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by Glenn Selk, OSU Extension Cattle Reproduction Specialist

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Growth implants have not been widely used in heifer calves because of concern by herd managers about detrimental effects on subsequent reproductive performance of heifers kept as herd replacements. Currently, at this printing, implants with active ingredients of estradiol and progesterone, and zeranol have been given FDA approval for use on potential replacement heifer calves. Past reviews of this subject have been quite thorough and generally concluded that one implant given at or after the heifer is 2 months of age has very little impact on future reproductive performance (Hargrove, 1994 and Deutscher, 1994). Also these reviews have both concluded that implanted heifers have significantly greater pelvic area when measured at about one year of age, but these differences are indeed very small at the time the heifer is delivering her first calf at or about two years of age. Consequently, the data on dystocia rate indicates that implanted heifers have no less calving difficulty than do non-implanted counterparts.

The possible effect of implanting on breeding season pregnancy rates is still the major concern of ranchers deciding to implant heifer calves or leave them unimplanted. The following are tables reporting trials that examined the difference in pregnancy percentages of heifer calves implanted once at birth, once at calf-working time (approximately 2 months of age), once at weaning time, or multiple implants. Both the 36 mg zeranol implants and the 10 mg estradiol - 100 mg progesterone type implants are examined. The available data is clear that implanting at birth is detrimental to breeding season pregnancy rates.

Table 1. Summary of trials where heifer calves were implanted with Zeranol at birth

Number of trials	Average difference from non-implanted controls in pregnancy rates
3	-39% (Range -37% to -50%)

Therefore, producers must be encouraged to follow label instructions closely when implanting heifer calves after 30 days or 45 days of age depending on implant type. The average loss in percentage pregnant due to one implant (at calf-working time) is quite small (tables 2 and 3).

Table 2. Summary of trials where heifer calves were implanted once with Zeranol at 1 to 3 months of age.

Number of trials	Average difference from non-implanted controls in pregnancy rates
13	-0.8% (Range -11% to +19%)

Table 3. Summary of pregnancy rate of heifers implanted once at 1 to 3 months with Estradiol and Progesterone.

Number of trials	Average difference from non-implanted controls in pregnancy rates
10	-3.8% (Range -10% to +6%)

The tremendous variation in the trials is partly due to the relatively small numbers of heifers represented in some treatment groups. This summary of trials should not lead to any conclusions that one implant type is safer than another when given properly at 2 months of age. When heifers are implanted once at weaning time, the risk of reduced pregnancy rates is slightly greater. Most producers can identify potential replacements at this time. Therefore, the decision to implant stocker heifers being kept for gain and not implanting those kept for replacements seems obvious for most operations. The summary of trials in which heifers were implanted more than once indicate that the risk of reproductive loss increases as the number of multiple implants increase.

The information available for suckling steer calves and heifer calves not intended for replacements is clear that growth promoting implants are consistent in improving average daily gain from implanting to weaning. Other reviewers have stated that the decision to implant is much more important than the decision of which implant to use (Corah and Blanding, 1992). Average daily gain responses of approximately .1 pound per day can be expected with the zeranol and estradiol-progesterone implants in steer calves. Slightly greater responses may occur in heifer calves (.12 to .14 pound per day advantages). This agrees with other findings in which heifer calves tended to produce greater responses than steers (Mader, et al. 1994).

Potential replacement heifers that can be identified early in life (for example heifers in seedstock herds) should not be implanted. No advantage in puberty age or dystocia rate exist. Heifers that cannot be identified early in the suckling phase as a potential replacement can be implanted once at approximately 2 months of age with very little risk of reproductive impairment. Re-implanting of replacement heifers increases the risk of reduced pregnancy rates. Economic analyses of a simulated commercial cow herd indicates that little economic risk exists if all heifers are implanted once at calf working time. The risk increased if a very high replacement heifer rate

was used and ranch history of greater than 5% reduction in pregnancy rates due to implanting had been shown. Also it is important to remember that calves targeted for “all-natural” or “organic” markets cannot be implanted.

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