

LOW INPUT FEEDING REGIME FOR DEVELOPMENT OF FALL-BORN REPLACEMENT HEIFERS

Richard R. Evans¹, Lora R. Ballweber², Randy D. Little³, Terry J. Engelken², Roscoe L. Ivy¹, Timothy F. Best¹ and John E. Huston¹

¹Prairie Research Unit, North Mississippi Research & Ext. Center, Mississippi State University, Prairie, MS 39756

²College of Veterinary Medicine, Mississippi State University, Mississippi State University, MS 39762

³Dept. of Agricultural Economics, Mississippi State University, Mississippi State, MS 39762

ABSTRACT: Developing replacement heifers is an expensive part of the beef cattle enterprise. Producers are looking for systems that minimize inputs and labor while still providing sufficient nutrition to developing heifers to insure that they are large enough and mature enough to breed at 14-15 months of age. In this study three feeding regimes were evaluated. In 2001, average daily gains (ADG) for heifers consuming a 14% protein commercial ration were 1.38 lb/h/d, a soybean hull ration, 1.33 lb/h/d and 0.94 lb/h/d for whole shell corn, when all three rations were fed at 8.0 lb/h/d for 132 days. Supplement costs per day for the above-mentioned rations were \$ 0.64/day for the commercial heifer developer \$0.32 for soybean hulls and \$0.32 for corn. Supplement cost per pound of animal gain were \$0.48; \$0.24; and \$0.34, respectively.

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MATERIALS AND METHODS: In July 2001, sixty weaned, fall born crossbred heifers averaging approximately 525 pounds were divided into six groups of ten heifers each and assigned to 12 acre pastures. Two groups were randomly assigned to a soybean hull diet, two groups to a 14% commercial heifer developer ration and two groups to a whole-shelled corn diet.

At trial initiation, heifers were weighed on two consecutive days. Weights were taken at twenty-eight (28) day intervals thereafter until trial termination at day 132. Heifers were weighed twice at trial termination. To make association with humans a pleasant experience, heifers were hand fed in troughs three times per week. Heifers were given a two-day supply of feed on Monday and Wednesday and a three-day supply on Friday. They were fed to consume approximately 1.5% of initial body weight per day or 8.0 pounds of feed/day. Heifers were rotated to different pastures at each weigh period so that all groups rotated through the pastures during the study. The time it took to hand feed was collected to determine the total efficiency for each feeding regime. At trial termination, blood was drawn to measure blood progesterone levels to determine which heifers had reached puberty. Heifers were randomly assigned to one of two estrus synchronization regimes and timed bred artificially, 80 hours after a prostaglandin injection. Ten days after the timed insemination, all the heifers were exposed to a cleanup bull for 45 days.

RESULTS AND DISCUSSION: At trial termination, the average final weights for each group were 704.5 pounds for the commercial mixed ration, 700.0 for the soybean hulls and 647.8 for the corn ration. The total gains for the soyhulls and the commercial heifer developer were almost identical 176.0 (1.33 ADG) pounds for soybean hulls, 182.5 (1.38 ADG) pounds for the commercial ration and 124.3 (0.94 ADG) for the corn group. Although the gains for the soyhulls and the commercial ration were not different, the costs of gain were quite different. The supplement cost for soybean hulls was \$0.24/pound of gain, \$0.48/pound of gain for the commercial ration. The supplement cost of gain for corn was very near that of soybean hulls at \$0.34 but the ADG for the heifers was too low for corn alone to be a viable feed supplement for replacement heifers. Corn alone supplies sufficient energy for growth but does not supply adequate protein. The crude protein level for local corn test 7% or lower and this is inadequate for growing heifers even on good quality forages.

The ADG for heifer in 2001 compares very favorably with the gains seen in 2000. Direct comparisons are soybean hulls, 1.24 in 2000 and 1.33 in 2001 and the commercial mixed feed, 1.21 vs 1.38. In 2001, corn replaced the energy-

protein self-feeding tub used in 2000. The tub is designed to be a forage supplement but the drought of 2000 retarded forage growth to such an extent, that hay served as the heifer's roughage source. Gains for the tub were not representative at 0.52 lb/day. Although forage was adequate to abundant in 2001, when corn was provided as the only supplement, it proved to be an inadequate supplementation for growing replacement heifers with an ADG of 0.94 lb/day. This experiment once again highlights the need for a balanced diet.

Blood was drawn on December 5, 2001 to measure blood progesterone levels to determine if any of the diets influenced heifers reaching puberty and cycling. The results from this collection will not be available until the spring of 2002. Pregnancy rates to the timed A. I. and natural breeding will be determined for heifers in the spring of 2002. It will then be determined if pregnancy rate was influenced by either feeding regime or synchronization protocol.