 – 2009, Northern NSW*.

Information can also be found in Primefact 720 *Cereals for grazing*.

### Acknowledgements

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File reference: Across sites mixed cereals 2010 S.doc

Table 2: Dry matter 1 (kg/ha).

SOUTHERN NSW		DRY MATTER 1						
		Average 1 <sup>st</sup> dry matter			Dry matter as a percentage of			
		kg/ha	Trial Mean %	Rank	Eurabbie Oats	Wedgetail Wheat	Endeavour Triticale	Yambla Barley
GS5092	B	2170	119	11	88	118	99	99
URAMBIE	B	1823	100	19	74	99	83	83
<b>YAMBLA</b>	<b>B</b>	<b>2190</b>	<b>120</b>	<b>7</b>	89	119	100	<b>100</b>
BIMBIL	O	2178	119	9	89	118	100	99
DAWSON	O	2133	117	13	87	116	98	97
DROVER	O	2460	135	2	100	133	112	112
<b>EURABBIE</b>	<b>O</b>	<b>2453</b>	<b>134</b>	<b>3</b>	<b>100</b>	133	112	112
GENIE	O	2172	119	10	89	118	99	99
GRAZA80	O	2413	132	4	98	131	110	110
MA6878W	O	2358	129	5	96	128	108	108
MANNUS	O	2059	113	15	84	112	94	94
TAIPAN	O	2474	135	1	101	134	113	113
YIDDAH	O	2146	117	12	87	116	98	98
AT573	T	2133	117	14	87	116	97	97
BREAKWELL	T	2027	111	16	83	110	93	93
CRACKERJACK	T	2211	121	6	90	120	101	101
<b>ENDEAVOUR</b>	<b>T</b>	<b>2188</b>	<b>120</b>	<b>8</b>	89	119	<b>100</b>	100
TOBRUK	T	1654	90	25	67	90	76	76
170	W	1268	69	40	52	69	58	58
98049.91	W	1307	71	38	53	71	60	60
98350.182	W	1444	79	33	59	78	66	66
98613.86	W	1370	75	37	56	74	63	63
AMAROK	W	1516	83	28	62	82	69	69
BEAUFORT	W	1899	104	17	77	103	87	87
BRENNAN	W	1508	82	29	61	82	69	69
CS10.1010.3	W	1524	83	27	62	83	70	70
EAGLEHAWK	W	1725	94	22	70	94	79	79
<b>EGA_WEDGETAIL</b>	<b>W</b>	<b>1844</b>	<b>101</b>	<b>18</b>	75	<b>100</b>	84	84
FRELON	W	1489	81	30	61	81	68	68
H150.2	W	1488	81	31	61	81	68	68
MACKELLAR	W	1382	76	36	56	75	63	63
MAROMBI	W	1389	76	35	57	75	63	63
NAPAROO	W	1595	87	26	65	87	73	73
PRESTON	W	1460	80	32	60	79	67	67
SQP_REVENUE	W	1410	77	34	57	76	64	64
SUN518A	W	1696	93	23	69	92	78	77
SUN520C	W	1689	92	24	69	92	77	77
SUN521A	W	1775	97	21	72	96	81	81
SUN521C	W	1816	99	20	74	98	83	83
TENNANT	W	1306	71	39	53	71	60	60
<b>Average</b>		<b>1828</b>						
<b>No of trials</b>		<b>23</b>						

Table 3: Dry matter 2 (kg/ha).

SOUTHERN NSW		DRY MATTER 2						
		Average 2 <sup>nd</sup> dry matter			Dry matter as a percentage of			
		kg/ha	Trial Mean %	Rank	Eurabbie Oats	Wedgetail Wheat	Endeavour Triticale	Yambla Barley
GS5092	B	2288	118	5	101	116	103	96
URAMBIE	B	2425	125	2	107	123	109	101
<b>YAMBLA</b>	<b>B</b>	<b>2392</b>	<b>123</b>	<b>4</b>	105	122	107	<b>100</b>
BIMBIL	O	2056	106	13	90	105	92	86
DAWSON	O	1671	86	34	74	85	75	70
DROVER	O	1988	103	16	87	101	89	83
<b>EURABBIE</b>	<b>O</b>	<b>2274</b>	<b>117</b>	<b>8</b>	<b>100</b>	116	102	95
GENIE	O	1743	90	30	77	89	78	73
GRAZA80	O	1895	98	20	83	96	85	79
MA6878W	O	2445	126	1	108	124	110	102
MANNUS	O	2084	108	12	92	106	93	87
TAIPAN	O	1794	93	27	79	91	80	75
YIDDAH	O	2093	108	10	92	106	94	87
AT573	T	2274	117	7	100	116	102	95
BREAKWELL	T	2281	118	6	100	116	102	95
CRACKERJACK	T	1890	97	21	83	96	85	79
<b>ENDEAVOUR</b>	<b>T</b>	<b>2229</b>	<b>115</b>	<b>9</b>	98	113	<b>100</b>	93
TOBRUK	T	2396	124	3	105	122	107	100
170	W	1560	80	39	69	79	70	65
98049.91	W	1572	81	38	69	80	71	66
98350.182	W	1836	95	23	81	93	82	77
98613.86	W	1724	89	31	76	88	77	72
AMAROK	W	1801	93	26	79	92	81	75
BEAUFORT	W	2090	108	11	92	106	94	87
BRENNAN	W	1943	100	18	85	99	87	81
CS10.1010.3	W	1925	99	19	85	98	86	80
EAGLEHAWK	W	1640	85	37	72	83	74	69
<b>EGA_WEDGETAIL</b>	<b>W</b>	<b>1966</b>	<b>101</b>	<b>17</b>	86	<b>100</b>	88	82
FRELON	W	1705	88	32	75	87	76	71
H150.2	W	2023	104	14	89	103	91	85
MACKELLAR	W	1802	93	25	79	92	81	75
MAROMBI	W	1660	86	35	73	84	74	69
NAPAROO	W	2019	104	15	89	103	91	84
PRESTON	W	1536	79	40	68	78	69	64
SQP_REVENUE	W	1781	92	28	78	91	80	74
SUN518A	W	1847	95	22	81	94	83	77
SUN520C	W	1805	93	24	79	92	81	75
SUN521A	W	1649	85	36	73	84	74	69
SUN521C	W	1747	90	29	77	89	78	73
TENNANT	W	1692	87	33	74	86	76	71
<b>Average</b>		<b>1939</b>						
<b>No of trials</b>		<b>7</b>						

Table 4: Grain recovery (kg/ha).

SOUTHERN NSW		GRAIN RECOVERY						
		Average grain yield			Grain yield as a percentage of			
		kg/ha	Trial Mean %	Rank	Eurabbie Oats	Wedgetail Wheat	Endeavour Triticale	Yambla Barley
GS5092	B	3355	106	14	97	109	84	101
URAMBIE	B	3902	123	3	112	127	98	117
<b>YAMBLA</b>	<b>B</b>	<b>3324</b>	<b>105</b>	<b>19</b>	96	108	84	<b>100</b>
BIMBIL	O	2792	88	33	80	91	70	84
DAWSON	O	2179	69	37	63	71	55	66
DROVER	O	2243	71	36	65	73	56	67
<b>EURABBIE</b>	<b>O</b>	<b>3476</b>	<b>110</b>	<b>9</b>	<b>100</b>	113	87	105
GENIE	O	2081	66	38	60	68	52	63
GRAZA80	O	2244	71	35	65	73	56	68
MA6878W	O	3415	108	11	98	111	86	103
MANNUS	O	2638	83	34	76	86	66	79
TAIPAN	O	1673	53	40	48	54	42	50
YIDDAH	O	1880	59	39	54	61	47	57
AT573	T	3808	120	4	110	124	96	115
BREAKWELL	T	3291	104	22	95	107	83	99
CRACKERJACK	T	3579	113	8	103	116	90	108
<b>ENDEAVOUR</b>	<b>T</b>	<b>3979</b>	<b>125</b>	<b>2</b>	114	129	<b>100</b>	120
TOBRUK	T	4375	138	1	126	142	110	132
170	W	3383	107	12	97	110	85	102
98049.91	W	3711	117	6	107	120	93	112
98350.182	W	3330	105	18	96	108	84	100
98613.86	W	3198	101	26	92	104	80	96
AMAROK	W	3102	98	29	89	101	78	93
BEAUFORT	W	3740	118	5	108	121	94	113
BRENNAN	W	3102	98	28	89	101	78	93
CS10.1010.3	W	3299	104	20	95	107	83	99
EAGLEHAWK	W	3287	104	23	95	107	83	99
<b>EGA_WEDGETAIL</b>	<b>W</b>	<b>3082</b>	<b>97</b>	<b>31</b>	89	<b>100</b>	77	93
FRELON	W	3202	101	25	92	104	80	96
H150.2	W	3335	105	17	96	108	84	100
MACKELLAR	W	3341	105	16	96	108	84	101
MAROMBI	W	3610	114	7	104	117	91	109
NAPAROO	W	3206	101	24	92	104	81	96
PRESTON	W	3344	105	15	96	108	84	101
SQP_REVENUE	W	3469	109	10	100	113	87	104
SUN518A	W	3076	97	32	88	100	77	93
SUN520C	W	3087	97	30	89	100	78	93
SUN521A	W	3383	107	13	97	110	85	102
SUN521C	W	3296	104	21	95	107	83	99
TENNANT	W	3162	100	27	91	103	79	95
<b>Average</b>		<b>3174</b>						
<b>Number of trials</b>		<b>25</b>						