

Intensive Rotational Grazing of Steers at the Andrew Jackson Demonstration Farm

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Tony Harvey, extension beef/dairy field specialist
Dr. M. O. Pitcher, board member, Andrew Jackson
Demonstration Farm

Summary

Fifty head of crossbred steers started grazing 51 acres of pasture on May 1 in a rotational grazing system using a variable density paddock system. Twenty-two head grazed 92 days, 27 grazed 140 days, and one steer died. A total of 11,922 pounds was produced on 5,804 animal-days of grazing. The average daily gain was 2.02 pounds for group 1 and 2.07 for group 2. The stocking rate for the first 92 days was .98 steers per acre and .53 for the final 48 days. The animal days of grazing per acre was 113 and the pounds of gain per acre was 233. Total return for land, labor and management for the demonstration was \$2,829.76 or \$55.49/acre.

Introduction

The purposes of the 1996 steer grazing project were to show the production potential and economic outcome for a group of steers in an intensive rotational grazing system on highly erodible land and to demonstrate management intensive grazing strategies. Jackson County is the leading beef cow/calf county in Iowa and ranks ninth in Conservation Reserve Program (CRP) acres with over 43,000 acres enrolled. Improved production of pasture with more intensive grazing management can increase the competitiveness of cattle businesses. As land comes out of the CRP program, consideration of livestock and cropping alternatives will be important. This demonstration attempted to collect and provide information for producers to use in their decision making process.

Materials and Methods

The steer grazing project was conducted at the Andrew Jackson Demonstration Farm (AJDF) located in central Jackson county. The steers were grazed on 51 acres comprised of 24 acres of primarily bluegrass with about 40% timber area and 27 acres of mixed pasture that was approximately 75 - 80% grasses (primarily brome), 15 - 20% legumes (alfalfa and red clover) and about 5% weeds. No hay was harvested from the pasture acres.

Fifty steers were purchased at a county sale barn on March 18, 1996. The average weight for the group was 502 pounds and the purchase price was \$64.00 per hundredweight. On delivery to the demonstration farm the steers were fed two pounds of corn per head and free choice grass and legume mixed hay until going on

pasture April 29. All steers were weighed, implanted with Ralgro® and poured with Levasol® before going to pasture. On July 31, 22 head were sold to decrease the stocking rate to match the slower pasture growth. The steers not sold were dewormed on August 9. On September 17 the final 27 head were sold. No grain was fed while on pasture. The steers were weighed unshrunk before going on to pasture and when they came off. One steer died during the grazing season.

The pasture fencing layout was designed so the steers could be managed using variable density grazing. The 51 acres of pasture were divided into five larger fields with permanent exterior fences. These larger fields could be subdivided further into various sized paddocks. A total of 23 paddocks ranging in size from 1.2 to 6.6 acres were identified and combined as needed during the grazing season. Steers were moved on average every 2.4 days, ranging from one to six days. The stocking density was varied by adjusting paddock sizes using temporary poly fence based on the amount of forage available and days planned for grazing. For example in May the stocking density ranged from 25,000 pounds of steer per acre per day on one of the best paddocks to 1,225 pounds of steer per acre per day in early May on the bluegrass and timber paddocks.

Estimates of forage on offer were monitored once a week by measuring the pasture height in the paddock the steers were going into. This was done with a falling plane meter (8.8 lbs. per square yard) called a sward stick, which was calibrated by Dr. Jim Russell at Iowa State University. Following is the monthly average height of the pasture in inches and the estimated pounds of live forage dry matter per acre when the steers were given new pasture: May - 9.4 (2,387), June - 9.4 (2,387), July - 5.1 (1,309), August - 4.9 (1,249), and September - 3.6 (920).

Rainfall at the farm in 1996 is compared with normal rainfall in Table 1. Rainfall for the entire grazing season was 39% above normal. The spring started very cool resulting in slow pasture growth and delayed the planned start of grazing. However, above average rainfall in May and June resulted in some excellent pasture growth as indicated by the average pasture heights when turned into new pasture.

Results and Discussion

Fifty head of crossbred steers started grazing 51 acres of pasture on May 1 in a rotational grazing system using a variable density paddock system. On July 31, 22 head were sold after 92 days of grazing (Group 1). On September 17 the remainder were sold after 140 days of grazing (Group 2). One steer died during this time.

A total of 11,922 pounds was produced on 5,804 animal-days of grazing. The average daily gain was 2.02 for group 1 and 2.07 for group 2. The stocking rate for the

first 92 days was .98 steers per acre and .53 for the final 48 days. The animal days of grazing per acre was 113 and the pounds of gain per acre was 233. Table 2 summarizes the data. This represents production at the farm only. It does not include any shrink loss from purchase weight to on-test weight or from final on-farm weight to sale pay weight.

Table 3 summarizes the cost and returns for the project. Feed costs during the dry lot period was \$.48 per head per day based on corn at \$4.75 per bushel and hay at \$45 per ton. Salt and minerals were fed free choice during the demonstration. Fertilizer costs were for a spring application of nitrogen, phosphorus and potassium on all the acres and an application of nitrogen in late summer. Pasture rent is based on the Iowa State University rental rate survey for permanent pasture in Jackson County.

Labor hours were recorded for moving the steers. It took a total of 94 hours for 56 moves. This included moving cattle, fence, water tanks and mineral feeders while on pasture. Additional hours were for fence repair, mowing weeds, dry lot feeding and handling the steers. Labor was valued at \$7.50 per hour. One steer also died during the grazing period from sickness.

Total return for land, labor and management for the demonstration was \$2,829.76 or \$55.49/acre.

Implications

The grazing project demonstrates that suitable gains can be achieved on growing steers when there is above average rainfall, using a management intensive grazing system and without

feeding grain while on pasture. The use of variable density grazing allows for greater grazing flexibility and better control of forage quantity and quality offered, which seems to contribute to improved gains. Factors such as when animals are bought and sold, death losses and shrink are additional factors that have a significant impact on returns.

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Table 1. 1996 rainfall at the Andrew Jackson Demonstration Farm (inches).

Month	1996	Normal
April	3.30	3.0
May	7.75	3.5
June	7.50	3.8
July	3.47	3.5
August	2.35	3.3
September	3.70	3.0
Totals	28.07	20.1

Table 2. 1996 AJDF steer grazing performance data

Item	Group 1	Group 2
Number	22	27
Date started grazing	May 1	May 1
Date ended	July 31	Sept 17
Days grazed	92	140
Average beginning weight (lbs.)	643	523
Average ending weight (lbs.)	829	813
Average total gain	186	290
Average daily gain on pasture (lbs.)	2.02	2.07
Summary of groups		
Total animal days of grazing	5804	
Animal days of grazing per acre	113	
Stocking rate, steers per acre first 92 days	.98	
Stocking rate, steers per acre final 48 days	.53	
Total pounds gained on pasture	11,922	
Pounds of pasture gain per acre	233	

Table 3. 1996 AJDF steer grazing income and expenses

Income		
	Group 1 @ .61 (22 head)	10,443.20
	Group 2 @ .63 (27 head)	<u>12,398.40</u>
	Total	\$22,841.60
Expenses		
	Cost of steers (50 @ \$.64/lb.)	16,060.00
	Feed - purchased grain, hay, salt, minerals	1,137.20
	Pasture rent (51 acres @ \$26/Acre)	1,326.00
	Veterinary & supplies	471.69
	Fence supplies	38.20
	Fertilizer	1,318.44
	Interest (\$16,000 borrowed)	665.69
	Sales expenses (trucking, etc.)	320.62
	Labor	<u>1221.00</u>
	Total	\$22,558.84
	Return to management	\$282.76
	Return to mgt. & labor	\$1,502.76
	Return to mgt., labor & land	\$2,829.76