

## **Improving Stocker Calf Performance and Efficiency – Growth-Promoting Implants**

*Jane Parish, MSU Extension Beef Cattle Specialist*

### **Effects of Growth-Promoting Implants on Cattle**

Growth-promoting implants offer beef cattle producers a safe and effective way to increase calf weight gains. Implants work by increasing the production of muscle tissue and often reduce body fat production. This results in significant improvements in both growth rate and feed efficiency. Despite the proven benefits of implant use, only 18.8 percent of beef cattle operations surveyed by the National Animal Health Monitoring Service (NAHMS) implanted any calves prior to or at weaning.

When used properly, growth-stimulating implants can enhance average daily gain in suckling calves by 4 to 8 percent, in growing calves by ten to twenty percent, and in finishing cattle by 15 percent. In addition, feed efficiency is expected to improve by 6 to 8 percent in growing cattle and by 8 to 10 percent in finishing cattle. Adequate nutrition is needed for calf growth performance to be enhanced by an implant. Implants will not make up for poor nutrition. Calf gains must be at least 1.3 pounds per day for implants to be effective at improving growth. Expected return on investment for implant use under proper management is often 10 to 1.

Implants are available for sucking, stockering, and finishing phases of beef cattle production. While implanting may be beneficial for an individual production phase, it is important to consider implant impacts on latter production phases, particularly with respect to marketing and retained ownership considerations. Implant effects on Quality Grade and palatability of the end product must be considered. In some instances, aggressive implanting protocols can reduce Quality Grade of beef end product. Responsible and strategic implanting programs can make best use of implants while maintaining acceptable end product quality. For instance, altering the timing of implant administration in relation to harvest can reduce the effects of implanting on Quality Grade.

### **Available Implants**

The U. S. Food and Drug Administration approves and regulates the use of growth-promoting implants for beef cattle. Implants are typically small pellets impregnated with specific growth promotants. Some implants also contain an antimicrobial such as oxytetracycline or tylosin tartrate to provide a local antibacterial effect. Implants are designed for sustained, slow release of the active ingredients and are administered under the skin (subcutaneously) on the backside of the ear midway between the ear tip and base.

Implants can be classified as either estrogenic (hormones affecting female characteristics) or androgenic (hormones affecting male characteristics) based on the specific growth promotants contained in the implants. Estradiol, progesterone, and zeranol are estrogenic. Androgenic implants often contain trenbolone acetate, which is chemically related to testosterone, alone or in combination with other active ingredients.

### **Situations where Implant Use is not Appropriate**

As a general rule, do not implant breeding cattle including bull and replacement heifer calves. Implanting bulls can result in problems in reproductive organ development and sterility. In addition, implanting does not improve growth rate or efficiency in bulls. While some implants are labeled for use in replacement heifers, adequate heifer development can be accomplished without implant use. It is advisable to only implant heifers to be marketed as feeders or stockers.

Side effects from implant use may include bulling, vaginal and rectal prolapses, udder development, and raised tailheads. Side effects are rare, of little economic significance in most cases, and therefore are not a reason to avoid implant use. These situations are often the result of improper implanting technique. Crushed implants may contribute to these conditions.

Some marketing programs specify that no implants be used on cattle in order for them to qualify for the programs. For example, "Natural" programs may include such implant restrictions. Make sure that the specifics of the targeted marketing program are known prior to implant use.

### **Implant Handling and Administration**

Always adhere to best management practices including Beef Quality Assurance compliant practices for implant use in beef cattle. Start by reading label directions on specific implant products. Label directions include information on the age, weight, and/or sex of cattle for recommended use of specific implants. Some implants require refrigerated storage or protection from light. Others require cool, dry storage, and still others should be stored at room temperature without excessive heat or humidity. The needed storage conditions will be indicated on the label. Review label instructions prior to implant storage and use. Check the product expiration date, and only use implants before expiration.

Make sure the appropriate implant applicator (often called an implant gun) is on hand for use with the specific implant chosen. Manufacturers make implant guns specifically designed for use with certain implants. Match implants to the correct implant guns to minimize implant defects. Load the implant gun according to label directions. Only use sharp needles in implant applicators. Dull or burred implant applicator needles increase the risk of tissue damage and infection at the implant site. Burrs on needles can also damage implants. Check periodically for clogged implant applicator needles. Wash clogged needles with water and then disinfectant and allow to dry before reuse.

Effective animal restraint makes implant administration easier and more likely to be done properly. Catching cattle in a head gate just behind the ears is ideal when implanting. With horned cattle, use of nose tongs can provide additional animal restraint and handler safety. Once a calf is properly restrained, select an appropriate ear for

implanting. Select the ear with fewer ear tags, tattoos, and ear notches. If ears are tagged during the same cattle working event, then administer tags prior to implants. Try to tag calves in the opposite ear from the implant site. When possible choose the same ear to implant in all calves worked together. This will help in monitoring implants later.

Locate the proper implant location on the ear. Proper implant placement is under the skin on the backside of the ear. Implants should be administered in the middle third of the ear between the skin and cartilage. Therefore the needle insertion site should be a point toward the tip of the ear at least a needle length away from the intended deposition site. Implants should never be placed in the cartilage ribs of the ear and should not be placed closer to the head than the edge of the cartilage ring furthest from the head. If the implant site is contaminated with mud or manure, then scrape the site with a dull serrated knife and clean the site with disinfectant before implanting. Do not contaminate the site with dirty hands. For reimplantation, place the second implant parallel to but not in contact with the previous implant or in the unimplanted ear.

Grasp the ear to be implanted with one hand, and position the loaded implant applicator parallel to the backside of the ear. With the tip of the needle, prick and lift the skin to completely insert the needle under the skin avoiding major blood vessels. The needle should form a canal between the skin and cartilage for deposit of the implant. Be careful to avoid gouging or piercing the cartilage. Needle resistance may indicate that the needle is gouging the cartilage. Once the needle is completely inserted, then back it up slightly (about 1/8 to 1/4 inch). Some implant guns have retractable needles that eliminate the need for pulling the needle back slightly. Depress the trigger of the implant gun, and withdraw the needle slowly and steadily. Implant pellets should be deposited in a row. Gently palpate the ear to make sure that the implant was properly inserted. Pellets should not be bunched or crushed, and the full dosage of implant pellets should have been deposited.

Improper implant administration can make the implant less effective or ineffective. Never sacrifice proper implant administration and sanitation for speed. Make sure that all persons administering implants are trained in acceptable implant handling and administration techniques. Select the most conscientious crew member to administer implants. Periodically check implant technicians to make sure they are using good implanting technique. There are several common potential causes for implant failure including missing implant, partial implant, crushed or bunched implant pellets, improper implant site, abscess, inadequate implant storage, and inappropriate implant timing or target animal. Many, if not all, of these causes of implant ineffectiveness are preventable.

Abscesses often result from infected implant sites. Abscesses may wall off the implant preventing absorption or push implant pellets out of the implant site. Adequate sanitation during implanting can help prevent abscess development. Thoroughly disinfect implant needles between animals. Wipe implant applicator needles with cotton or gauze moistened with alcohol or other suitable disinfectant. Consider fly control measures when implanting during fly season.

Maintain thorough and accurate implanting records. Record the date of administration, product administered, location of administration, and unique animal identification. An

animal health processing map may be useful for this. Implant records should be retained, and cattle buyers or future managers should be made aware of past implant management. This will help prevent poor implanting decisions in later production phases. For more information on stocker cattle production or related topics, contact an office of the Mississippi State University Extension Service.