DUAL PURPOSE CEREALS

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AIM

To measure the productivity and recovery of cereals under simulated grazing regimes.
To determine the number of times cereals can be grazed without affecting yield.

BACKGROUND

The autumn/winter feed gap is a common problem in mixed farming systems (Anon 2005). Dry matter is generally limited after the break of season when plants regenerate after a dry summer through to winter when cold temperatures restrict growth. Supplementary feeding is often required to make up for this period of low production (Anon 2005). Overgrazing of annual pastures in autumn can lead to significant reduction in pasture seedling density, especially within the first 12 days after the break of the season. As a result the productivity of pastures during winter will be lower because there are fewer plants (Devenish and Hyder 2001).
Dual purpose cereals such as wheat and oats are currently being used by farmers in the eastern states to fill the autumn and winter feed gap. Dual purpose cereals are more versatile than sown pasture varieties as they provide a source of winter feed, can be conserved as fodder and provide economic return from harvested grain. Winter wheats can be grazed between tillering and stem elongation without adversely affecting yield (Sharma et al 2005). Commercially produced varieties have the potential to better fit the lower rainfall areas in Western Australia in a dual purpose capacity as the longer growing season of winter wheats are not as suited to the lower rainfall areas of Western Australia. Grazing cereals research in the past 3 years has indicated that dual purpose cereals may have a place in the Northern Agricultural Region (NAR) farming system but more research into this is required.

This trial was carried out at four sites in the Northern Agricultural Region, Dalwallinu, Badgingarra, Mingenew and Binnu. This article includes results from the Dalwallinu and Badgingarra sites which were sites that experienced vastly different seasons.

TRIAL DETAILS

Property	Steve & Lee Anne Carter, Xantippe	Badgingarra Research Station
Plot size & replication	8m x 1.54m x 3 replications	8m x 1.54m x 3 replications
Soil type	Sandy Loam	Sandy Loam
Sowing date	13/6/07	4/5/07
Fertiliser (kg/ha)	13/6/07: 80 kg/ha Agras No. 1	4/5/07: 100 kg/ha Agstar extra 4/5/07: 80 kg/ha Urea 7/6/07: 90 kg/ha Urea
Paddock rotation	2006 = Wheat, 2005 = Volunteer Pasture, 2004 = Volunteer Pasture	
Herbicides	9/6/07: 2 L/ha Glyphosate 12/6/07: 500 mL/ha Diuron 12/6/07: 2 L/ha Sprayseed 11/8/07: 1 L/ha Broadside	4/5/07: 1 L/ha Sprayseed 23/5/07: 0.001 L/ha Wetter 23/5/07: 20 g/ha Glean 26/6/07: 500 mL/ha Jaguar
Insecticides	17/8/07: 125 mL/ha Dominex	4/5/07: 100 mL/ha Fastac Duo 2/10/07: 200 mL Fastac Duo
Growing Season Rainfall	113.5mm	399.2mm

RESULTS

Table 1: Dry matter production (kg DM/ha) and date of grazing from east Dalwallinu and Badgingarra in 2007.

	1 graze		2 grazes		3 grazes
Variety Date of Grazing	**Dalwallinu 31/7/07**	**Badgingarra 3/7/07**	**Dalwallinu 28/8/07**	**Badgingarra 30/7/07**	**Dalwallinu 18/9/07**
Ryegrass/cadiz	78	792	397	1554	341
Volunteer Pasture	459	2505	304	1856	526
Calingiri Wheat	407	850	741	1202	588
Baroota Wonder Wheat	442	732	1201	1856	794
Eagle Rock Wheat	456	615	913	1609	636
Carrolup Oats	518	975	1044	1574	770
Monstress Triticale	521	938	1065	1422	732
Taipan Oats	545	1120	1016	2110	562
Saia Black Oats	548	1059	953	1688	719
Cereal rye	572	910	998	1689	666
Wyalkatchem Wheat	577	724	828	1939	601
Pallinup Oats	584	1529	1168	1284	764
Barque Barley	599	1333	929	1673	925
Speedy Triticale	672	1537	1039	1165	470

Table 2: Final grain yield (t/ha) for number of grazings treatments at Badgingarra.

Variety	Ungrazed	1 graze	2 graze
Calingiri Wheat	2.59	2.4	1.95
Baroota Wonder Wheat	1.46	1.46	1.19
Eagle RockWheat	2.14	2.34	1.9
Carrolup Oats	2.50	2.84	2.31
Monstress Triticale	3.74	3.53	2.86
Taipan Oats	1.36	1.75	1.42
Saia Black Oats	1.52	1.63	1.33
Cereal Rye	3.49	3.05	2.48
Wyalkatchem Wheat	1.19	2.24	1.82
Pallinup Oats	2.39	2.87	2.33
Barque Barley	3.05	3.15	2.55
Speedee Triticale	2.06	2.47	2.00

COMMENTS

The dry matter production results from both the Dalwallinu and Badgingarra sites show that Speedee triticale shows better early vigour than the other varieties, with the exception of the volunteer pasture at Badgingarra. The volunteer pasture at Badgingarra was composed mostly of radish which was very quick to respond to rain at the beginning of the season. The wheat varieties show that they had produced less biomass by the time of the first graze than the barley, oat and triticale varieties. The dargo ryegrass and cadiz serradella mix did not perform very well at either site. This could have been the result of the late break to the season.

The grain yields at Badgingarra show that a simulated graze early on in the season did not significantly affect the yield, with the yields for the ungrazed plots very similar to the plots that were grazed once. The yields for most of the varieties that were grazed twice were reduced. The height of the twice grazed plots was also affected with the grazed plots being shorter than the ungrazed. The effect wasn't as noticeable on plots that were only grazed once. Simulated grazing was carried out using a conventional lawnmower, with the blades set 5cm from the ground.

Grain yields at the east Dalwallinu site were extremely low and many plots were not harvested. This site was severely affected by drought.

CONCLUSIONS

- Grazing once early in the season did not affect grain yield.
- Grain yields were reduced when varieties were grazed late in the season.
- Oats and barley showed better early vigour than the wheat varieties.

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