



# MICHIGAN BEEF PRODUCTION

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## Implanting Cattle to Stimulate Growth

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### Introduction

Implants are small pellets deposited underneath the skin on the back side of the ear. This effect on performance is to stimulate average daily gain by 8 to 18% and improve feed efficiency by 6 to 10%. They accomplish this by means of slow absorption of the pellet(s) into the bloodstream over a period of 70 to 200 days. The pellets are composed of natural hormones or compounds which stimulate the release of growth-promoting hormones in the body.

In addition to the subcutaneous-implanted pellets mentioned above, there is also a vaginal insert for heifers. It is claimed that this device stimulates the release of growth-promoting hormones.

Use of drugs in food animals is under close scrutiny by the FDA (Food and Drug Administration). Regulations governing their use are changed from time to time. Before implanting any cattle, the producer should become thoroughly familiar with the most recent regulations. Manufacturer's directions should be closely adhered to. If drug residues are detected in the carcass, the cattleman involved is subject to penalties prescribed by law.

### Diethylstilbestrol (DES)

DES was banned by the FDA on July 6, 1979. Its use as a growth stimulant for livestock is no longer legal. However, the implants discussed below are as effective as DES.

### Synovex

Synovex is a combination of naturally occurring steroid hormones.

*Two Forms of Synovex:* (1) Synovex-S for steers contains 20 mg estradiol benzoate and 200 mg progesterone; (2) Synovex-H for heifers contains 20 mg estradiol benzoate and 200 mg testosterone.

*Expected Response:* 8 to 18% improvement in average daily gain; 6 to 10% improvement in feed efficiency.

*Life of the Implant:* 70 to 110 days, but the effective life may be only 90 days.

*Required Withdrawal Time:* No withdrawal time required.

*What About Re-Implanting:* Every 90 days is recommended.

*Dosage:* Dose is same for all cattle weighing 400 lb. or more (8 pellets). Synovex is not labelled for cattle under 400 lb.

*Location of the Implant:* Middle 1/3 of ear or no closer than 1 1/2 to 2 inches from the base. This is farther away from the base than Ralgro.

*Cost of Implanting:* About \$1 to \$1.10 per implant of 8 pellets. Cost of the implant gun varies from \$7 to \$14.

### Ralgro

Ralgro is the trade name given to zeranol, one of several compounds known as resorcyclic acid lactones or RAL's. Ralgro is a derivative of the basic compound, zeralanone, which is isolated from the mold, *Gibberella zeae*. Through a series of chemical steps, zeralanone is changed to zeranol or "Ralgro."

*Expected Response:* 8 to 18% improvement in average

daily gain; 6 to 10% improvement in feed efficiency.

*Life of the Implant:* 70 to 110 days, but the effective life may be only 90 days.

*Required Withdrawal Time:* Cattle must not be implanted within 65 days of slaughter.

*What About Re-Implanting?* Every 90 days is recommended.

*Dosage:* Ralgro is labelled for cattle of all ages, from birth to slaughter. Dosage is three 12-mg pellets for all ages (total of 36 mg).

*Location of the Implant:* Very close to the cartilaginous ring at the base of the ear and near the bottom side. It is important to keep the implant within 1 inch of the base.

*Cost of Implanting:* About 90 cents to \$1 per dose of three 12-mg pellets. Cost of the implant gun is about \$20 to \$25.

## Compudose

Compudose, a long-acting implant for growth promotion in steers, was approved by FDA on March 12, 1982. Effective life of the implant is about 200 days. Active ingredient is estradiol-17 $\beta$ , a naturally occurring steroid hormone in all mammalian species. The implant is constructed of silicone rubber impregnated with 24 mg of estradiol-17 $\beta$ . It is  $\frac{3}{16}$  inch in diameter and  $1\frac{1}{8}$  inch in length. Because of its flexible rubber construction, the implant cannot be crushed during administration.

*Expected Response:* 8 to 18% improvement in average daily gain; 6 to 10% improvement in feed efficiency.

*Life of the Implant:* 200 days.

*Required Withdrawal Time:* No withdrawal period required.

*Dosage:* Compudose is labelled for *steers* of all ages, from birth to slaughter. Dosage is one implant (24 mg) for all ages. Compudose is *not* labelled for heifers or bulls.

*Location of the Implant:* From middle  $\frac{1}{3}$  to base of the ear.

*Cost of Implanting:* About \$2.45 to \$2.80 per implant, plus initial cost of implanting gun, which is about \$10 to \$16.

## Other Considerations for Synovex, Ralgro and Compudose

**What About Implanting Breeding Cattle?** Don't do it. You run a risk of sterility or lowered fertility. Even though Ralgro was originally considered safe for heifers, recent research suggests that implanted

females, later selected as replacements, may not be as fertile as nonimplanted heifers. Although implanting suckling heifers once early in life appears to have little effect on fertility, Ralgro is not cleared for breeding stock and should not be used on potential replacements.

Research has shown that implanting bull calves reduces testicular size, sex drive and sperm production. This suggests that the fertility of implanted bulls can be impaired.

**Which Implants are Labelled for Suckling Calves?** Ralgro may be implanted at birth, whereas Synovex may not be used until calves weigh 400 lb., which essentially rules it out for suckling calves. Compudose may be used on suckling steer calves but not on suckling heifer calves.

**Which Implants May be Used on Feeder Heifers?** Ralgro may be used on heifers of all ages. Synovex-H is the form of Synovex for feedlot heifers; however, it should not be used on suckling heifer calves. Potential herd replacement heifers should not be implanted with either of these products. Compudose is labelled only for steers.

**What About Side Effects?** Some implanted cattle will occasionally show evidence of side effects such as riding, sunken loins, high tailheads and udder development. This is not apt to occur if proper implanting procedures are followed.

**Do Implants Influence Carcass Composition?** Implants tend to increase lean deposition, which means that implanted cattle may need to be slightly heavier to attain the same degree of marbling as nonimplanted cattle. However, the length of time on feed required to grade Choice would be about the same.

**Can Rumensin or Bovatec be Fed to Implanted Cattle?** Yes, in fact, there tends to be a beneficial additive effect from combining an implant with either of these feed additives.

**Can MGA be Fed to Implanted Heifers?** Yes, it is permissible. The two together, tend to have an additive effect on growth. Therefore, it is a recommended practice.

### Variation in Response Due to Age and Sex:

- (1) Steers versus heifers generally a slightly greater response in steers than in heifers.
- (2) Bulls: generally not as much response as in steers or heifers.
- (3) Age response:
  - a. Suckling calves — about 8%.
  - b. Growing cattle — about 15%.
  - c. Finishing cattle — about 10%.
  - d. Implanted calves will continue to respond to re-implanting through the suckling, growing and finishing phases.

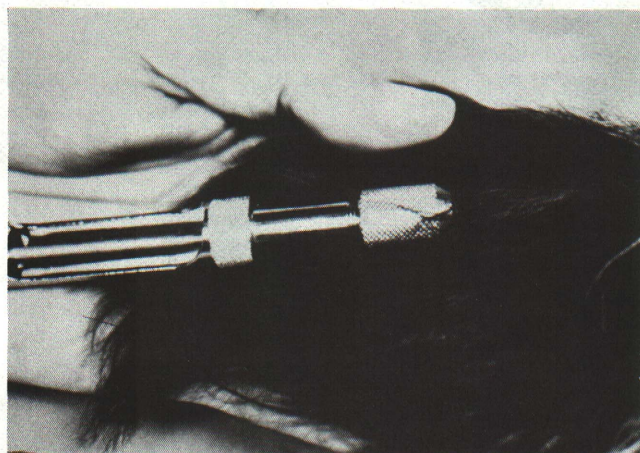


Figure 1. Synovex implanting gun with needle inserted under skin in middle third of the ear.



Figure 2. Cutaway view of ear showing Synovex needle withdrawn about 1/2 inch leaving space for pellets.



Figure 3. Cutaway view of ear showing withdrawal of Synovex needle, laying pellets in a straight line. This allows pellets to be deposited in path of needle, and avoids crushing them.

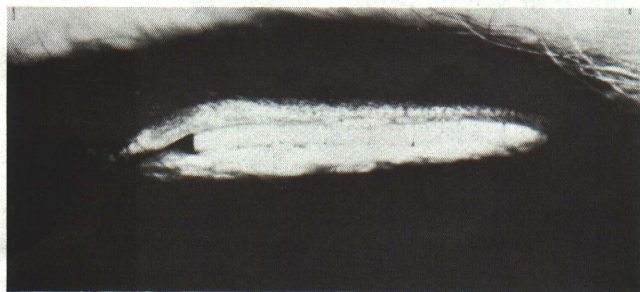


Figure 4. Cutaway view of Synovex implant site following withdrawal of needle.

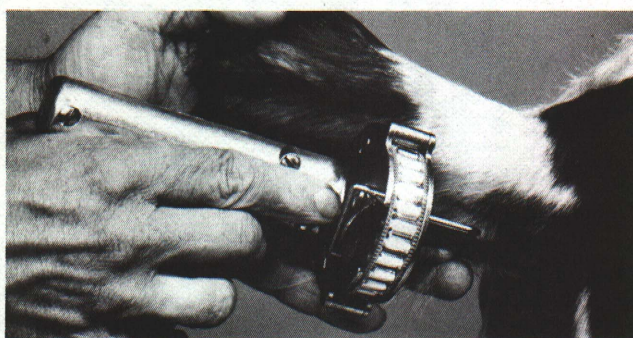


Figure 5. Inserting the tip of the Ralgro needle underneath the skin toward lower edge of ear.

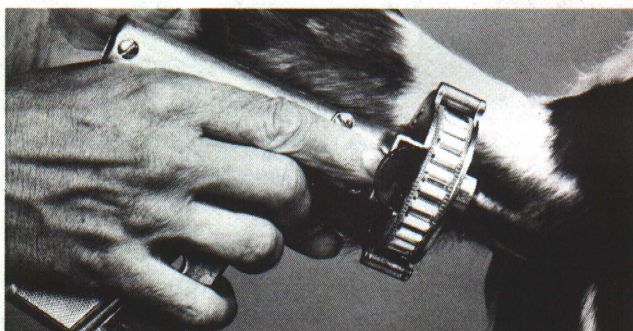


Figure 6. Ralgro needle inserted all the way under the skin. Ralgro pellets should be deposited within 1 inch of the cartilaginous ring at base of the ear.

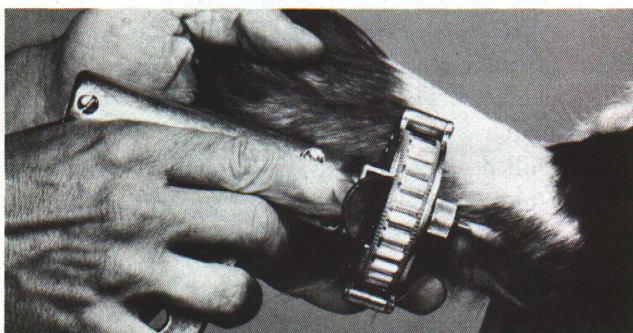


Figure 7. Before squeezing trigger of Ralgro gun, pull back about 3/8 inch to allow room for pellets, thereby preventing crushing.



Figure 8. This ear was clipped to illustrate proper Ralgro implant site. Note the hole where needle was initially inserted.

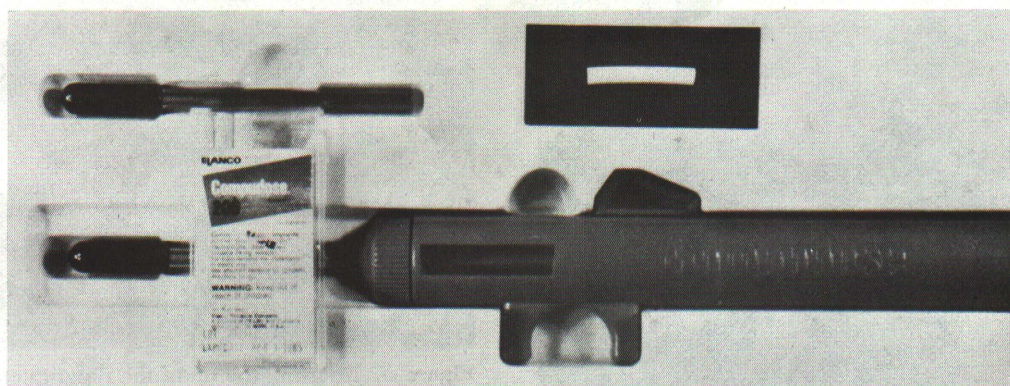


Figure 9. Photo of Compudose implanting gun with extra needle and box of implants. Insert above gun is photo of an implant pellet (roughly 1/2 scale).

**Importance of Implanting Technique.** In order to achieve maximum benefit from implants, your implanting technique should be reasonably precise. Here are some common mistakes:

- (1) Facility inadequate for proper animal restraint.
- (2) Implant placed too far away from the base of the ear: absorption is too slow.
- (3) Pellets are crushed due to failure to withdraw needle slightly to accommodate them: absorption is too rapid; side effects could be a problem.
- (4) Pellets are implanted into the cartilage: absorption is too slow.
- (5) Dirty needle: may cause abscesses, which wall off the pellet and prevent absorption; clean the needle each time with alcohol-soaked cotton or sponge.
- (6) Dull needle: skin is very difficult to penetrate.
- (7) Holding needle at too steep an angle: you risk jabbing the needle into, or even through, the cartilage.

As the needle is being withdrawn from the ear with one hand, use a thumb or finger on the opposite hand to feel for the implant to make certain it has been deposited.

**Importance of Re-Implanting Early.** According to research at Oklahoma, Synovex and Ralgro lose their

effectiveness after 90 days because blood hormone activity falls below the level needed to stimulate growth. After 110 days, there is very little blood hormone activity left from the implant. With this in mind, it is probably wise to re-implant no later than 90 days after the previous implant. For Compudose, implanting at 200-day intervals appears to be adequate.

### Hei-Gro

Hei-Gro is a nondrug vaginal insert for stimulating growth in feedlot heifers. It is constructed of food-grade nylon and is shaped somewhat like a Christmas tree. To insert the device, a tube is used to place it through the vulva and against the cervix.

The manufacturer claims that the Hei-Gro insert stimulates nerve signals which trigger the eventual release of estrogen from the sex glands, thereby promoting growth. Recent research at a university experiment station suggests there may be some problems with infection.

### Steer-oid

At the time of this writing, Steer-oid, a new implant for feedlot steers, is on the market. It contains 20 mg estradiol benzoate and 200 mg progesterone; there is no withdrawal requirement. Its composition is apparently similar to that of Synovex-S.

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