Summary

The C.O.W. (Cow's Own Worth) is a new web-based decision support tool launched in the latter quarter of 2017 to aid in culling the expected least profitable dairy females from spring-calving Irish herds. The C.O.W. profile facilitates the instant ranking of dairy females within herd in order of expected most profitable to least profitable based on live data stored in Ireland's centralised database so that the end user can quickly identify the under-performing animals that may be considered for culling. The C.O.W. was originally developed using estimated performance values (sum of additive genetic merit, nonadditive genetic merit, and permanent environmental effects) of traits, their respective net margin values, and transition probability matrices for month of calving, survival, and somatic cell count. Full details of the original development of the C.O.W. index are described by Kelleher et al. (2015). The national genetic evaluation system in Ireland for production traits have recently adopted the test day model (TDM) from the previous utilisation of the 305D model proofs. In this study, estimates of genetic and permanent environmental values were available for both evaluation systems for the December 2013 evaluation. The TDM values were used to generate the C.O.W. ranking (COW_TDM) and compared to the original C.O.W. ranking that utilized the 305D model estimates. Both models were also compared against the phenotypic performance of Irish dairy females. All data originated from the Irish Cattle Breeding Federation (ICBF) database. Phenotypic performance records for the year-end 2014 were used to compare the accuracy in ranking between the COW_TDM and COW_305 indices. Cows were stratified per quartile within herd, based on their COW_TDM, COW_305 values and GEN model (305-d model EBVs only). More genetic improvement can be achieved using TDM approaches (Sawalha et al., 2005). Results from this study will be useful to determine whether herd profitability gains can be achieved through the newly developed C.O.W. index by utilising TDM records to identify under-performing animals that should be culled more accurately compared to the current 305D lactation model approach.

Keywords: test day model, 305-d genetic evaluation, dairy, culling