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Growth-Promoting Implants for Beef Cattle

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Overview of Synthetic Compounds

Utilization of growth-promoting implants in the beef cattle industry provides an opportunity for improving production efficiency (Table 1). These products have been extensively studied for safety and efficacy. Growth-promoting implants contain active ingredients that are classified as anabolic or tissue building. Within the animal, they promote protein synthesis, resulting in a 10 to 30% increase in growth along with a 5 to 10% improvement in feed efficiency. These products mimic naturally occurring compounds produced by the animal.

Hormones are naturally produced by the body. For instance, a non-pregnant woman produces some 480,000 nanograms of estrogen daily, while prepubertal children produce an estimated 45,000 nanograms daily. Men produce about 136,000 nanograms of estrogen daily.

Several regularly consumed foods contain estrogenic activity. Cabbage, peas, eggs, and dairy products contain levels of hormone-like activity greater than that of implanted beef on an equivalent weight basis.

Growth-promoting implants have been extensively researched for safety. Studies have shown slight to no differences in hormone levels of edible tissue from implanted cattle. A 3-ounce cooked serving size of beef would supply less than one-thousandth of a percent of the estrogenic activity of that produced daily by a prepubertal child. It is important to recognize that the normally occurring hormone levels in beef will vary based on sex, age, and breed as well as production status (i.e., whether the animal is castrated or pregnant).

Considering that per capita beef consumption is less than 95 pounds or approximately an average of 0.25 pound daily, it is evident that implanted beef is not a major source of estrogen consumed in the daily diet.

Table 1. Performance responses to growth-promoting implants for steers on pasture.

Implant	ADG, lb	% Increase
None	1.51	--
Ralgro	1.70	13.2
Revalor G	1.76	16.9
Synovex S	1.69	12.4

Source: Texas Tech & Intervet Implant Database.

Products Available

There are a number of growth-promoting implant products available on the market. These products are manufactured by fewer companies today than in the past due to company mergers, yet most products remain the same. Products are often categorized based upon the type of compound contained and whether or not it is in combination with a testosterone or equivalent product. Table 2 contains a listing of available products, compounds, and concentrations as well as projected payout period. When choosing a product, consider the sex of the animal to be implanted and the duration of ownership. Administering a 200-day plus implant to cattle that will be backgrounded for only a 45-day period after implanting is not necessarily a wise choice. Also, determine any restrictions for product use that may be applicable to the given situation such as:

1. Are these suckling calves?
2. Are they less than 400 pounds?
3. Are they younger than 30 days of age?

Table 2 is a guide to aid in determining which product may be most appropriate for the class of animal and feeding situation. However, always read the label before using the product to ensure the appropriate use. Properly administered implants have no withdrawal time period prior to harvest. To date, no implants are approved for use in calves intended for the production of veal.

Administering an Implant

It is important to have adequate facilities that allow for proper restraint. When implanting, head restraint is important for proper implant placement. Implant cradles or nose bars on chutes greatly aid in limiting head movement. Use of nose leads or a halter can also aid in minimizing head movement.

Sanitation

One of the most important and overlooked aspects of administering an implant is sanitation. It is important to take steps to ensure that the incision site does not become infected, which can lead to the immune system walling off the implant and reducing or eliminating product absorption. Cattle that have manure- and/or dirt-covered ears should have the back of the ear lightly scrubbed with a brush and disinfectant. Wipe the back of the ear dry with a clean paper towel or cloth before inserting the needle to reduce the risk of introducing foreign material and pathogens.

Table 2. Growth-promoting implant products available for utilization in beef cattle.

Product Name	Suckling Calves	Weight Restriction	Age Restriction	Grazing	Steers	Heifers	Replacement Heifers	Backgrounding Confined	Feedlot Confined	Approx. Effective Days
Ralgro	X		> 30 d	X	X	X	X	X	X	70-100
Ralgro Magnum					X				X	100-120
Revalor H						X		X	X	100-140
Revalor S					X			X	X	100-140
Revalor G				X	X	X		X	X	100-140
Revalor IS					X			X	X	100-140
Revalor IH						X		X	X	100-140
Revalor 200					X	X			X	100-140
Revalor XS					X				X	200
Finaplix			63 d preharvest			X			X	60-100
Synovex S		> 400			X			X	X	80-120
Synovex H		> 400				X		X	X	80-120
Synovex C	X	< 400 Suckling	> 45 d	X	X	X	X	X	X	100-120
Synovex Choice					X				X	100-140
Synovex Plus					X	X			X	100-140
Component E-S		> 400			X			X	X	100-140
Component E-H		> 400				X		X	X	100-140
Component E-C	X	< 400 Suckling	> 45 d	X	X	X	X	X	X	100-140
Component TE-S w/Tylan					X			X	X	100-140
Component TE-H w/Tylan						X		X	X	100-140
Component TE-G w/Tylan				X	X	X		X	X	100-140
Component TE-200					X				X	100-140
Component T-H						X		X	X	60-100
Component T-S					X			X	X	100-140
Compudose	X Steers			X Steers	X	X		X	X	170-200
Encore	X Steers			X Steers	X	X		X	X	400

Note: Information summarized from product labels. Please read and follow label recommendations when using these and any other products.

Placement of the Implant

Products are to be administered in the middle one-third of the ear unless otherwise directed by the label. Proper implant placement is illustrated in Figure 1. To achieve proper placement of the implant, it is important to insert the needle on the backside of the ear toward the tip of the ear allowing for the implant to be deposited in the middle third of the ear and not in the cartilage ring at the base of the ear (Figure 2).

Figure 1. Administering an implant in the middle third of the backside of the ear. (photo: Jeff Lehmkuhler)

Grasp and firmly hold the tip of the ear. Position the needle nearly parallel with the ear while ensuring the beveled, sharpened edge of the needle is facing up. Gently prick the skin of the ear with the tip of the needle and begin inserting it directly under the skin. Little resistance should be felt as the needle slides under the skin. Moderate resistance or too steep of an angle likely means the needle is going into the cartilage of the ear and not the preferred location. When inserting the needle, avoid piercing the large ear veins.

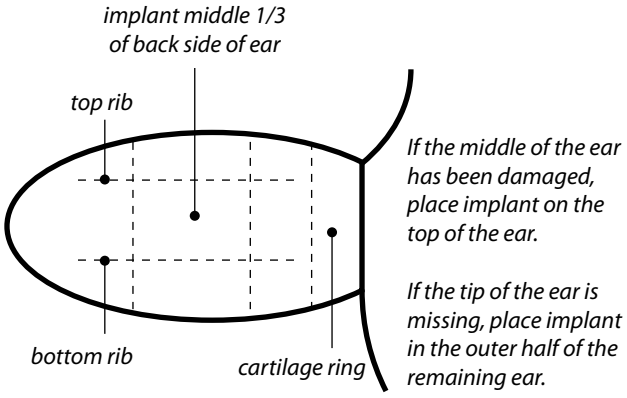

Figure 2. Insertion site for implant gun needle. Source: ID-140: *Kentucky Beef Quality Assurance Program.*

Do not crush the implant while administering it. To avoid crushing implants, slowly retract the needle as pressure is applied to the trigger if the gun does not have a self-retracting needle. Crushed or improperly administered implants can increase the risk to riding activity or "bulling." Feel the ear to ensure that the implant has been deposited in the proper location.

Improperly placed implants reduce your return on your investment. Never sacrifice implant technique for speed. Common implant administration mistakes include:

- Implant is improperly placed.
- Needle pierces through the other side of the ear due to the needle angle being too steep at entry.
- Poor sanitation results in an abscess.
- Implant is crushed or misaligned.

Summary

Implants have been widely evaluated for safety and animal responses. These products when utilized in accordance with product labels are safe and effective in improving animal production performance and efficiency.

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