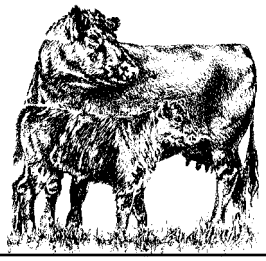

Western Beef Resource Committee *Fourth Edition*

Cattle Producer's Handbook

Management Section 755

Beef Cattle Implants

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Growth stimulants are non-nutritive products that improve rate and/or efficiency of gain and prevent certain diseases or conditions in cattle. They have been used extensively in beef production for over 30 years.

Significant changes in implants and implanting strategies have occurred. Before 1987, available implants were estrogenic agents that metabolically enhanced nutrient use to enhance growth. These products improved feed efficiency 5 to 10 percent and daily gains from 5 to 15 percent.

In 1987, the androgenic (tissue building) agent, trenbolone acetate, was approved for use in growth promoting implants. This compound had an additive effect with existing estrogenic implants. The androgenic implant enhanced muscle growth and added an additional 2 to 3 percent to the feed efficiency and 3 to 5 percent to the daily gains.

The return on implant investment varies, but only in rare situations do implants return less than $5 per $1 spent. Implants are available for all cattle except calves younger than 45 days old and most breeding cattle. Proper scheduling and use of implants should return in excess of $10 per $1 spent.

Today, implants have become almost designer products with varied doses and combinations of estrogenic and/or androgenic agents. While implants tend to be most effective in feed yards, implanting strategies have been effectively applied to other beef production situations. The growth promoting implants approved for use in the United States are extremely safe. They are safe not only for the cattle, but also for producers who use the products and for the consumers who consume the beef produced from implanted cattle. There is *no withdrawal time* for any of the approved implants available in the United States.

Mechanism of Action

Cattle must have adequate nutrition before implants can positively influence feed efficiency and gain. The greatest response to implants tends to be observed in older cattle, such as yearlings, near peak periods of lean tissue deposition. Typically these would be yearling cattle consuming high levels of high-energy feed.

Estrogenic implants increase the circulating levels of somatotropin (ST) and insulin-like growth factor-1 (IGF-1). Both of these substances are produced by the animal and have a marked effect on how nutrients are used by the animal to produce muscle, bone, and fat.

The approved androgenic agent, trenbolone acetate (TBA), does not seem to stimulate the production of ST, but does significantly increase the circulating levels of IGF-1 and decreases the normal loss of muscle tissue in sedentary animals. The implant response is associated with nutrients available and the level of implant growth promotant circulating in the animal.

When growth-promoting implants are first placed in the animal, there is a rapid release of hormone from the implant. The level of growth promotant being released from the implant will begin to fall after a few days, but will remain above an effective growth stimulating level (threshold) for a varying length of time depending on the pharmaceutical design of the implant and the quality of technique used when administering the implant placement.

Re-implanting, the administration of an additional implant, is usually scheduled to coincide with the declining level of circulating implant growth promotant, but always above threshold. The optimum re-implant time is referred to as the re-implant window. For maximum benefit, it is important to maintain the level of implant growth promotant above threshold throughout the ownership of the stocker or feeder animal. The length

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