

Texas Agricultural Extension Service

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IMPLANTS: GROWTH STIMULANTS FOR BEEF CATTLE

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Few management practices in the beef cattle industry return more dollars per dollar invested than implanting. More than 35 years of research and industry use support implanting as an extremely profitable practice. Nearly all feedlot cattle are implanted, but only 45 percent of all stockers and less than 15 percent of all calves are implanted.

Implants are administered in the form of a pellet(s) or a cylindrical silicone core and contain growth promoting compounds which increase protein deposition in the animal. Implants are inserted under the skin of the ear and the growth stimulating compounds are released into the bloodstream over a three to six month period at a fairly constant rate. Implanting, through a direct or indirect action on cells or organs, results in a substantial increase in growth rate and feed efficiency.

Implant Selection

There are four commercial implants available for use in steers, two of which are also approved for heifers. Each drug has unique advantages and disadvantages, but they all produce essentially the same magnitude of growth and feed efficiency response for each day that they are active (Ralgro® and Synovex®-90 to 100 days, Compudose®-200 days).

Compudose®. On the market since 1982, Compudose is the longest lasting of the available implants (200 days before recommended reimplantation). The active compound is estradiol 17 β , a naturally occurring hormone produced by the ovaries, which is impregnated into a silicone rubber matrix to form a solid implant. Estradiol migrates out of the silicone rubber and enters the bloodstream. When the drug has been completely dissolved from the silicone, the implant can still be seen and felt at the implant site. Compudose® is cleared for use in steers of any weight class and does not have to be removed prior to slaughter or reimplantation.

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Ralgro®. Available for commercial use since 1969, Ralgro® is a chemical compound (Zeranol) isolated from mold. While not a hormone, it appears to cause the release of certain hormones (growth hormone, cortisol, prolactin) that provide growth-promoting effects. Ralgro® is approved for all suckling calves, growing cattle and feedlot steers and heifers. Reimplantation is recommended after 90 to 100 days.

Synovex®. The product is available in three different implants. Synovex-H® is cleared for use in growing and finishing heifers over 400 pounds, and contains 200 mg of testosterone and 20 mg of estradiol. Synovex-S® is for steers over 400 pounds and contains 200 mg progesterone and 20 mg estradiol benzoate. A new implant, Synovex-C® has been released for implantation of suckling calves (both steers and heifers) weighing less than 400 pounds. Synovex-C® contains 100 mg progesterone and 10 mg of estradiol benzoate. The recommended reimplantation period for Synovex-H® and Synovex-S® is 90 to 100 days. It is not recommended to reimplant a suckling calf with Synovex-C. Progesterone, testosterone and estradiol are naturally occurring hormones that function directly or indirectly on other organs to stimulate growth.

Steer-oid®. Similar to Synovex-S®, Steer-oid® implants contain 200 mg progesterone and 20 mg estradiol benzoate.

A withdrawal time is not required for implants with the exception of Steer-oid® and Ralgro®. These implants have a 65-day withdrawal requirement before slaughter.

Implant Effectiveness

With the proper level of a growth stimulant, cattle will grow at a rate of 6 to 30 percent (usually 10) faster than a non-stimulated control. If the stimulation is removed, for a period of time the cattle will grow at a rate much slower than the control cattle. When steers are subjected to a continuously circulating level of

estrogenic activity representing one-half to two-thirds the biological potency as that hormone naturally produced by the estrus cow, the estrogen growth response is observed.

Common Implanting Errors

The proper location for Synovex® and Compu-dose® implants is under the skin in the middle third of the ear (Figures 1 and 2). Ralgro® should be implanted in the loose skin at the base of the ear. The following are common implanting errors:

1. The implant may be crushed by implanting at an improper location. This might cause adverse side effects and reduce the effective life of the implant.
2. Implant is deposited in the cartilage of the ear and not between the skin and cartilage. This reduces blood flow to the implant which reduces absorption.
3. Implant is deposited into the skin and the results are the same as implanting into the cartilage.
4. Implant is deposited in a blood vessel and absorption occurs too rapidly.

If implanted properly, side effects like raised tail heads and udder development will be avoided. The failure to realize an increased 15 to 25 pounds of weaned calf from a \$1 to \$2 implant investment occurs too often because of improper or hurried implantation.

Economic Benefits

Increase in weaning weights of 4 to 5 percent are common in implanted suckling calves versus non-implanted controls. Stocker cattle gaining 1 lb. per day or better, increase daily gains 10 to 14 percent after implantation. Feeder cattle have a 10 to 14 percent increase in gains when implanted, along with an 8 to 10 percent increase in feed efficiency.

General Guidelines

There are essentially three guidelines to follow when deciding whether or not to implant. First, implanting cattle gaining less than 3/4 to 1 lb. per day is generally of nominal benefit. The growth response to the implant is proportional to how well cattle are already gaining. The lower the rate of gain, the less

advantage gained from implanting. Second, animals destined for slaughter should be implanted as suckling calves (depending on range quality) with implants maintained until slaughter. Third, implants should not be given to males or females retained for breeding purposes.

A single Ralgro® or Synovex® implant given to suckling heifer calves may not affect future reproduction. Implantation at weaning and/or yearling ages may or may not alter fertility, but repeated implants from birth to puberty will probably decrease fertility in heifers. Compu-dose®, because of its long life, should not be given to replacement heifers. Studies from Kansas indicate a pronounced decrease in testicular size, semen quality and libido in bulls implanted from birth to 15 months with Ralgro®.

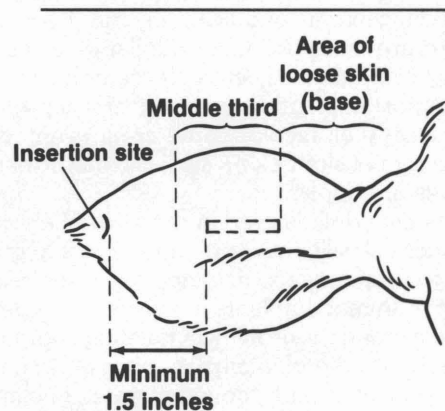


Figure 1. Proper position for suckling calves.

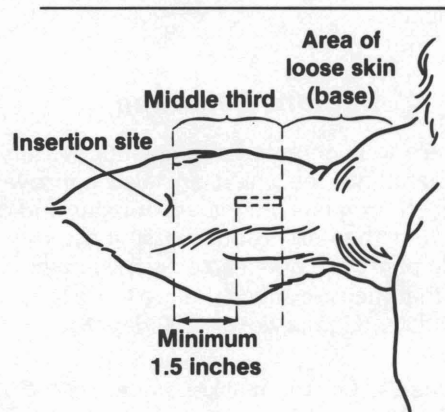


Figure 2. Proper position for weaned calves or larger.

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