

Factors impacting dairy cow conception risk in Irish herds

Caroline Fenlon¹, Luke O'Grady², Michael Doherty², Stephen Butler³, Laurence Shalloo³, John Dunnion¹,
¹University College Dublin, Dublin 4, Ireland; ²University College Dublin, Dublin 4, Ireland; ³Teagasc,
Moorepark, Co. Cork, Ireland. Contact: caroline.fenlon@ucdconnect.ie

Purpose:

Previous research into dairy cow reproduction has studied the impact of various factors on the proportion of animals conceiving to first service or within fixed time periods of breeding (e.g. 21 or 42 days). The objective of this study was to analyse individual breeding attempts, in an effort to model the likelihood of success given temporal, animal and herd-related variables.

Methods:

The analysis was performed on 4,919 service events involving 1,018 cows from the research herds belonging to Teagasc, the Irish agri-food research and development authority, at its Animal and Grassland Research and Innovation Centre, Moorepark, County Cork. All animals were of parity 1 or greater and members of spring-calving pasture-based systems. The outcome of each service was confirmed with calving dates and pregnancy diagnosis scans. Binary logistic regression was carried out to find the impact of a range of variables on the probability of successful insemination. As service events from multiple herds and years were included in the analysis, herd and service year were incorporated as random effects in the model.

Results:

The results of this analysis show that factors concerning age, energy balance, milk production, stage of breeding season, previous fertility and genetics all significantly influence the reproductive performance of Irish dairy cattle.

Conclusions:

The variables considered will be used to inform the construction of a multivariate model of conception risk, for use in the fertility component of an animal-level whole-farm simulation model.

Relevance:

Irish dairy farming is currently undergoing a period of extensive change, with the abolition of European Union milk quotas from March 2015 and the Food Harvest 2020 initiative leading a drive for increased milk production. Reproductive performance is a crucial component of dairy herd management. A comprehensive model of dairy cow fertility would allow thorough simulation for the purpose of analysis and decision support.