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Effect of single Ralgro® implant during the suckling period on reproductive performance of replacement heifers

Abstract

One hundred and seven spring-born, crossbred heifers were used to determine the effect of a single Ralgro® implant on their reproductive performance. Three implant treatments were used: 1) Non-implanted controls, 2) 36 mg Ralgro® at birth, or 3) 36 mg Ralgro® at 2 to 3 months of age. Heifers implanted at birth had significantly lower first service conception rates and overall pregnancy rates than non-implanted controls or those implanted at 2 to 3 months of age. Pelvic areas of yearling were increased by implanting at birth or 2 to 3 months of age. Age at puberty and the percentage of heifers cycling prior to the 22nd day of the 60-day breeding period were not influenced by treatment.

Keywords

Cattlemen's Day, 1986; Kansas Agricultural Experiment Station contribution; no. 86-320-S; Report of progress (Kansas State University. Agricultural Experiment Station and Cooperative Extension Service); 494; Beef; Ralgro® implant; Reproductive performance; Replacement heifers

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Effect of a Single Ralgro® Implant
During the Suckling Period on
Reproductive Performance of Replacement Heifers¹

T. B. Goehring, L. R. Corah,
and D. D. Simms

Summary

One hundred and seven spring-born, crossbred heifers were used to determine the effect of a single Ralgro® implant on their reproductive performance. Three implant treatments were used: 1) Non-implanted controls, 2) 36 mg Ralgro® at birth, or 3) 36 mg Ralgro® at 2 to 3 months of age.

Heifers implanted at birth had significantly lower first service conception rates and overall pregnancy rates than non-implanted controls or those implanted at 2 to 3 months of age. Pelvic areas of yearlings were increased by implanting at birth or 2 to 3 months of age. Age at puberty and the percentage of heifers cycling prior to the 22nd day of the 60-day breeding period were not influenced by treatment.

Introduction

Several studies have found that implanting with Ralgro® during the suckling period or at weaning does not reduce reproductive performance of replacement heifers bred as yearlings. However, implanting at birth appears to reduce conception and pregnancy rates. This study was designed to further evaluate the effect of Ralgro® implants on age of puberty, pelvic area, and breeding performance of replacement heifers.

Experimental Procedures

One hundred and seven spring-born, crossbred heifers were allotted at birth to three implant treatments: 1) control (no implant), 2) implanted at birth, or 3) implanted at 2 to 3 months of age. Following weaning, the heifers were allotted by implant treatment and weight to one of four levels of energy. Weight, frame, and pelvic measurements (Rice pelvimeter) were taken at the start and end of a 130-day feeding trial. To determine onset of puberty, heifers were checked visually twice daily for estrus activity. Heifers were artificially inseminated for a 60-day period, and subsequent pregnancy was confirmed by rectal palpation. Reproductive variables measured included first service conception rate, overall pregnancy rate, initial and final pelvic area, age at puberty, and the percentage of heifers cycling up to and including the first 21 days of the breeding period.

¹Appreciation is expressed to International Minerals and Chemical Company for providing Ralgro® (zeranol) implants and partial financial support.

Results and Discussion

Implanting heifers with 36 mg of Ralgro® at birth or 2 to 3 months of age increased adjusted 205-day weaning weight by an average of 19.5 lb over non-implanted controls (Table 20.1). The heifers averaged 471 lb at the beginning of the 130-day feeding phase and their average daily gain ranged from 1.12 to 1.74 lb during this phase. Average daily gain had no effect on first service conception rate. Implanting heifers at birth significantly lowered first service conception and overall pregnancy rates compared to controls and heifers implanted at 2 to 3 months of age (Table 20.1). This finding agrees with earlier research.

Onset of puberty was not influenced by implant treatment. Age at puberty and the percentage of heifers cycling up to and including the 21st day of the breeding period were not different among treatments (Table 20.1). Cycling activity was lower than expected in this study, with no obvious explanation. This study was conducted in 1983-84, which had a severe winter followed by a wet spring. This may have influenced cycling activity. Four control (7.4%), four birth-implanted (11.4%), and one suckling-implanted (5.6%) heifer did not show estrus during the study. Pelvic area at the start of the feeding trial was greater for heifers implanted at 2 to 3 months of age than for controls. At the end of the trial, pelvic area was greater for both implant groups than for controls (Table 20.1). This observation agrees with results of previous studies. This study indicates that implanting at birth does not affect onset of puberty, but does reduce first service conception and overall pregnancy rates, and, therefore, is strongly discouraged. In contrast, results of this and previous studies indicate that implanting heifers at 2 to 3 months of age does not lower fertility.

Table 20.1. Effect of Ralgro® on Heifer Reproductive Performance

Item	Control	Implanted at Birth	Implanted at 2 to 3 Months of Age
Number of Heifers	54	35	18
Adjusted 205 Day Wt., lb	418 ^{ae}	441 ^b	437 ^f
1st Service	58 ^e	39 ^{fc}	74 ^d
Conception Rate, %			
Overall Pregnancy Rate, %	78 ^d	48 ^c	79 ^d
Age at Puberty, Days	414	412	422
Cycling Activity, % ¹	64	62	77
Initial Pelvic Area, cm ²	130.6 ^c	132.9 ^d	137.7 ^d
Final Pelvic Area, cm ²	168.6 ^c	175.0 ^d	178.8 ^d

^{ab} Values in the same row not sharing the same superscript are significantly different (P<.01).

^{cd} Values in the same row not sharing the same superscript are significantly different (P<.05).

^{ef} Values in the same row not sharing the same superscript are significantly different (P<.01).

¹ Percentage of heifers cycling up to and including the first 21 days of the breeding period.