

Can We Select for Tenderness?

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Lack of tenderness in beef should be an important concern to the beef industry due to the fact that at least 25% of steaks evaluated by consumers are considered to be too tough. Since tenderness cannot be evaluated in the live animal, it has been suggested that progeny-testing programs be developed to select those sires that produce the most tender progeny. Progeny testing, however, is an expensive and time-consuming process. The heritability of tenderness (the degree of genetic control over the trait) is quite high, probably over 40%. This indicates that, if we could evaluate individual animals for tenderness in some manner, it should be possible to make progress through selection of the most tender bulls to sire the next generation.

The selection system for tenderness that we are evaluating involves collection of semen from 12- to 14-month-old Angus bulls that had been placed on a high-energy feed soon after weaning. Bulls are slaughtered soon after the completion of semen collection, when they have an average of about .4 inches of fat over the ribeye. Due to their age, and perhaps to the high plane of nutrition that they had been receiving, acceptable semen (with good post-thaw viability) was obtained from less than half of the bulls. Steaks from the carcasses of these bulls are taken to the University of Florida Meats Laboratory to be evaluated for Warner-Bratzler Shear (WBS) value—a measure of meat tenderness. Estimated breeding values (EBVs) for WBS are calculated, based on the WBS values of steak from the bull himself and from those of paternal half

brothers. Semen from the three bulls with the lowest EBV for WBS (the most tender) and from the three bulls with the highest EBVs for WBS (the toughest) is used to sire the next year's calf crop. The reason we use semen from the toughest as well as the most tender bulls is that the goal of the study is to determine the effectiveness of this type of selection and this is the fastest method. Daughters of bulls identified as tender will be bred to bulls with low EBV for WBS and daughters of bulls identified as tough will be bred to bulls with the highest EBV for WBS. After two generations of selection (about 5 years), it is planned to do a follow-up commercial study of the effectiveness of this program through the use of semen from bulls identified as tough and tender on commercial heifers at the Deseret Ranch and then to evaluate their progeny for tenderness.

The Angus cowherd at the Santa Fe Beef Unit is descended from cattle from a variety of sources, including the Wye-influenced Angus herd at the (Brooksville) Subtropical Agricultural Research Station, commercial Angus from the Tennessee area, and Florida Angus breeders. The sires of the bulls utilized have been those available through AI organizations and efforts have been made to use bulls from many bloodlines. In addition, sons of a bull from Baldwin Angus ranch have been evaluated favorably in this program. In the initial phase of this study, one Angus bull, Nichols Super Systems, appears to sire progeny with superior tenderness. Unfortunately, semen from this bull is now scarce.