EFFECTS OF RALGRO ON GROWTH AND
REPRODUCTION OF BOS INDICUS X BOS
TAURUS CROSSBRED BEEF FEMALES

T. T. Marshall and D. D. Hargrove

SUMMARY

When postweaning gain was less than one pound per day, heifers implanted with Ralgro once preweaning showed delayed puberty when compared to nonimplanted heifers, but the pregnancy rates for the two groups after a 60 day breeding season were not significantly different. Under the same limited nutritional environment, heifers that were implanted once preweaning and once near weaning showed delayed puberty and a slightly lower pregnancy rate when compared to the nonimplanted heifers.

INTRODUCTION

Implanting nursing calves with Ralgro to increase weaning weight is used by many commercial cattlemen. Ralgro has proven to be an economically feasible management tool. Its reputation is such that some cattlemen routinely implant all calves at least once before weaning. Although Ralgro is not cleared for use in breeding animals, many heifer calves are implanted, and some of the implanted heifers are used in the breeding herd. Replacement heifer selection is usually done near weaning time. Therefore, it is impossible for the cattlemen to know which heifers should not be implanted prior to that time. Assuming a 20 pound increase in weaning weight from two implants, a conservative estimate, and $55/cwt heifers, an implanted heifer is worth about $11 more at weaning than a nonimplanted heifer. This economic advantage has prompted many cattlemen to assume the risk of detrimental effects of Ralgro on reproductive performance and maternal ability. Ralgro stimulates the animal's pituitary which results in increased skeletal and muscle growth. This may cause a hormonal imbalance and result in detrimental effects on the reproductive or mammary systems. Although several researchers have attempted to determine the effects of Ralgro on reproductive and maternal performance, the results have been variable.

The objectives of this study are to determine the effects of one and two Ralgro implants on weaning and growth traits and on postweaning development, reproduction and maternal performance of Bos indicus x Bos taurus crossbred females on a large commercial ranch in Florida. The project is not complete, but this progress report includes the results from Year 1.

MATERIALS AND METHODS

About 1800 heifers from each of the 1987 and 1988 calf crops, produced at Deseret Ranches of Florida, Inc., were used in this study. The heifers were either Braford- or Simbrah-sired out of commercial crossbred cows. Two-thirds of the heifers each year were implanted at an average age of about 2 months with Ralgro. A random half of the implanted heifers each year received a second Ralgro implant just before weaning. About half of the heifers from each of the three treatment groups were retained as herd replacements, and the others were sold at weaning. Postweaning nutritional management included the supplementation of blackstrap molasses ad libitum, and about one-half pound/day of cottonseed meal cubes, and annual cool season pasture, as well as perennial warm season grass pasture. All replacement heifers were exposed as yearlings to Angus bulls for 60 days.

Weight and scores for condition, frame, vulva size and teat development were obtained at weaning, about one year of age and the beginning and end of the breeding season. Additionally, pre- and postweaning gains were calculated, pelvic area was measured before and after the breeding season, puberty status was determined before and after the breeding season, and pregnancy status was determined 60 days after the breeding season. The following data were collected on the heifers calving as twyear-olds; calving date, calf birth weight and sex of calf. Calf weaning weight and condition score will be collected in July.

RESULTS AND DISCUSSION

One implant increased daily gain to weaning by .19 lb and weaning weight by 16.2 lb, and increased teat and vulva size at weaning (P<.01) (Table 1). Ralgro had no significant effect on condition score at weaning (Table 1). This positive effect on rate of gain has been well documented by previous researchers. High rainfall during much of the 150-day postweaning period caused poor pasture conditions and unexpected heifer growth results (Table 2). Implanted heifers gained at a slower rate from weaning to yearling than did the controls. The two implant heifers were lighter weight and in thinner condition than the control heifers (P<.01). Several researchers have theorized that the nutritional

<table>
<thead>
<tr>
<th>Ralgro Treatment</th>
<th>0</th>
<th>1</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADG, lbs</td>
<td>2.08</td>
<td>2.27</td>
<td>.0001</td>
</tr>
<tr>
<td>Weight, lbs</td>
<td>403.7</td>
<td>419.9</td>
<td>.0001</td>
</tr>
<tr>
<td>Frame score</td>
<td>2.3</td>
<td>2.4</td>
<td>.0022</td>
</tr>
<tr>
<td>Condition score</td>
<td>9.2</td>
<td>9.2</td>
<td>.7836</td>
</tr>
<tr>
<td>Teat score</td>
<td>2.7</td>
<td>3.3</td>
<td>.0001</td>
</tr>
<tr>
<td>Vulva score</td>
<td>2.5</td>
<td>3.0</td>
<td>.0001</td>
</tr>
</tbody>
</table>

Higher values for frame, condition, teat and vulva scores indicate larger frame size, fatter condition, longer teats and larger vulvas, respectively.

management of heifers may alter the effect of Ralgro on reproduction (Staigmiller et al., 1983; Johnson, 1984; Fontes, 1985). Staigmiller et al. (1983) suggested that heifers on a more restricted nutritional program are more likely to experience reduced conception rates when
implanted with Ralgro postweaning than heifers on a higher plan of nutrition. Deutscher et al. (1986) reported
a trend for implanted heifers on a high nutritional level to have an earlier puberty date, with a higher percentage
reaching puberty by the breeding season, and higher total conception rate than implanted heifers on a lower plane of
nutrition. In the present study, a higher percentage of the control heifers was cycling at the beginning of the breeding
season than the implanted heifers (Table 3). Heifers that were implanted twice were heavier and had a larger pelvic
area than control heifers at the beginning of the breeding season (P < .01). The heifers in the one implant group
were intermediate and significantly different from the other two groups in weight and pelvic area. Sprout et al.
(1979), Muncy et al. (1979), Fuller et al. (1980) and Fontes (1985) reported no significant effect of preweaning Ralgro
implants on reproduction. These results are supportive of those for the present study, in which the pregnancy rates
of the controls and one implant group were 58.6 and 55.2%, respectively. However, the heifers that received an
additional implant near weaning had an average pregnancy rate of 47.8% (Table 4), which was significantly lower than
the other groups (P < .09). Nelson et al. (1972), Corah (1980) and Turner and Raleigh (1984a) reported a
significant detrimental effect of Ralgro implants given near or after weaning on reproduction. Conversely, Ruttle
et al. (1981), Huang et al. (1984), Turner and Raleigh (1984b), Deutscher et al. (1986), and Cohen et al. (1987)
found no significant effect of postweaning Ralgro on reproduction. Close examination of postweaning gains in
each of these research trials provides additional support for the theorized interaction effect of zanol and
nutritional level. There appears to be a significantly negative effect on reproduction only when postweaning
gain is lower than one pound per day.

REFERENCES CITED

repeated implantation with zanolon from birth or weaning on


Deutscher, G. H., M. L. Zerfoss and D. C. Clanton. 1986. Time of
zanolon implantation on growth, reproduction and calving of beef

Fontes, C. A. 1985. Effects of creep feeding, zanolon and type on
Univ. of Florida, Gainesville.

Sci. 51(Suppl. 1):279.

Huang, J. C., J. S. Wu and S. L. Wu. 1984. The effects of zanolon on
body weight gain and subsequent reproductive performance in beef heifers.
Taiwan Livestock Res. 17(1):25.


Influence of growth stimulants on reproductive performance of

| TABLE 3. EFFECT OF RALGRO ON TRAITS MEASURED AT THE
| BEGINNING OF THE BREEDING SEASON. |
|-----------------------------------|--------|--------|--------|-------|
| Ralgro Treatment                  | 0      | 1      | 2      | P value |
| % Cycling                         | 11.7a  | 3.7b   | 2.6b   | .0003  |
| Pelvic area in2                   | 22.9a  | 23.7b  | 24.5c  | .0001  |
| Weight, lbs                       | 506.6a | 517.6b | 528.5c | .0001  |
| Frame score                       | 2.6    | 2.6    | 2.7    | .1251  |
| Condition score                  | 7.2a   | 7.9b   | 7.9b   | .0107  |
| Test score                        | 3.0a   | 3.1a   | 3.3b   | .0001  |
| Vulva score                       | 2.9    | 3.0    | 3.1    | .0506  |

a,b,c Means with different letters differ at reported P value.

| TABLE 4. EFFECT OF RALGRO OR TRAITS MEASURED 60 DAYS
| AFTER END OF BREEDING SEASON. |
|-------------------------------|--------|--------|--------|-------|
| Ralgro Treatment              | 0      | 1      | 2      | P value |
| Pregnancy, %                  | 58.6a  | 55.2a  | 47.8b  | .0825  |
| Pelvic area in2                | 25.9   | 25.1   | 26.4   | .6466  |
| Weight, lbs                    | 694.8a | 705.4ab| 711.8b | .0057  |
| Frame score                    | 2.7    | 2.7    | 2.6    | .5380  |
| Condition score                | 8.8    | 9.0    | 9.2    | .3132  |
| Test score                     | 2.9    | 2.9    | 2.9    | .6479  |
| Vulva score                    | 2.7    | 2.8    | 2.7    | .8360  |

a,b,c Means with different letters differ at reported P value.

DES and RAL on reproduction of heifers. J. Anim. Sci. 35:250
(Abstr).

Ruttle, J. L., J. D. Wallace, M. Oriolo, E. E. Parker, G. M. Southward
and A. B. Nelson. 1981. Effect of growth stimulants on
reproduction and skeletal measurements in beef heifers. New

Effect of implanting suckling heifer calves with Ralgro orDES on

Staitmiller, R. B., R. A. Bellows and R. E. Short. 1983. Growth and
reproductive traits in beef heifers implanted with zanolon. J. Anim.
Sci. 57:527.

menestin on reproductive performance of spring-born replacement

Turner, H. A. and R. J. Raleigh. 1984b. The effect of zanolon and
menestin administered at or near puberty on reproductive

T. T. Marshall, Assistant Professor, Department of Animal Science; D.
D. Hargrove, Professor, Department of Animal Science, University of Florida.