Seasonal herbage accumulation of different dairy pasture types in southern Australia

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Introduction Perennial ryegrass pastures, which are the mainstay of dairy feeding systems in southern Australia, are characterised by strong spring growth, little summer/autumn growth, and poor persistence. These limitations impose costs to farm businesses through the purchase of additional fodder to fill feed gaps, and regular re-sowing of pastures. The objective of the research reported here was to investigate the potential for alternative pasture types with different seasonal growth characteristics to improve the seasonal distribution of feed supply and overcome some of the limitations associated with perennial ryegrass.

Materials and methods The experiment was conducted over 3 years at 3 sites in southwest Victoria, Australia: DemoDairy, near Terang (38°14′S, 142°54′E, mean annual rainfall 740 mm), Heytesbury (38°57′S, 142°92′E, 1000 mm), and Naringal (38°40′S, 142°72′E, 840 mm). Five pasture types were established in 3 replicate blocks of 0.1 ha plots in April 2001. The pasture types were: 1) short-term winter active (STW), based on Italian ryegrass; 2) long-term winter active (LTW), based on Mediterranean tall fescue types; 3) long-term summer active (LTS), based on Continental tall fescue types plus chicory and red clover; 4) perennial ryegrass pastures with high N inputs (210 kg N / ha / year, compared to 90 kg in all other treatments) (RHN); and 5) perennial ryegrass (Control). Plots were grazed 10 – 12 times per year depending on site and season, and herbage accumulation (HA) was estimated by difference between post-grazing pasture mass and the subsequent pre-grazing pasture mass measured using a calibrated rising plate meter.

Results HA was greater in spring than in any other season for all pasture types (Table 1). However, there was a significant season x pasture type interaction in HA, due to greater HA in the LTS treatment compared to all other treatments in summer and lower HA from the LTS treatment compared to all other treatments in winter. The LTS pasture produced 25 – 30% of total annual HA in the summer months across all 3 sites, whereas the control treatment consistently produced only 15 – 20% of total annual HA in summer (Figure 1). Chapman & Kenny (2005) estimated that each additional kg DM / ha grown and grazed *in situ* in summer is worth an extra $0.24 operating profit (before the cost of growing the extra feed is included), while the equivalent value for extra feed in winter is $0.14. Thus, the additional 1310 kg DM / ha grown in summer in LTS compared to control (Table 1) is potentially worth an additional $314 / ha in operating profit, while the loss of 840 kg DM / ha in winter for LTS means $118 / ha less profit. On balance, LTS pastures could increase operating profit by nearly $200 / ha compared to perennial ryegrass assuming equal efficiency of growing and using both pastures. RHN grew extra feed in spring (Table 1) which has relatively low economic value (Chapman & Kenny 2005).

Table 1 Effects of pasture type on seasonal HA (mean of all years across the three sites)

	Pasture type				
	STW	LTW	LTS	RHN	Con
	----------(t DM / ha)----------				
Autumn	2.51c	2.46b	2.67c	2.66c	2.45c
Winter	3.69b	3.68a	2.80c	3.75b	3.64b
Spring	4.14a	3.92a	4.43a	5.37a	4.53a
Summer	2.11d	2.11c	3.86b	2.62c	2.55c
Total	12.45	12.17	13.76	14.40	13.17

s.e.m. season = 0.054 (P<0.01)
s.e.m. season x pasture type = 0.131 (P<0.01)
Letters apply to means within columns

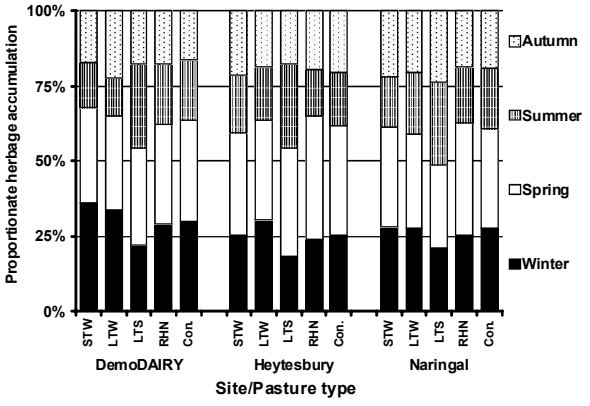

Figure 1 Proportion of total annual HA grown per season

Conclusions A more-even seasonal pattern of feed supply can be achieved using alternatives to perennial ryegrass. Gains appear possible in summer through use of tall fescue-based pastures, and these should translate into worthwhile economic returns for farm businesses.

References

Chapman, D.F. & S. Kenny (2005). Alternative feedbase systems for southern Australia dairy farms. 3. Economic returns from extra dry matter consumption. *XX International Grassland Congress – offered papers* (in press).