Comparing calving patterns for winter milk systems

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Summary

- The Johnstown Castle winter milk project compared performance of block spring calving, block autumn calving, and 50:50 split autumn-spring calving systems.
- Increasing the proportion of autumn calving increased milk output per cow; however the value of additional milk was largely nullified by additional purchased feed cost.
- Compared to spring calving, daily milk volume at summer peak was reduced by 9% and 14.7% by split and block autumn calving respectively. Block autumn calving delivered 43% of annual supply in the Oct-Feb period compared to 26% for split calving and 10% for spring calving.
- High EBI cows delivered high milk performance and good fertility across all calving pattern systems.

Introduction

Calving cows in autumn to generate a planned winter milk supply is practiced on approximately 2,700 dairy farms nationally. For the vast majority of these herds, a 'split calving' model is employed, whereby a proportion of cows (typically 20%-50%) calve in autumn and the remainder calve in spring. This approach works best where winter milk payment contracts specify a fixed volume of winter supply. Optimum pattern can be defined as having the minimum percentage of autumn calving required to meet contract volumes in winter. As the Irish dairy industry expands and evolves, a number of key issues emerge regarding the future role of winter milk. The fresh milk market is an essential component of the sector and requires specialist production, but it is of modest and relatively fixed scale (approximately 580 million litres) within the overall industry. Numerous liquid milk producers have thus expanded the spring-calving component of the herd but now face the question of whether retaining a small proportion of autumn calving within the herd is viable. On the other hand, many producers view winter milk as an opportunity to increase output and winter cash flow from a given land base. However, effects on annual costs and labour must also be accounted for. From a processing perspective, the potential for altering milk supply profile to improve efficiencies and handle extra volumes requires clarification.

The study

With these questions in mind, a study comparing the performance of three calving patterns was undertaken at Teagasc Johnstown Castle. Systems compared were SPR-100% compact spring calving; AUT- 100% compact autumn calving and SPLIT- 50% spring and 50% autumn calving. Herds were managed at a grazing stocking rate of 2.90 cows per ha. The SPLIT and AUT herds incorporated maize silage as 33% of winter forage for milking cows. Herd EBI was €156 (€53 milk, €63 fertility). Grazing commenced in early February with the first rotation completed by early April. Mid-season pasture was managed to target 1,400 kg DM/ha pre-grazing cover. The final rotation was completed by early November for the AUT herd and 10–12 days later for SPR and SPLIT herds.

Results

Across a 3-year period, the AUT and SPLIT herds had greater milk output per cow relative to SPR. This arose through a combination of increased annual concentrate input and flatter lactation curves for autumn-calving cows. However, when additional feed costs were accounted for, gross margins per cow (before winter bonus payments) were similar across the systems.

Table 1. Milk and feed profiles for calving pattern systems 2015–2018

	SPR	SPLIT	AUT
Milk solids per cow	489	517	561
Concentrate fed kg DM	536	1,050	1,380
Mean milk kg/cow Apr-Jun	27.1	24.6	23.1
% total milk in winter Nov- Feb	10.1	29.4	43.2
Margin over feed at €0.34/litre base price	-	+€11/cow	+€29/cow
Margin over feed at €0.30/litre base price	-	-€3/cow	+€9/cow
Milk bonus value			
Liquid milk €0.075/litre 50% contract	-	+€129/cow	+€135/cow
Flat Payment €0.075/litre Nov-Feb		+€150/cow	+€230/cow

Comparing system overheads and labour in this study is difficult. Using data from commercial farms, it has been estimated that split-calving systems require 3–4 hours extra labour input per cow annually compared to spring calving. Machinery costs are also increased. Labour data on block autumn systems is limited, but it would be expected that hours per cow may be intermediate between spring and split systems. The study highlights that any financial advantage to systems with autumn calving, requires a price incentive to at least offset additional overhead costs. Depending on pricing structure, the AUT system has greatest capacity to generate milk premium values per farm due to the proportion of milk supplied in winter.

When annual supply profiles were compared, the SPLIT and AUT systems reduced peak (Apr-Jun) daily volumes by 9% and 14% respectively. Further modelling work showed that shifting a smaller percentage of cows to autumn from spring had a negligible effect on peak volumes. Therefore, winter supply and peak volume management should be considered as separate but related issues at processing level.

Conclusions

The autumn-calving systems tested did not improve margins over feed but may increase farm overhead costs. Winter milk pricing incentives should combine the dual objectives of securing defined winter milk volumes while maximising production efficiencies across the entire milk pool. Rationalising winter supply schemes toward more specialised herds with a higher proportion of autumn calving may be a suitable strategy.