Breeding for Sustainable Future

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Man has been selecting chickens ever since their domestication. More intensified and concentrated efforts by industrial breeding companies for the past several decades supported by research in academia as pointed out by Siegel *et al*. (2006) have contributed to dramatic improvements in methods and progress due to selective breeding. Improvements in growth, yield, and feed efficiency of broilers within the last 40 to 50 years are well documented (Havenstein *et al*.., 2003). Such dramatic improvements would not have been deliverable unless breeders had a keen interest in health and well-being of their products.

Modern broiler survival and good health are keys to efficient production. Primary breeders are well aware that selecting for better health and well-being along with economic traits such as faster growth rate, higher levels of meat yield, and improved efficiency of feed utilization are critical to balanced long-term genetic progress of their pure lines as well as to increased production efficiency of broiler products for the broiler industry.

Cobb collects and selects on over 50 phenotypic observations per pedigree candidate at various ages. Over 50% of these collections are involved with evaluation of each bird's health, welfare, and fitness. Some examples of these traits are various chick defects, various broiler age skeletal and leg abnormalities, feather cover, various physiological measures of heart and lung functions, and specific causes of mortality. Large pedigree populations, massive data collection infrastructure, integration of better technologies in evaluation of phenotypes, and sophisticated data analysis capability have allowed geneticists to perform selections that are balanced for both economic and welfare traits.

Cobb's internal as well as world-wide sponsored research has facilitated geneticists to make science-based breeding decisions. Each pedigree line per product available to primary breeders exhibits their own unique characteristics that are enhanced by selective breeding and positioned in special mating schemes to produce the product and welfare performance that our customers demand. Additionally, most if not all primary breeding companies now offer different products for different markets that exhibit varying levels of performance and behavior to fit customer needs. Future expansion of these products and creation of new products by breeding companies will be in large dictated by both our customers and consumers. An elaborate library of gene pools has been assembled by primary broiler breeders to address development needs of today and future products demanded by consumers around the world. Genomics would facilitate genetic markers as an additional tool for geneticists to better select their stocks in the near future.