Genetic trends for carcass traits within breeds in a multi-breed evaluation

Abstract

Most genetic evaluations and breeding objectives worldwide for beef traits tend to be on a within breed basis. Ireland is relatively unique in publishing national multi-breed genetic and genomic evaluation for carcass traits. The focus of this research is to determine genetic trends in carcass traits within each of the common sire breeds used in both dairy and beef populations. Estimated breeding values for carcass weight, carcass conformation, and carcass fat were available on 8,375,561 animals from the national carcass genetic evaluation. The mean of each animal's sire EBV was estimated for each animal's birth year for carcass weight, carcass conformation, and carcass fat. A linear regression model was used to estimate the genetic gain within and across each breed from 2008 to 2018, inclusive, for beef sires used on dairy and beef cows separately. The dependent variables were carcass weight, conformation, and fat score. Birth year of progeny was included as a fixed effect. Larger genetic gain was observed within breeds for beef sires used on beef dams in comparison to beef sires used on dairy dams for all carcass traits. There was a relatively small genetic gain observed across breed for beef sires used on dairy dams although a significant genetic gain was observed within these sire breeds, suggesting breed substitution.