BEEF CATTLE RESEARCH UPDATE

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Growth Technologies: Performance Benefits and Quality Considerations

Growth-enhancement technologies have been used for more than 50 yr in US beef production systems to improve cattle performance and reduce per-unit cost of beef.[1] A paper presented at a recent symposium on "Balancing Live Cattle Performance and Beef Quality" considered the performance benefits and quality considerations associated with the use of growth enhancement technologies in feedlots.[2] Most cattle produced in commercial feedlots receive one or two growth promoting implants (estrogenic, androgenic, or combination). In addition, growing numbers of implanted feedlot cattle are also fed beta agonists (Optaflexx® or Zilmax®) during the final few weeks of finishing. The use of implants and beta agonists produce additive, beneficial effects on rate and efficiency of gain and substantially increase final sale weighs and carcass weights, thereby improving economic returns. A recent analysis conducted by Iowa State University economists estimated that the values added to feedlot cattle by implanting or supplementing cattle with beta agonists were $71 and $15 per animal, respectively.[3,4] Similarly, a recent Kansas State University analysis suggested that implanted feedlot steers had a $77 per animal lower cost of production than non-implanted steers.[5] However, these technologies have been shown to reduce marbling deposition, increase beef toughness, and decrease consumer acceptability. In addition, these technologies may increase the frequency of discounted heavyweight carcasses and over-sized beef cuts. These data illustrate the importance of implementing growth technologies by considering cattle types and marketing targets. This paper concluded that when growth-enhancement programs, cattle types, and marketing targets are properly matched, the use of growth technologies can facilitate efficient production of beef without substantially reducing product quality.[2]

Genetic Antagonisms between Economically Important Beef Production Traits and Marbling

Over the last several years, the beef industry has become more consumer focused with more cattle being individually priced through value-based-marketing systems. A number of grid pricing systems reward cattle that grade Choice or better and meet other product specifications for branded beef programs. These changes have caused seedstock and commercial producers to place more selection pressure on carcass traits. Another paper presented at the recent symposium on "Balancing Live Cattle Performance and Beef Quality" evaluated genetic antagonisms between economically important beef production traits and marbling.[6] These researchers reported that a wide range of carcass traits have been shown to be moderately to highly heritable and lowly to moderately correlated with production traits such as cow body condition score, direct and maternal weaning weight. They investigated "the potential correlated responses and economic consequences to selection for increased marbling". It was reported that even when considerable selection pressure was placed on marbling score that predicted genetic changes in correlated traits were small in magnitude for all traits included in the breeding objective. Even in an integrated production system producing its own replacement heifers and retaining ownership through marketing, selection for marbling resulted in little effect on net value. These researchers attributed this to the lower economic importance of changes in marbling

relative to other traits, including cow longevity and fertility. In another paper presented at the symposium, it was noted that "many data sets show that production parameters post weaning are 2-3 times more important than the value of the carcass when sold on an average grid basis".[7] These data illustrate that even though meeting consumer demand is very important to the beef industry that production traits still have greater effects on profitability when looking at the overall beef production scheme.

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