

Alternative feedbase systems for southern Australia dairy farms. 2. Seasonal variability

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Introduction The standard feedbase on non-irrigated dairy farms in southern Australia is perennial ryegrass-dominant pasture supplemented by concentrate feeds, silage and hay to fill seasonal feed gaps. Using models, Chapman *et al.* (2005) concluded that dairy producers in this region can increase forage consumption and operating profit through the use of summer-active pastures and double-cropping (winter cereal grown for silage, followed by a summer grazing crop). However, these results were based on long-term average pasture and crop growth rates and therefore do not account for seasonal variability associated with climatic variation, which is important in southern Australia. This paper investigates the interaction between seasonal conditions and feedbase system to determine the potential risk associated with changing to alternative pastures or crops.

Materials and methods The general modelling approach is described by Chapman *et al.* (2005). The least 'reliable' seasons in southwest Victoria are autumn (timing of rain after the summer) and spring (timing of onset of moisture stress). Pasture growth outcomes were simulated in DairyMod for each year 1961 – 2001. Growth rates from years with poor autumns or springs were used to synthesise monthly harvest rates for years which included these seasonal outcomes alone, or together. The converse situations (early autumn break and long spring) were also modelled. Harvest rates were entered into UDDER and Red Sky (Chapman *et al.* 2005) to estimate milk production and return on assets. Analyses were conducted for top 40% and top 10% farms (Chapman *et al.* 2005), but only results for the first of these are presented here. Feedbase systems modelled were: Base (perennial ryegrass), double cropping (winter cereal followed by summer turnip crop), oversowing of annual ryegrass into the perennial ryegrass base, and summer shoulder pasture (based on tall fescue).

Results The growth of perennial ryegrass pastures was highly variable in time (Figure 1). Poor autumns (late break of season) occurred in about 20% of years, and poor springs (early end to season) in about 10% of years. 'Average' annual pasture growth curves were seldom seen and it was rare for two consecutive years to be alike.

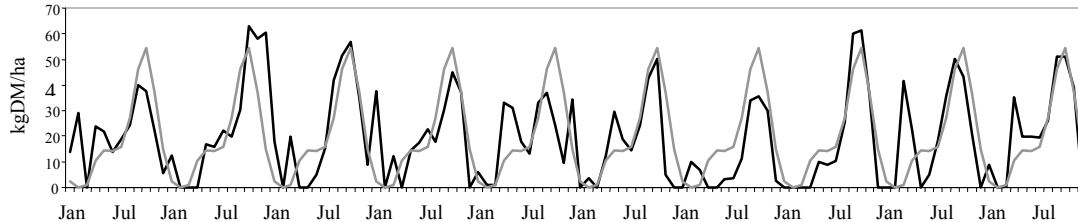
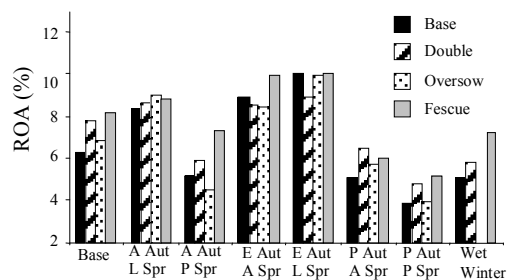


Figure 1 An example of predicted daily growth rates of perennial ryegrass pastures for 1991 – 2000 inclusive (dark, variable line), compared to the long-term mean 1961 - 2000 (lighter, regular line)



A = average; E = early; L = long; P = poor
Aut = autumn; Spr = spring

Figure 2 Predicted return on assets for different seasonal scenarios and feedbase systems

Reference

Chapman, D.F., S. Kenny & D. Beca (2005). Alternative feedbase systems for southern Australia dairy farms. *XX International Grassland Congress - offered papers* (in press).

Return on assets was adversely affected by poor autumns and springs for all feedbase systems due to increased purchased feed costs (Figure 2). However, fescue-based pasture and double cropping showed more consistent financial returns in the face of inter-annual climate variability (CV of return on assets 22%) compared to ryegrass-based systems (CV 31%). This is due to the deeper root systems of tall fescue compared to ryegrass, and security of yield of the winter crop (growing season April – October) insulating the double cropping system against the effects of dry seasons.

Conclusions All feedbase systems are subject to seasonal risk, but staying with ryegrass-based systems appears more risky than adopting alternatives such as tall fescue or crops

1. Predicted pasture/crop consumption and farm financial performance. *XX International Grassland Congress - offered papers* (in press).