

Alternative feedbase systems for southern Australia dairy farms. 3. Economic returns from extra dry matter consumption

D.F. Chapman and S. Kenny

The University of Melbourne, Parkville, Victoria, Australia 3010, Email: d.chapman@unimelb.edu.au

Keywords: dry matter consumption, feed gaps, dairy systems, modelling

Introduction Growth rates of the ‘traditional’ perennial ryegrass pasture frequently fail to meet the seasonal feed requirements of herds in non-irrigated dairy systems in southern Australia, leading to a dependence upon additional feed at these times of the year. Farmers commonly purchase this feed off-farm, which can be costly. Growing extra feed on-farm may be more cost effective but will require additional inputs such as N fertiliser and alternative pastures/crops. The gross return to dairy farms of growing extra feed at certain times of the year can be estimated by connecting biophysical models of pasture growth to farm systems models and financial analysis tools (e.g. Chapman *et al.* 2005). Farmers can then measure additional costs incurred in growing this feed against the margin available to help decide on cost-effective feeding strategies. This paper reports such an analysis for non-irrigated dairy farms in southwest Victoria using different calving policies.

Materials and methods The general modelling approach is described by Chapman *et al.* (2005). In this analysis, only the top 40% farm type with 100% perennial ryegrass pasture was used. Estimated pasture dry matter consumption through *in situ* grazing on this farm was 6.0 t / ha / year, with an additional 0.6 t DM / ha / year conserved as silage. We then asked the question: if an additional 10% of the total DM consumed by grazing on this ‘base’ farm (i.e. an additional 0.6 t DM / ha / year) was available for *in situ* grazing, what would be the gross economic return to the farm, and how does this return differ if the 0.6 t DM is spread evenly throughout the year versus confined to each of the 4 seasons of the year? Adjusted harvest rates were entered into the base UDDER simulation, and farm management policies such as supplementary feeding, N fertiliser use, and silage and hay conservation adjusted to utilise all of the extra feed available, either through direct grazing or via fodder conservation. This allowed us to determine the time of year when additional home-grown feed is most valuable in an economic sense. Since this may depend on calving pattern and the associated seasonal pattern of feed demand, we compared a seasonal calving herd (calving over 60 days from 10th May) with a split calving herd (60% of herd start calving on 1st March and 40% on 1st August) at the same stocking rate (1.8 cows / ha).

Results When expressed in \$ per extra kg DM / ha grown, additional feed consumed in summer and autumn was worth more than additional feed consumed in any other season for both seasonal and split calving herds (Table 1). This reflects low pasture growth rates in these seasons, and heavy dependence on purchased feed. The seasonal conditions. For example, an additional kg DM grown with N fertiliser at current prices and assuming a response efficiency of 10 kg DM per 1 kg N applied would cost an estimated 8.7 cents. This would be highly profitable after an early autumn break, but marginally profitable in spring for a seasonal calving dairy herd.

Table 1 Impact of 10% extra feed consumed on gross farm return

	Total DM consumed	RoA (%)	Seasonal calving		Split calving
			Change in op profit \$	\$/extra kgDM/ha	\$/extra kgDM/ha
Base	6014	6.3			
All year	6615	6.9	9,585	0.13	0.21
Autumn	6616	7.4	16,325	0.22	0.36
Winter	6616	7.0	10,440	0.14	0.21
Spring	6615	6.9	8,800	0.12	0.15
Summer	6616	7.5	18,290	0.24	0.30

Conclusion The timing of feed supply is critical to dairy farm profitability. Growing extra feed when it is easiest to produce (i.e. spring) may yield only limited improvements in farm financial return.

References

- Chapman, D.F., S. Kenny & D. Beca (2005). Alternative feedbase systems for southern Australia dairy farms. 1. Predicted pasture/crop consumption and farm financial performance. *XX International Grassland Congress- offered papers* (in press).