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S.B. Laudert

Gerry L. Kuhl

A.J. Edwards

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Grazing and feedlot performance of heifers spayed by two methods

Abstract
Two field trials were conducted to compare the pasture and finishing performance of heifers spayed by the Kimberling-Rupp(K-R) technique or by flank spaying plus autografting a piece of ovarian tissue into the rumen wall (FS+A). In trial 1, neither spaying method resulted in gains of grazing heifers different from that of intake controls; however, FS+A heifers gained 5.1% faster than K-R spayed heifers. In trial 2, grazing gains of heifers spayed by the two techniques were similar. During the finishing phase, no performance difference was found among intact, K-R, or FS+A heifers in trial 1 or between K-R and FS+A heifers in trial 2.

Keywords
Cattlemen's Day, 1987; Kansas Agricultural Experiment Station contribution; no. 87-309-S; Report of progress (Kansas State University. Agricultural Experiment Station and Cooperative Extension Service); 514; Beef; Performance; Heifers; Spayed

Grazing and Feedlot Performance[1] of Heifers Spayed by Two Methods

Scott B. Laudert[2], Gerry L. Kuhl, and Alvin J. Edwards[3]

Summary

Two field trials were conducted to compare the pasture and finishing performance of heifers spayed by the Kimberling-Rupp (K-R) technique or by flank spaying plus autografting a piece of ovarian tissue into the rumen wall (FS+A). In trial 1, neither spaying method resulted in gains of grazing heifers different from that of intact controls; however, FS+A heifers gained 5.1% faster than K-R spayed heifers. In trial 2, grazing gains of heifers spayed by the two techniques were similar. During the finishing phase, no performance difference was found among intact, K-R, or FS+A heifers in trial 1 or between K-R and FS+A heifers in trial 2.

Introduction

The incidence of pregnancy in heifers entering commercial feedyards in the United States has been estimated to exceed 15% annually. Loss of performance and increased costs associated with pregnant feedlot heifers has stimulated interest and research in the area of ovariectomizing grazing heifers. This interest lead to the development of a spaying technique known as the Kimberling-Rupp (K-R) method by Dr. Cleon Kimberling and Dr. Gary Rupp of Colorado State University. This method involves the use of a stainless steel cylindrical instrument inserted through the vaginal wall into the peritoneal cavity to allow removal of the heifer's ovaries. Research comparing the K-R method with the conventional flank spaying method suggests that heifers undergo less stress and that performance is slightly improved. Moreover, the K-R technique is relatively fast, with less likelihood of infection, and hide damage from flank incision is eliminated.

More recently, other spaying techniques have been developed. The flank spay plus rumen-ovarian autograft (FS+A) technique developed in North Dakota received extensive media coverage when it was reported that heifers spayed with this technique performed better than steers. The FS+A technique involves flank spaying the heifer in the conventional manner and then implanting or grafting a small piece of ovarian tissue into the lining of the rumen wall. The theory behind this technique is that the ovarian tissue will be nourished by the extensive blood supply

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[2]Extension Livestock Specialist, Southwest Kansas.

[3]Feedlot Specialist, College of Veterinary Medicine.

in the ruminal wall, allowing it to grow and produce naturally occurring female hormones similar to those in intact heifers. These trials were conducted to compare the pasture and subsequent feedlot performance of heifers spayed with the FS+A and K-R techniques.

Experimental Procedures

Trial 1. Four hundred and eight-one mixed breed heifers averaging 431 lbs were individually weighed and randomly allotted by breed type and origin to three spaying treatments: intact controls, K-R, or FS+A. All heifers were implanted with Ralgro® at processing. The heifers grazed a common native pasture in Clark County for 169 days. At the end of the grazing season, the heifers were hauled approximately 110 miles to a commercial feedyard and individually weighed. All heifers in the control and K-R groups, and one half of the heifers in the FS+A group were implanted with Synovex-H, while the other half of the FS+A heifers were implanted with Synovex-S. All heifers were further processed according to standard feedyard operating procedures. Each treatment group was fed in a separate pen for 125 days, then pen weighed prior to slaughter. Heifers in all pens were fed and managed similarly according to standard feedyard procedures. The grazing phase results were statistically evaluated by Analysis of Covariance to remove effects of initial body weight variation.

Trial 2. One hundred and fifty-six mixed breed heifers averaging 378 lbs were individually weighed and randomly allotted by breed type in an incomplete block design to two spaying treatments (K-R and FS+A) and three implant treatments (Ralgro®, Synovex-H®, and Synovex-S®) at the beginning of the grazing phase. The incomplete design did not include K-R spayed heifers implanted with Ralgro. All heifers then grazed for 156 days in the same pasture as the heifers in trial 1. At the end of the grazing season, heifers were hauled approximately 110 miles to a commercial feedyard and individually weighed. All heifers were fed in the same pen and managed similarly. Following a 143-day feeding period, the heifers were slaughtered. Carcass weight divided by the average dressing percentage (64.0%) of the heifers was used to estimate individual live slaughter weight. All data were evaluated by Analysis of Covariance to remove effects of initial weight variation.

Results and Discussion

Trial 1. Heifer grazing performance is presented in Table 23.1. Neither spaying method resulted in heifer gains different from that of the intact controls. However, the FS+A heifers gained 5.1% faster ($P<.05$) than the K-R spayed heifers. Feedlot performance of the heifers is shown in Table 23.2. These data are based on final group (pen) weights and, therefore, could not be statistically evaluated. However, there do not appear to be any material performance differences among the treatment groups.

Trial 2. Heifer grazing and feedlot performance are presented in Tables 23.3 and 23.4, respectively. There was no significant interaction ($P>.5$) between the spaying and implant treatments in either the grazing or feedlot phases, so the data were pooled. No differences in heifer gains were found between the two spaying techniques in either the grazing or feedlot phases. Results of the implant comparisons can be found in a companion paper on page 80 of this publication.

Table 23.1. Grazing Performance of Spayed Heifers, Trial 1

Item	Intact	Kimberling-Rupp	Flank Spay + Autograft
No. Heifers	65	133	283
Initial Wt., lb	446	436	426
Final Wt., lb	683	667	671
Daily Gain, lb	1.41[ab]	1.36[b]	1.43[a]

[ab]Means not sharing a common superscript are different (P<.05).

Table 23.2. Feedlot Performance of Spayed Heifers Implanted with Synovex-H or Synovex-S, Trial 1

Item	Synovex-H			Synovex-S
	Intact	K-R	FS+A	FS+A
No. Heifers	63	132	138	132
Initial Wt., lb	676	661	669	667
Final Wt., lb	1045	1036	1041	1045
Daily Gain, lb	2.95	3.00	2.98	3.02
Daily Feed (as fed), lb	27.90	27.23	27.61	27.29
Feed/Gain	9.46	9.08	9.27	9.04

Table 23.3. Grazing Performance of Spayed Heifers, Trial 2

Item	Kimberling-Rupp	Flank Spay + Autograft
No. Heifers	64	73
Initial Wt., lb	391	367
Final Wt., lb	602	581
Daily Gain, lb	1.35	1.37

Table 23.4. Feedlot Performance of Spayed Heifers, Trial 2

Item	Kimberling-Rupp	Flank Spay + Autograft
No. Heifers	61	95
Initial Wt., lb	603	584
Final Wt., lb	991	968
Daily Gain, lb	2.71	2.69