




# MICHIGAN BEEF PRODUCTION



Cooperative Extension Service  Michigan State University

## 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. Their effect on performance is to stimulate average daily gain by 8 to 15% 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 120 days. The pellets are composed of: (1) natural hormones, or (2) synthetic hormones, or (3) compounds which stimulate the release of growth-promoting hormones.

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 & Drug Administration). Regulations governing their use are changed from time to time. Before implanting any cattle, the producer should thoroughly familiarize himself with the most recent regulations. Moreover, the 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 is a synthetic hormone that has many of the physiological properties of the female hormone estrogen. In addition to the implant, DES may also be purchased as a feed additive and fed at the rate of 10 to 20 mg per head per day. Either form of DES is equally effective if used according to directions. Feeding and implanting together is of no additional benefit and increases the risk of carcass residues. Producers should be aware that DES is under close surveillance by the FDA and may be banned at any time.

*Expected Response:* 10 to 12% improvement in

average daily gain and feed efficiency in growing-finishing cattle.

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

*Required Withdrawal Time:* Cattle must not be implanted within 120 days of slaughter.

*What About Re-Implanting?* Should be done every 90 days but not within 120 days of slaughter, as mentioned above.

*Dosage:* Suckling calves, 200-400 lb—One 12-mg or one 15-mg pellet.

Feedlot cattle, over 400 lb—Three 12-mg or two 15-mg pellets.

*Location of the Implant:* For ideal absorption rate, the DES implant should be deposited 1½ to 2 inches from the base of the ear, which is slightly further from the base than Ralgro implants.

*Cost of Implanting:* DES is less expensive than other implants. Cost per 12- or 15-mg pellet is 10 cents to 15 cents. Cost of the implant gun is \$18 to \$24.

### 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:* Average response from Synovex may be slightly greater than either DES or Ralgro. However, the differences are usually not significant.

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

*Required Withdrawal Time:* Cattle must not be implanted within 60 days of slaughter.



*What About Re-Implanting?* Every 70 to 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 about the same site as DES but farther away from the base than Ralgro.

*Cost of Implanting:* 80 cents to \$1.00 per cartridge of 8 pellets. Cost of the implant gun is \$7.00 to \$8.00.

## Ralgro

Ralgro is the trade name given to zeranol, one of several compounds known as resorcylic 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:* Similar to the response from DES.

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

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

*What About Re-Implanting:* Every 70 to 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:* 1 inch from the base of the ear. This is closer to the base than the site for DES or Synovex.

*Cost of Implanting:* About 65 cents per dose of three 12-mg pellets. Cost of the implant gun varies from \$16 to \$24. There are two types of guns. The older type is similar to the DES gun that is fed with a bottle of pellets that fits on top of the barrel. The newer type is fed with a rotating drum containing 24 doses. Most people prefer the newer gun.

## Other Considerations for DES, Synovex and Ralgro

### What About Implanting Breeding Cattle?

Don't do it. You run a risk of sterility or lowered fertility. Even though Ralgro has generally been considered safe for heifers, recent research suggests that females implanted at birth and again at 3 months of age and later selected as replacements may not be as fertile as nonimplanted heifers. More research is needed to confirm this work.

Testicles on bulls implanted as calves are reported to be smaller than those on nonimplanted bulls. Sex drive and fertility also tend to be retarded. Moreover, there is

little or no increase in average daily gain of implanted bulls compared to that of nonimplanted bulls.

### Which Implants are Labelled for Suckling Calves?

Ralgro may be implanted at birth, whereas DES may not be used until calves are 200 lb. (about 3 months). Synovex may not be used until calves weigh 400 lb., which essentially rules it out for suckling calves.

### Which Implants May be Used on Feeder Heifers?

Ralgro may be used on heifers of all ages. DES should *not* be used on suckling heifers, but may be used on suckling steer calves. 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 any of these products, as noted previously.

### What About Side Effects?

Some implanted cattle will show evidence of side effects such as riding, sunken loins, high tailheads and udder development. In extreme cases, more serious side effects such as rectal and uterine prolapse may be occasionally observed. Side effects seem to be less pronounced with Ralgro and Synovex than with DES.

### Do Implants Influence Carcass Composition?

Additional research is probably needed to clarify this point. Nevertheless, 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.

### What About the Canadian Ban Against DES?

If you wish to make your cattle eligible for purchase by Canadian buyers, they *must not* receive DES in any form, nor can there be any DES on the premises. Three certificates are required in order to ship slaughter cattle to Canada. They are as follows:

(1) An owner certification form attesting to the fact that you do not use DES.

(2) An export seminar attendance form, verifying that you have received instruction regarding these regulations. It must be signed by a representative of the U.S.D.A., such as your county or regional Extension agent or state beef specialist. Contact your nearest Extension office for additional details.

(3) An official U.S. health certificate, prepared by your local veterinarian when he makes the health inspection of the cattle to be shipped. This is the same form that must accompany any cattle being sent to Canada.

The owner certification form and U.S. health certificate must accompany the cattle when they are shipped. The export seminar attendance form is completed only one time and should be placed in the producer's permanent files as a matter of record.



### **Can Rumensin be Fed to Implanted Cattle?**

Yes, in fact, there tends to be a beneficial additive effect from the combination.

### **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. Please note, however, that feeding MGA and Rumensin together is not legal.

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

- (1) Bulls: little or no response.
- (2) Steers versus heifers: generally a slightly greater response in steers than in 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.

### **Importance of Implanting Technique:**

In order to achieve maximum benefit from implants, your implanting technique must be reasonably precise. Common mistakes are as follows:

- (1) Implant placed too close to the base of the ear: in this case, the implant is absorbed too rapidly.
- (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 instead of between the skin and 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.

### **Withdrawal Time Differences May Influence Strategy**

Many commercial feedlots have adopted the strategy of implanting first with DES, which has the longest withdrawal requirement (120 days). As the cattle approach slaughter time, the last implant is usually Synovex or Ralgro, both of which have much shorter withdrawal periods (60 and 65 days, respectively).

### **Importance of Re-Implanting Early**

According to research at Oklahoma, most implants lose their effectiveness after 70 to 85 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.

## **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.

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