Integration of Pasturing Systems for Cattle Finishing Programs—A Progress Report

T. M. Delehant
Iowa State University

M. P. Hoffman
Iowa State University

G. R. Dahlke
Iowa State University

H. Koknaroglu
Iowa State University

Follow this and additional works at: http://lib.dr.iastate.edu/beefreports_1997

Part of the Animal Sciences Commons

Recommended Citation
http://lib.dr.iastate.edu/beefreports_1997/26

This report is brought to you for free and open access by the Animal Science Research Reports at Iowa State University Digital Repository. It has been accepted for inclusion in Beef Research Report, 1997 by an authorized administrator of Iowa State University Digital Repository. For more information, please contact digirep@iastate.edu.
Integration of Pasturing Systems for Cattle Finishing Programs—A Progress Report

Abstract
This progress report is an introduction to a study to evaluate the incorporation of rotational pasturing systems into cattle finishing programs. Because the first year is still in progress and the first trial is not complete, few data are available. However, there is a suggestion that feeding an ionophore to young calves on pasture may result in improved daily gains.

Keywords
ASL R1459

Disciplines
Animal Sciences

This forage utilization is available at Iowa State University Digital Repository: http://lib.dr.iastate.edu/beefreports_1997/26
Integration of Pasturing Systems for Cattle Finishing Programs -- A Progress Report

A.S. Leaflet R1459

T. M. Delehant, graduate assistant
M. P. Hoffman, professor of animal science
G.R. Dahlke, graduate assistant
H. Koknaroglu, graduate student

Summary
This progress report is an introduction to a study to evaluate the incorporation of rotational pasturing systems into cattle finishing programs. Because the first year is still in progress and the first trial is not complete, few data are available. However, there is a suggestion that feeding an ionophore to young calves on pasture may result in improved daily gains.

Introduction
In this report a system of finishing beef cattle utilizing a rotational grazing system in conjunction with a conventional feedlot is presented. The pasture exists on land classified as highly erodible, making soil conservation, as well as input cost reduction, an important consideration.

Materials and Methods
This study was begun May, 1995 at the Western Iowa Research and Demonstration Farm at Castana, Iowa, with the establishment of a smooth bromegrass pasture. The purpose of the study was to examine the feasibility of using a pasturing system prior to placing cattle in the feedlot as a means of improving land usage and the overall economics of beef production. Eighty-four fall-born calves purchased from the Stuart Ranch near Caddo, OK, were used in the initial phase of this study. The calves were given their booster shots at the ranch and injected with Ivomec™ plus Flukocide. They arrived at the research farm on April 17, 1996, after 12 hours of transport. The calves were placed directly into the feedlot (seven head per pen) and fed the finishing diet for the duration of the feeding period.

The final two treatments involved placing 28 spring-born calves, from the same source and processed in the same manner as the fall born calves, on the cool season grass pasture October 1, 1996, and moving them to the feedlot October 22, 1996, to be fed the finishing diet the remainder of the trial. The third 28 head of steers were placed directly into the feedlot (seven head per pen) and fed the finishing diet for the duration of the feeding period.

On pasture, those cattle receiving ionophore grazed together as a group (14 to 28 steers), and those not receiving ionophore grazed together as a separate group. Each grazing group had access to one paddock at a time, approximately 1.7 acres each. There were 16 paddocks each separated by two strands of electrified steel cable attached to metal “T” posts. Including cattle lanes, which were grazed as needed, the total pasture available was 29.85 acres. Cattle were moved on the basis of forage availability. Initially, the cattle were not capable of consuming adequate forage to match the
growth of the forage in all the paddocks and they were moved every three or four days to a new paddock. Three paddocks were harvested as grass hay during the second week of June. Because the grass grew at a slower rate later in the season and the cattle were able to consume more forage per day, they were moved every two days to a different paddock. Nitrogen fertilizer was added to the pasture in two applications; the first 100 lb per acre of nitrogen was applied in late April and an additional 80 lb per acre was applied in mid-August.

Estimates of available forage live dry matter were recorded with the aid of a sward stick device (Russell, 1992). Measures of sward height were recorded before and after cattle were allowed to graze each paddock. The height of the forage was related to available live dry matter by sampling several sites selected at random in the pasture throughout the grazing period. First, forage height was determined with the sward stick. Then a one square foot area directly under the sward stick was clipped to within 8 cm of the ground (Baker et al., 1985), separated into live and dead material, and weighed. All samples of pasture obtained on a particular day were combined, mixed thoroughly, and sub-sampled three times for dry matter determination. Live dry matter per acre was a product of: live forage sample wt (lb) x dry matter percentage x 43,560 sq ft. per acre.

Control feedlot steers were housed in pens with concrete floors and a shelter at the north end. Steers were fed in fence-line concrete bunks and steers had access to automatic waterers. Feed allotments were determined daily prior to the morning feeding. Feed samples were collected twice per week for dry matter determination. Alfalfa hay samples were collected weekly for determination of neutral detergent fiber (NDF) and acid detergent fiber (ADF) content (Goering and Van Soest, 1970; Van Soest et al., 1991).

Steers were weighed individually every 28 days during the trial. Average daily gain and feed conversion will be determined by adjusting each steer's final live weight to a constant dressing percentage of 61.5%. When pens of cattle reach about 1,200 lb average live weight they will be processed at IBP in Denison, IA. After a 24-hour chill, 12th rib fat thickness and ribeye area will be measured on the left half of each carcass. Carcass grades will be recorded as determined by the USDA Meat Grading Service personnel.

Statistical Analyses
The experimental unit is a group of seven steers. There are seven treatment combinations, six with two replications and one with four replications. The analysis will take the form of a one-way analysis of variance with six degrees-of-freedom for treatments and 13 degrees-of-freedom for units within treatments (experimental error).

Results and Discussion
Feedlot daily gains for control cattle through October 22, 1996, averaged 2.92 lb (Table 1). Cattle either fed ionophore or not fed ionophore on pasture and then moved to the feedlot July 30, 1996, had similar combined weight gains of 2.27 lb. The cattle grazed from May 7 to October 22 show an advantage for the ionophore supplemented cattle (1.88 vs 1.73 lb per day). The spring born calves, provided pasture for three weeks, displayed an advantage for the ionophore fed cattle (1.96 vs 1.31 lb per day).
Table 1. Average daily gains of cattle both in feedlot and on pasture - trial one.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Pasture Gain (lb per day)</th>
<th>Feedlot Gain (lb per day)</th>
<th>Gain through Oct. 22, 1996 (lb per day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall born calves</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct to feedlot</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To feedlot July 30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ionophore</td>
<td>1.81</td>
<td>2.74</td>
<td>2.27</td>
</tr>
<tr>
<td>No ionophore</td>
<td>1.77</td>
<td>2.76</td>
<td>2.27</td>
</tr>
<tr>
<td>To feedlot Oct. 22</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ionophore</td>
<td>1.88</td>
<td></td>
<td>1.88</td>
</tr>
<tr>
<td>No ionophore</td>
<td>1.73</td>
<td></td>
<td>1.73</td>
</tr>
<tr>
<td>Spring born calves</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To feedlot Oct. 22</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ionophore</td>
<td>1.96</td>
<td></td>
<td>1.96</td>
</tr>
<tr>
<td>No ionophore</td>
<td>1.31</td>
<td></td>
<td>1.31</td>
</tr>
</tbody>
</table>

Implications
Very preliminary observations suggest a gain advantage associated with feeding ionophore to calves consuming cool-season grass pastures.

References


Acknowledgments
We would like to thank the staff at the Western Iowa Research and Demonstration Farm for their assistance in conducting and collecting data during this study. We also would like to thank Mr. Al Nelson and the Sweetlix Division of PM Ag Products Inc. in Atlantic, IA for providing the supplements for the pasture treatments.