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Cows in the Corn Grazing Project

Abstract

Corn is the most productive grass grown in Iowa with dry matter yields often exceeding 6 t/a. Harvesting corn by grazing can provide abundant pasture in mid- to late-summer when pastures in southern Iowa normally make little growth. This approach eliminates harvesting, drying, storage, and transportation costs associated with marketing the grain and leaves almost all of the surplus or waste nutrients in the field. Objectives of this project were to measure animal performance when standing corn crop was the sole feed source for pregnant dairy heifers and to increase our understanding of the management practices necessary to optimize the use of this feed source.

Keywords

Animal Science

Disciplines

Agricultural Science | Agriculture | Animal Sciences

Cows in the Corn Grazing Project

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Introduction

Corn is the most productive grass grown in Iowa with dry matter yields often exceeding 6 t/a. Harvesting corn by grazing can provide abundant pasture in mid- to late-summer when pastures in southern Iowa normally make little growth. This approach eliminates harvesting, drying, storage, and transportation costs associated with marketing the grain and leaves almost all of the surplus or waste nutrients in the field. Objectives of this project were to measure animal performance when standing corn crop was the sole feed source for pregnant dairy heifers and to increase our understanding of the management practices necessary to optimize the use of this feed source.

Materials and Methods

Eleven pregnant dairy heifers (3 Ayrshire, 2 Brown Swiss, 4 Holstein, 1 Jersey, and 1 Milking Shorthorn) were given the opportunity to graze approximately 2 acres of standing corn, which was in the dough stage, beginning on August 18, 2000. Electric fencing was used to limit the amount of corn available for grazing on any given day and was moved every 3-4 days to give the heifers access to fresh corn. Initially, 2 rows were knocked down to avoid corn plants coming in contact with the electric fence and shorting it out. As the maturity of the corn increased, stalk lodging became a problem, and it was necessary to increase this to 3 and later to 4 rows. Additionally, the heifers had access to a small (approximately 1 acre) grass paddock with shade and water located adjacent to the corn. Although a free-choice mineral mixture was continuously available, no other feed was fed to the heifers that were allowed to graze the

standing corn; however, a concentrate supplement was provided to heifers grazing grass. Four heifers were removed from the project on September 13, 2000, due to advanced stages of pregnancy. The remaining heifers continued grazing standing corn until October 11, 2000. The heifers were weighed on August 16, September 13 and October 11, using a portable scale and were measured for height at withers using a measurement stick attached to the inside of the scale chute. At the same time, body condition scores (BCS) were obtained by visual appraisal using a scale of 1 to 5, where 1 represented a severely emaciated animal and 5 an extremely obese animal. This group of heifers is referred to by the term "cows in the corn."

For comparison, body weights, height, and BCS were also collected at the same times on 19 younger, open dairy heifers (1 Ayrshire, 2 Brown Swiss, 3 Guernsey, 8 Holstein, 3 Jersey, and 2 Milking Shorthorn). Fifteen of these heifers began grazing grass-dominant pasture on August 3, 2000, and 4 more were added August 16. Their grazed forage diet was supplemented with 3 lb/day of a concentrate mixture containing % TDN and % crude protein. This group is referred to by the term "grass."

Results and Discussion

Average body weight of the pregnant heifers used in the corn grazing project was 968 lb (range of 694 to 1264 lb) at the start of the corn grazing period. On the average, the dairy heifers had access to the standing corn for 40.8 days. Initial and final body measurements are given in Table 1. Similar data are included in the table for the open dairy heifers who were on grass pastures, with supplementation, during the time the corn grazing project was conducted, and for all dairy heifers that were utilized at the Neely-

Kinyon Research Farm during the 2000 grazing season (all projects combined).

On the average, heifers gained 2.38 lb/d while grazing corn (Table 1). All animals except one, which developed a sole abscess on one foot, gained body weight during the trial. The ADGs ranged from -1.02 lb to +4.32 lb. This gain is larger than the 1.34 lb/day gain for open heifers grazing grass and the overall 2.11 average daily gain (ADG) that was obtained on all heifers grazing (includes both grass with supplementation and the standing corn) at the Neely-Kinyon Research Farm during this pasture season. The overall ADG is greater than the 1.91 lb obtained in 1999 with 13 beef cows that had just weaned their calves. Interestingly, the heifers that had been grazing grass at Greenfield prior to being given access to the standing corn, gained more rapidly (3.59 vs 1.49 ADG) than the heifers that had been fed in a dry-lot environment in Ames prior to the start of the trial. A re-analysis of the data after deleting

the heifer with the sore foot did not change this conclusion.

Heifers grazing the corn grew well as evidenced by their average gain of 1.68" in wither height and 0.21 improvement in BCS. Again, there was a large difference in frame growth, with the heifers from Ames growing more (2.08") than the older heifers that had been at Greenfield prior to the start of the project. Some of these differences in body weight gain and frame growth might be attributed to using different scales and having different people making the measurements in Ames and in Greenfield.

The ADGs obtained when the heifers were grazing the corn are greater than the 1.8 lb target ADG for dairy heifers. Thus, it is important to monitor animal growth and performance and limit the amount of corn the animals have access to. In addition, as the corn advances in maturity and the dry matter percentage of the plant increases, the heifers may need additional grazing opportunities.

Table 1. Growth and performance of dairy heifers grazing corn or grass.

	"Cows in the Corn"	"New"	"Old"	"Grass"	"All Summer"
Number	11	6	5	14	60
Avg. age on 8/20/00, months	20.5	20.1	20.9	11.8	---
Initial body weight, lb	968.0	957.0	981.2	585.6	880.8
Initial height, in.	52.0	50.8	53.6	45.6	50.7
Initial BCS	4.4	4.3	4.5	3.9	4.0
Final body weight, lb	1096.4	1042.0	1162.0	671.1	963.5
Final height, in.	53.7	52.8	54.8	48.9	52.5
Final BCS	4.6	4.5	4.7	4.0	4.2
Days on pasture	40.8	37.0	45.4	63.6	67.7
ADG, lb	2.38	1.49	3.59	1.34	2.11
Height gain, in.	1.68	2.08	1.20	3.29	1.90
BCS gain	0.21	0.17	0.26	0.07	0.23