

# Balancing performance and sustainability in breeding suckler beef herds



## The Challenge

70% of the Scottish cattle herd is beef suckler cows. Herd management requires balancing, often-conflicting, needs for farm profit, animal welfare and sustainable food production. This study investigated the consequences of cow replacement and management decisions on the interaction between animal welfare, fertility and profitability in breeding beef suckler cattle herds.

## Policy Implication

The expected trade-off between animal welfare, fertility and profitability was not apparent in our results. Animals with low body condition scores (BCS) suffered from lower nutrient intake, but were also less profitable than animals with higher BCS. Achieving such improvements depends on a high energy feed regime in winter, adding extra cost, but this was outweighed by improved performance such as having a higher calf weight at birth, a higher growth rate, and leading to higher revenue at sale. Increasing the number of very early calving cows by optimising reproduction management improves both financial and animal welfare scores of suckler cattle farms.

## Research

We developed a dynamic programming (DP) model that maximises profit from current cow and all successors by identifying the best keep/replace decision. The 150 states incorporated in the DP model were all combinations of: 10 cow-parity, five calving periods as fertility indicators and three BCS at weaning as an animal welfare indicator. Data from 200 suckler cows collected from SRUC's Beef farm between 2006 and 2010 were fitted to statistical models to estimate parameters needed in the DP model.

## Results

The DP model indicated that very early calving cows, those conceived in the first 21 days after artificial insemination, showed reduced frequencies of calving difficulty as well as voluntary culling. Leading to better financial return than late calving or barren cows. As a result, fewer replacements were needed which reduced the frequency of calving difficulty. This implies a win-win scenario for both profit and animal welfare. In contrast, in late calving animals, the frequency of calving difficulty increased and they were less profitable and more prone to be culled.

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## Funding

Scottish Government's Rural and Environment Science and Analytical Services Division (RESAS)

Scottish Funding Council supported Universities Innovation Fund



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## About

The Land Economy, Environment and Society (LEES) Research Group is one of the largest groupings of economists and social scientists working in the rural, agricultural and land based sectors in the UK. Our vision is to be recognised as one of the leading centres for agricultural and wider rural economic and social research globally, benefiting the land use sector, the environment and rural communities.

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