

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

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Key Points

- Oats produced higher mean dry matter yields at the first dry matter assessment.
- Dry matter yields at the second assessment were similar between crop types.
- Overall oat varieties produced the largest quantity of total dry matter than other crop types.
- 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 northern sites include Binnaway, Cumnock, Curban, Merrygoen, Purlawaugh, Scone, Somerton and Wongarbron. The southern sites include Cowra, Culcairn, Galong, Temora, Finley, Goulburn and Gunning.

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 northern 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.

NORTHERN NSW		Average		
		DM1	DM2	Grain yield
Barley	3 varieties	2584	2397	2297
Oats	10 varieties	3035	2314	1367
Triticale	5 varieties	2498	2355	2374
Wheat	22 varieties	2070	2240	2135

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, Graza_80, Drover, Genie and Eurabbie. The first 4 were forage oat varieties.

However, by the second assessment, dry matter was similar between crop types. The five highest yielding varieties at the second assessment were Yiddah oats, Tobruk triticale, Urambie barley, Eurabbie oats and H150.2 wheat.

Overall, the oat varieties produced a larger amount of dry matter over the season than other crop types.

Triticale and barley varieties had higher grain yields than the wheat varieties. The oat varieties produced the lowest grain yields. The five highest grain yields were produced by Tobruk triticale, Urambie barley, Beaufort wheat, 98049.91 wheat and Endeavour triticale.

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, Southern NSW*.

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

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File reference: Across sites mixed cereals 2010 N.doc

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

NORTHERN NSW		DRY MATTER 1						
		Average 1 st dry matter			Dry matter as a percentage of			
		kg/ha	Trial Mean %	Rank	Eurabbie Oats	Wedgetail Wheat	Endeavour Triticale	Yambla Barley
GS5092	B	2689	112	12	85	111	102	96
URAMBIE	B	2273	95	21	72	94	87	81
YAMBLA	B	2791	116	9	89	115	106	100
BIMBIL	O	2879	120	8	91	119	110	103
DAWSON	O	3080	128	6	98	127	117	110
DROVER	O	3221	134	3	102	133	123	115
EURABBIE	O	3151	131	5	100	130	120	113
GENIE	O	3167	132	4	101	131	121	113
GRAZA80	O	3256	135	2	103	134	124	117
MA6878W	O	3002	125	7	95	124	114	108
MANNUS	O	2599	108	15	82	107	99	93
TAIPAN	O	3273	136	1	104	135	125	117
YIDDAH	O	2719	113	10	86	112	104	97
AT573	T	2603	108	14	83	107	99	93
BREAKWELL	T	2564	107	16	81	106	98	92
CRACKERJACK	T	2701	112	11	86	111	103	97
ENDEAVOUR	T	2627	109	13	83	108	100	94
TOBRUK	T	1993	83	32	63	82	76	71
170	W	1764	73	40	56	73	67	63
98049.91	W	1773	74	39	56	73	68	64
98350.182	W	2030	84	28	64	84	77	73
98613.86	W	1848	77	36	59	76	70	66
AMAROK	W	2003	83	30	64	83	76	72
BEAUFORT	W	2484	103	17	79	102	95	89
BRENNAN	W	1998	83	31	63	82	76	72
CS10.1010.3	W	2052	85	27	65	85	78	74
EAGLEHAWK	W	2262	94	22	72	93	86	81
EGA_WEDGETAIL	W	2425	101	20	77	100	92	87
FRELON	W	1887	79	34	60	78	72	68
H150.2	W	2008	84	29	64	83	76	72
MACKELLAR	W	1800	75	37	57	74	69	64
MAROMBI	W	1920	80	33	61	79	73	69
NAPAROO	W	2150	89	25	68	89	82	77
PRESTON	W	2072	86	26	66	85	79	74
SQP_REVENUE	W	1885	78	35	60	78	72	68
SUN518A	W	2257	94	23	72	93	86	81
SUN520C	W	2230	93	24	71	92	85	80
SUN521A	W	2449	102	19	78	101	93	88
SUN521C	W	2471	103	18	78	102	94	89
TENNANT	W	1774	74	38	56	73	68	64
Average		2403						
No of trials		29						

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

NORTHERN NSW		DRY MATTER 2						
		Average 2 nd dry matter			Dry matter as a percentage of			
		kg/ha	Trial Mean %	Rank	Eurabbie Oats	Wedgetail Wheat	Endeavour Triticale	Yambla Barley
GS5092	B	2385	104	7	99	104	100	102
URAMBIE	B	2473	108	3	103	107	103	106
YAMBLA	B	2333	102	10	97	101	98	100
BIMBIL	O	2236	98	24	93	97	94	96
DAWSON	O	2201	96	28	92	96	92	94
DROVER	O	2241	98	22	93	97	94	96
EURABBIE	O	2399	105	4	100	104	100	103
GENIE	O	2194	96	30	91	95	92	94
GRAZA80	O	2177	95	33	91	95	91	93
MA6878W	O	2334	102	9	97	101	98	100
MANNUS	O	2139	94	37	89	93	89	92
TAIPAN	O	2222	97	26	93	97	93	95
YIDDAH	O	2992	131	1	125	130	125	128
AT573	T	2329	102	11	97	101	97	100
BREAKWELL	T	2319	102	12	97	101	97	99
CRACKERJACK	T	2082	91	40	87	90	87	89
ENDEAVOUR	T	2391	105	6	100	104	100	102
TOBRUK	T	2656	116	2	111	115	111	114
170	W	2248	98	21	94	98	94	96
98049.91	W	2187	96	31	91	95	91	94
98350.182	W	2301	101	15	96	100	96	99
98613.86	W	2269	99	20	95	99	95	97
AMAROK	W	2239	98	23	93	97	94	96
BEAUFORT	W	2293	100	16	96	100	96	98
BRENNAN	W	2314	101	13	96	101	97	99
CS10.1010.3	W	2277	100	19	95	99	95	98
EAGLEHAWK	W	2181	95	32	91	95	91	93
EGA_WEDGETAIL	W	2303	101	14	96	100	96	99
FRELON	W	2284	100	17	95	99	96	98
H150.2	W	2394	105	5	100	104	100	103
MACKELLAR	W	2224	97	25	93	97	93	95
MAROMBI	W	2132	93	38	89	93	89	91
NAPAROO	W	2378	104	8	99	103	99	102
PRESTON	W	2199	96	29	92	95	92	94
SQP_REVENUE	W	2145	94	36	89	93	90	92
SUN518A	W	2168	95	35	90	94	91	93
SUN520C	W	2169	95	34	90	94	91	93
SUN521A	W	2103	92	39	88	91	88	90
SUN521C	W	2204	96	27	92	96	92	95
TENNANT	W	2280	100	18	95	99	95	98
Average		2285						
No of trials		8						

Table 4: Grain recovery (kg/ha).

NORTHERN 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	2235	113	11	114	106	93	104
URAMBIE	B	2499	126	2	128	119	104	116
YAMBLA	B	2156	109	15	110	103	90	100
BIMBIL	O	1525	77	34	78	73	63	71
DAWSON	O	1184	60	37	61	56	49	55
DROVER	O	1210	61	36	62	58	50	56
EURABBIE	O	1954	98	30	100	93	81	91
GENIE	O	1047	53	39	54	50	44	49
GRAZA80	O	1224	62	35	63	58	51	57
MA6878W	O	2038	103	25	104	97	85	95
MANNUS	O	1551	78	33	79	74	64	72
TAIPAN	O	822	41	40	42	39	34	38
YIDDAH	O	1117	56	38	57	53	46	52
AT573	T	2359	119	8	121	112	98	109
BREAKWELL	T	2042	103	24	104	97	85	95
CRACKERJACK	T	2400	121	6	123	114	100	111
ENDEAVOUR	T	2405	121	5	123	114	100	112
TOBRUK	T	2664	134	1	136	127	111	124
170	W	2154	109	16	110	102	90	100
98049.91	W	2419	122	4	124	115	101	112
98350.182	W	2158	109	14	110	103	90	100
98613.86	W	2002	101	26	102	95	83	93
AMAROK	W	1931	97	32	99	92	80	90
BEAUFORT	W	2486	125	3	127	118	103	115
BRENNAN	W	1990	100	27	102	95	83	92
CS10.1010.3	W	2083	105	21	107	99	87	97
EAGLEHAWK	W	2130	107	17	109	101	89	99
EGA_WEDGETAIL	W	2102	106	20	108	100	87	98
FRELON	W	1964	99	29	100	93	82	91
H150.2	W	2127	107	18	109	101	88	99
MACKELLAR	W	1976	100	28	101	94	82	92
MAROMBI	W	2370	119	7	121	113	99	110
NAPAROO	W	2237	113	10	114	106	93	104
PRESTON	W	2227	112	12	114	106	93	103
SQP_REVENUE	W	2180	110	13	112	104	91	101
SUN518A	W	2077	105	22	106	99	86	96
SUN520C	W	2059	104	23	105	98	86	96
SUN521A	W	2238	113	9	115	106	93	104
SUN521C	W	2116	107	19	108	101	88	98
TENNANT	W	1950	98	31	100	93	81	90
Average		1985						
No of trials		30						