Grain & Graze: filling the feed gap with grazing wheats

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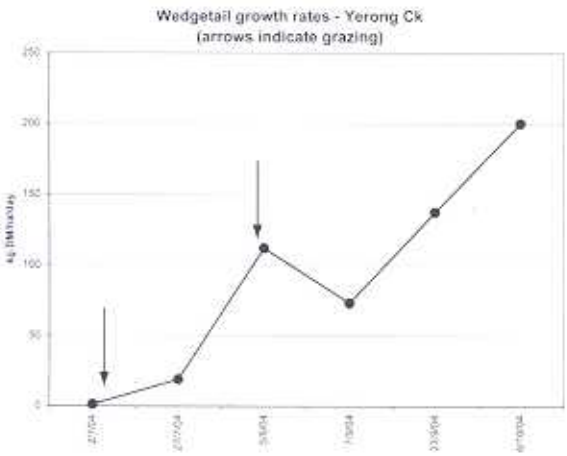
The autumn and winter feed gap is a common problem for many producers in central/southern NSW. Although perennial pastures are an essential part of the farming system and have helped boost overall feed production, dry matter is generally limited after the autumn break when plants are recovering from 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. However in recent years, the adoption of grazing wheats has increased rapidly as a more profitable option to "fill the feed gap", particularly in mixed farming systems. The Murrumbidgee Grain & Graze project[1] is looking at optimising management of grazing wheats for maximum returns of both livestock and grain.

2004 was the first year of the project, with replicated grazing wheat trials being sown at Grenfell, Marrar and Yerong Creek to evaluate dry matter production, feed quality, water use and grazing and grain recovery. Each trial consisted of 6 varieties (Lorikeet, Mackellar, Marombi, Wedgetail, Whistler, Wylah) sown at 3 sowing times (April – dry sown, late May, early June). The earliest sowing time at each site (plus second sowing time at Yerong Creek) was crash grazed to approximately 500kg DM/ha to determine grazing recovery. Unfortunately the Grenfell site suffered severe locust damage so only results from the second sowing time are available.

Despite a dry season, grazing dry matter production for Marrar and Yerong Creek sites (up until the end of August) ranged from 2.6-3.0t DM/ha for the earliest sowing time and 2.2-2.6t DM/ha for the latest sowing time, suggesting that late sowing can still produce a significant quantity of dry matter for grazing. Across all sites and sowing times, Whistler, Wedgetail and Lorikeet generally produced the most grazing dry matter and Mackellar the least. Wheat growth rates were also high, growing up to 112kg DM/ha/day at the

Yerong Creek site before grazing in early August, increasing to 200kg DM/ha/day by early October (Figure 1). Such rapid winter growth rates show the potential grazing wheats have for producing quick feed in the critical feed gap period, when pasture growth rates are typically much lower. Feed quality tests taken in August also showed that grazing wheats were highly digestible (above 80%) and high in crude protein (approximately 30%).

Fig. 1 – Growth rates of grazed Wedgetail, Yerong Creek 1st sowing time



Grain recovery was reasonable given the season, with yields from the earliest sowing times at Marrar and Yerong Creek averaging 2.7t/ha and 3.3t/ha respectively. There was only a small but significant decline in yield from the latest sowing time at Yerong Creek (average 3.1t/ha), whilst the Marrar site yielded the same across all sowing times due to similar emergence dates. Marombi performed consistently well across the sites, its longer season taking advantage of the early November rainfall. Grain protein was high (above 12% for all varieties), screenings were variable.

Anecdotal evidence from producers and previous trialwork by CSIRO and Charles Sturt University has shown that grazed wheat crops can produce higher yields than ungrazed. Researchers believe this may be due to moisture saved through the defoliation process (grazing) being deferred to later in the season for grain fill. To explore this further, an ungrazed Wedgetail comparison (and a spring wheat comparison, Diamondbird) were included in the second sowing time at the three Grain & Graze sites. At Marrar and Yerong Creek, there was no yield penalty from grazing Wedgetail compared to ungrazed (yield advantage at Yerong Creek – Figure 2), however there was a yield penalty from grazing at Grenfell. It is thought that the late rainfall received at Grenfell was enough to "over-ride" the benefits of "moisture sparing" from grazing. Despite this, gross margin analyses of each site showed that all grazed wheats (except Mackellar at Grenfell) produced greater returns than the ungrazed Wedgetail and Diamondbird comparisons, due to value adding of the dry matter through grazing (Figure 3).

Fig. 2 – Yields of 2nd sowing time at Yerong Creek, including ungrazed comparisons

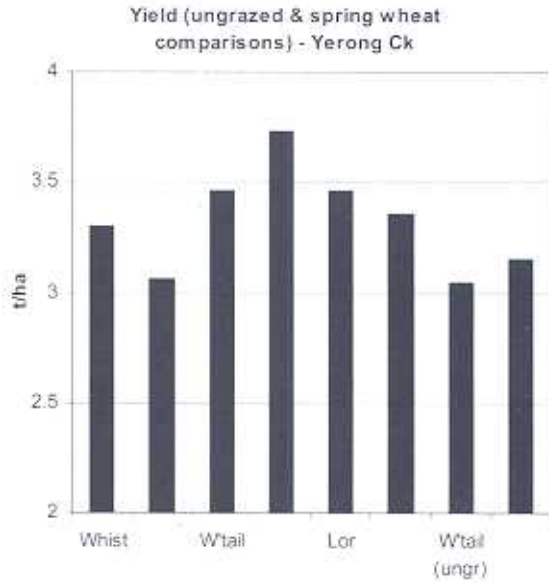
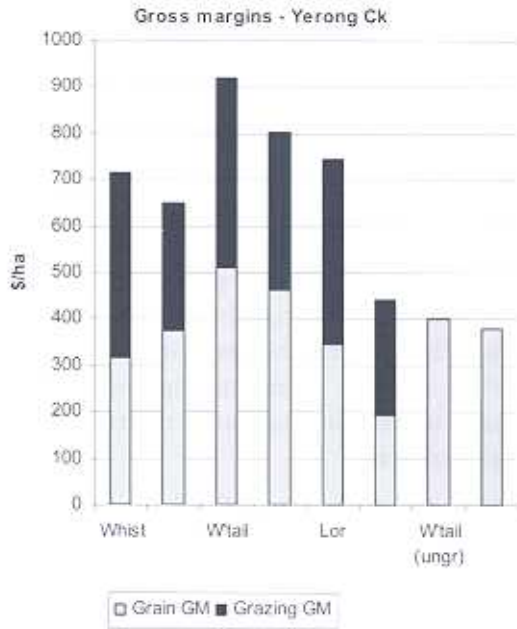


Fig. 3 – Gross margins of 2nd sowing time at Yerong Creek, including ungrazed comparisons



The effects of "moisture sparing" from grazing were monitored in detail by Warren Bond (CSIRO Land & Water) at the Marrar site where moisture sensors were placed at regular depths under the grazed and ungrazed Wedgetail treatments, as well as the Diamondbird spring wheat. Data from the sensors, which measure soil water potential, was logged automatically and uploaded to a CSIRO website daily, enabling viewing of "real time" water movement throughout the profile. The data showed the rate of water use in the grazed Wedgetail treatment slowed relative to the other treatments (which were similar) soon after grazing, due to reduced leaf. However the dry spring meant that this had little effect on total seasonal water use.

Animal performance on grazing wheats was also assessed last year through two additional trials at the Marrar site. The grazing preference trial was established to assess animal preference for one variety over another, in response to observations from producers. Lambs were given equal access to each of the 6 varieties over a 24 hour period. Dry matter recorded before and after grazing showed no significant difference in preference between varieties. Lamb liveweight and intakes were also measured in a larger scale trial on Whistler, Wylah and Wedgetail. Weight gains recorded over a 20-day grazing period averaged 215g/hd/day, with no difference between varieties. These lower than expected weight gains may have been due to the trial being understocked (20 lambs/ha), with lambs deterred by the bulk of feed available. Hugh Dove, CSIRO also measured feed intake of the lambs, averaging 1.25kg/hd/day, again with no difference between varieties.

The first year of Grain & Graze grazing wheat trials have shown significant benefits for grazing wheats in filling the winter feed gap, particularly those varieties with high dry matter production. The feed value of this dry matter, together with comparable grain recovery, means grazing wheats can provide superior economic returns to grain only wheats. This project will continue to 2008, incorporating further grazing management trials, as well as assessing a variety of short term pastures as additional options to help fill the feed gap.

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[1] The Murrumbidgee Grain & Graze project is a collaborative project between FarmLink Research, NSW Department of Primary Industries, Murrumbidgee Catchment Management Authority, CSIRO and Charles Sturt University. It is one of 9 Grain & Graze projects across Australia funded by Meat & Livestock Australia, Australian Wool Innovation, Grains Research & Development Corporation and Land & Water Australia.