



## KEY CASE STUDY

# AMERICAN ANGUS TRAIT PRIORITISATION AND BREEDING OBJECTIVES

Home to 20,000 members, the American Angus Association (AAA) is the largest beef registry in the world. Its purpose is to serve the US beef cattle industry, satisfying consumers worldwide by increasing the production of high-quality beef. The business' role is to provide programmes, services, technology, and leadership to "enhance the genetics of the Angus breed."

The association registers over 300,000 Angus cattle registered in the previous year, with its database holding more than 20 million cattle records and over 500 thousand genomic profiles on cattle. Angus cattle influence over 65% of the US\$67 billion (2018) beef production. Elite US Angus bulls are also influential in several beef-producing countries as a source of imported elite genetics, including in Australia, Brazil, and New Zealand.

AbacusBio has recently collaborated with Angus Genetics Inc. (AGI) - a division of AAA - to develop and update their index system which was created in 2004. The index combines economic production values and trait genetic relationships to describe cattle genetics in terms of their impact on profit within US production systems.

Ensuring the index aligns with the breeding objectives and production systems of breeders, ranchers, and other stakeholders is crucial, -as highlighted by AbacusBio consultant and project manager Jason Archer -

"AGI's breeding indexes will influence genetic selection decisions, and so it is a critical aspect to get right,"

Initially, a survey of bull breeders and commercial cattle buyers was conducted to understand their needs and trait priorities. These views were accounted for in determining the structure and format of the indexes produced, while the index weightings are based on economic models of the US beef production system and the impact of trait genetic changes on profitability. The team at AbacusBio created a fully update-able index model, which AGI will review annually to incorporate recent economic price movements influencing the beef value chain.

The success of the American Angus indexes has led to further involvement with beef cattle breeding in North America. AbacusBio consultants are currently supporting the development of further economic selection indexes for Canadian Angus cattle and for the Red Angus Association of America

These breeding indexes will be specific to the needs of Angus breeders in Canada and Red Angus breeders in America. The creation of both of these indexes from scientific methods will follow the same process of surveying stakeholders to better understand the breeding objectives and production systems of Canadian and American cattle ranchers.

→ The Angus breed is considered valuable due to the finely marbled qualities of the beef.

→ The marbling trait creates a noticeably more tender, juicy and flavorful product.

→ Angus is the most widely used breed of cattle in the USA



→ Male cattle weigh anywhere from 470-850kg

- Surveys of all three breeds showed a strong preference of cattle producers towards traits that influence the longevity of the cow in the production system. Red Angus Association of America have addressed this aspect with a policy of recording all cows in every breeders herd, producing genetic information on "stayability" of their cattle.

The American Angus Association and Canadian Angus Association have approached the same issue in an alternative manner, working to expand their genetic evaluations to cover new traits. These new traits have not traditionally been part of economic selection indexes for beef cattle, but are important for purebred and commercial breeders, as they represent reasons for cows dropping out of the herd.

A novel aspect of this project was to incorporate these traits and produce an index that improves economic production traits while also reducing inefficiencies due to these issues.