Effects of time-of-calving on dairy production

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INTRODUCTION

The adoption of seasonal calving in New Zealand has lead to marked irregularities in the supply of milk to processors in terms of both quantity and quality. The need to accommodate peak milk flow means that manufacturing plants are under utilised for most of the year. Further, there are difficulties manufacturing high quality products early and late in the season. This study presents data from an all-year-round calving system which may help to overcome the abovementioned problems.

MATERIALS AND METHODS

The trial utilised 25 Friesian cows of mixed age in 4 herds, one of which calved in each of January, April, July and October. Management of the herds is described by Auldist *et al.* (1997). Briefly, the herds were managed separately on a total of 28 ha, but were milked twice daily through a common shed. Herds grazed pasture but were supplemented with pasture silage when necessary. Once weekly, milk yields of all cows were measured and a milk sample tested for concentrations of fat, protein and lactose.

RESULTS AND DISCUSSION

The July herd (representing conventional seasonally-calving herds) was superior in terms of production (Table 1). Despite having the highest peak yield, the October herd had a reduced lactation yield of milk and milksolids, because of a lower number of days in milk. This was brought about by insufficient pasture in winter to sustain the milk production of cows in late lactation.

TABLE 1: Peak milk yields (PY; L/cow/day), lactation milk yields (LY; kg/cow), lactation milksolids yield (MSY; kg/cow) and days in milk (DIM) for the 4 herds.

	January	April	July	October	SED
PY	22.1	19.8	22.3	24	0.94
LY	4053	3966	4405	3725	163
MSY	320	313	355	290	12.6
DIM	277	266	281	239	5.4

The milk production curve of the farm as a whole (including dry cows) was markedly flatter than that of the July calving herd (Figure 1). The consistency across the season of milk composition (fat, protein and lactose) was similarly improved, implying a concurrent improvement in the quality of milk for manufacturing at the beginning and end of the season.

FIGURE 1: Mean daily milk yields from the seasonally calving herd (●) and the all-year-round calving herd as a whole (◯).

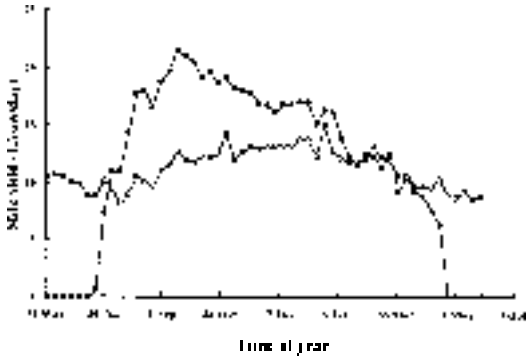
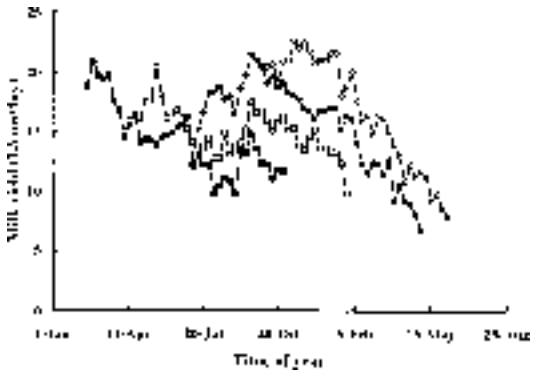


FIGURE 2: Mean daily milk yields for herds calving in January (■), April (□), July (●) and October (◯).



The lactation curve of each time-of-calving group was markedly different (Figure 2). Most notably, the January and April herds had a second peak during Spring, as the availability of quality pasture increased. This confirms that the decline in production after peak is at least partly nutritionally mediated, rather than being caused entirely by a loss of secretory tissue in the mammary gland.

CONCLUSION

Altering the time of calving offers the chance to flatten the production curve of New Zealand herds, thereby reducing problems of plant under-utilisation. Further research is required to determine whether the manufacturing properties of milk late in the season could be maximised by adjusting the time-of-calving of some herds so that optimal milk composition coincides with this problem time.

REFERENCE

Auldist, M.J., Walsh, B.J. and Thomson, N.A. (1997). *Proceedings of the New Zealand Society of Animal Production* - this issue.