

Modelling the effects of twinning on the economics of pasture-based suckler beef systems.

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Application: Twinning has potential to enhance profitability on suckler beef systems by increasing carcass output.

Introduction: An objective of suckler beef systems is to maximise weaned calf weight per cow in a cost-effective manner. Twinning is a technology that can increase the number of calves and weaned weight per cow. For example, Echterkamp et al. (2007) found that, for cows birthing twins compared to singles, weaned calf weight per cow calving was 52% greater. The objective of this study was to quantify the effect of increasing twinning rate through long-term genetic selection on the economic performance of pasture-based suckler beef systems.

Material and Methods: The Grange Beef Systems Model (Taylor et al., 2020), a bioeconomic model of suckler beef systems, was augmented to include a module defining the impact of twinning using data from Echterkamp et al. (2007) and Cummins et al. (1994). This module accounted for the implications of twinning on cow (e.g. calving rate, calving difficulty, fertility and feed energy demand) and calf (mortality, live weight gain and carcass characteristics) traits in suckler beef systems. The farm system modelled was a spring-calving suckler herd taking progeny through to beef as steers and heifers at 24 and 20 months of age, respectively. Farm size was 50 ha with a baseline stocking rate of 2.4 LU/ha. To reflect different proportions of the cow herd bearing twins, the analysis was conducted for three calving rates; 1.0 (base scenario), 1.5 and 2.0 calves per cow. Given the lack of consistency between published studies, two scenarios were compared with the base scenario whereby post-weaning performance of twin-born progeny were either (i) 3% less than or (ii) 9% greater than single-born progeny.

Results: Increasing twinning rate (i.e. the number of calves per cow) decreased the number of cows calving (range: 23% to 14%), increased carcass output (range: 16 to 27%) and increased farm net margin/ha (range: 76% to 126%) compared to the baseline scenario.

Table 1. Physical performance and financial results of twinning scenarios.

Scenario ¹	Base	CR1.5(9)	CR2.0(9)	CR1.5(-3)	CR2.0(-3)
Cows calving (head)	72.5	61.9	56.3	62.6	57.6
Carcass output (kg/ha)	452	529	576	526	569
Gross output (€/ha)	1,824	2,145	2,341	2,131	2,310
Total costs (€/ha)	1,494	1,545	1,594	1,550	1,599
Net margin (€/ha)	330	600	747	581	711

¹CR1.5 (9) = Calving rate of 1.5 calves per cow with post-weaning performance 9% greater than base. CR2.0 (9) = Calving rate of 2.0 calves per cow with post-weaning performance 9% greater than base. CR1.5 (-3) = Calving rate of 1.5 calves per cow with post-weaning performance 3% lower than base. CR2.0 (-3) = Calving rate of 2.0 calves per cow with post-weaning performance 3% lower than base.

Conclusion: When part of a defined breeding and management programme, twinning has the potential to substantially improve net margin on suckler calf-to-beef farms.

References:

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