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Developments in multi-source genetic evaluations for beef cattle: a Breedplan perspective

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The provision of commercial services for the genetic evaluation of beef cattle represents a rapidly changing context. With advancements in computational speed and analytical approaches as well as the increasing needs of beef seed-stock breeders for gains in production efficiency and sustainability, we are seeing the development of more complex, frequent and globally-focused initiatives as service providers. Where national breed-specific evaluations were once common place, there is now a growing interest and opportunity for countries to combine their pedigree and performance data into larger-scale multi-country genetic evaluations. This allows individual animals to be compared directly on EBV across countries, allowing breeders to take a more informed approach to the selection of possible genetics from „beyond the borders“. This also means that superior local genetics can be more accurately identified when benchmarked within the wider international gene pool BREEDPLAN represents the most widely used genetic evaluation service for beef cattle internationally. While ABRI has been conducting smaller scale multi-country BREEDPLAN evaluations for over 20 years (e.g. Australia and New Zealand; South Africa and Namibia) and a number of larger scale multi-country evaluations for the last 10 years, the changing commercial context of beef cattle genetic evaluation means we have now moved towards significantly larger and more complex evaluations that combine multiple sources of pedigree, phenotypic and genomic information. Two primary initiatives have been undertaken. The first involves progression towards International evaluations, working with client countries of ABRI where performance (and genomic) data is recorded on the same breed and for which there is some degree of genetic linkage between the respective populations. The second initiative involves multi-breed evaluations, using intentionally-designed multi-breed populations that allow the wider population of component breeds to be combined for genetic evaluation within the one analysis. To date, ABRI has completed a number of International test evaluations for each of the Brahman and Hereford breeds. Each evaluation represents a multi-country, multi-trait model using Single-Step methods to integrate available genomic data. These models include a diverse range of growth, fertility and carcass quality traits within the one analysis, plus separate analyses of docility (Brahman) and calving ease (Hereford) data. Multi-breed evaluations are also being conducted for the Brahman, Santa Gertrudis and Droughtmaster breeds in Australia, with a goal towards combining all three within the one analysis.

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