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Intensive rotational grazing management education-demonstration for Northeast Iowa dairy and beef producers

Abstract
Hay is a major crop for northeast Iowa cattle producers. The difficulty and cost of growing and harvesting quality hay and the continued pressure to reduce costs has stimulated producer interest in management intensive grazing systems. This project offered Iowa farmers extensive, hands-on information and experience with intensive grazing techniques.

Keywords
Animal management and forage, Farmer profitability, enterprise budgets

Disciplines
Agricultural and Resource Economics | Agricultural Economics | Agricultural Education | Animal Sciences
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Background

Lower milk and cattle prices over the past few years have stepped up the pressure to reduce costs of production in order to stay profitable. Producers recognize that an increasing number of cattle will have to be grown and maintained on diets that include more forage, which is a lower-cost feed source. A significant challenge for northeast Iowa cattle producers is to grow, harvest, and store high-quality forages. Existing hay harvesting systems are machinery and energy intensive, so producers are looking at alternative production systems such as management intensive grazing.

While interest has increased, there has been little educational support for producers who want to learn more about grazing. Producers were asking ISU Extension and Natural Resources Conservation Service personnel, “Is rotational grazing for me?” and “How do I get started?” Education programs held in 1993 and 1994 exposed many farmers and agriculture agency representatives to management intensive grazing and to the “pasture walk” concept. Pasture walks are an informal time of exchanging ideas while walking through producer-managed rotationally grazed pastures. The pastures serve as field classrooms that offer learning activities to producers interested in starting or improving a grazing operation.

The obvious value of these activities led the organizers to the Leopold Center for support of pasture walks, pasture quality and measurement, and profiles of grazing systems.

Objectives of the project included:

- Coordinate grazing networks to assist producers in developing intensive rotational grazing management practices. Producer networks will host pasture walks in the project area, and participants will be evaluated on what they learned and what practices they adopted.
- Work with two or three producers each year to collect forage samples and monitor changes in forage quality.
- Develop detailed farm profiles showing intensive grazing management systems on four dairy and two beef operations. The profiles will describe paddock layout, pasture descriptions, stocking rates, milk production, watering systems, fencing, and feed and forage harvesting systems.

Approach and methods

Pasture walks. These were the primary tools for education and demonstration for the project. The host producers were the primary resource people, while ISU Extension field specialists and Natural Resources Conservation Service staff served as technical specialists, teachers, and facilitators. The walks generally involved a description of the farm operation, a tour of several paddocks, a demonstration or education component, and a question and answer period.
Among the demonstrations evaluated at the walks were interseeding, frost seeding, fencing and watering techniques, swing parlor milking systems, cattle handling, seasonal calving, wrapping high-moisture hay, estimating pasture offered, and feed budgeting. Other topics addressed included early season management, getting started, seasonal dairying, cross breeding, heifer management on pasture, supplementation on pasture, pasture quality changes, summer management, and stockpiling.

**Pasture sampling.** Sward stick measurements and pasture samples were taken on the same two farms each year. (A sward stick is a forage mass measuring device that includes a plexiglass height plate with a hole in the middle. It is placed over a six-foot piece of aluminum tubing marked to measure the pasture height with the plate laying on the forage mass.)

Measurements on the Don Klosterman farm were taken in paddocks prior to grazing the dairy cows and the beef cow/calf pairs. At the Andrew Jackson Demonstration Farm, measurements were taken on paddocks prior to the grazing of beef heifers the first year and beef steers the second year.

These guidelines were used for monitoring pasture quantity and quality:

- Four random sward stick measurements were taken in each paddock the during the first year. Ten measurements were taken the second year to assess paddock variability.
- The sward stick, designed and calibrated by Jim Russell, an ISU animal scientist, was correlated to measure the yield of live dry matter (which animals are likely to select when grazing), rather than total dry matter.
- Sampling to be done weekly during the primary growing season and less frequently outside the growing season.

Visual estimates of the percentage of ground cover that was comprised of legumes, grass, problem weeds, and bare spots were made each time samples were taken. Twelve forage quality samples were plucked by hand from each farm field. After drying and grinding the samples, the pasture quality analysis was done by Steve Barnhart, ISU Extension Forage Specialist. The quality information was used to compare the forage harvested from the grazing system with hay of different qualities harvested conventionally. The Milk90 spreadsheet (developed at the University of Wisconsin) was used to calculate milk/acre and dollar return/acre of forage.

**Producer profiles.** The producer profiles were prepared to describe how intensive rotational grazing management practices were applied on six farms in 1995 and 1996. Producers were asked to complete a survey with questions about quality of life, farm ownership arrangements, labor usage, land management, and livestock management. They also provided financial information about their grazing: pasture costs, marketing costs, feed costs, fencing, water, etc.

These profiles containing information about the people, land, livestock, and management involved in the farm operation were handed...
out at pasture walks and related grazing programs. The purpose was to portray a whole farm picture of how grazing fits together with an operation, and to give ideas for producers to use on their own farms.

**Results and discussion**

*Pasture walks.* In 1995, 27 pasture walks were held, and 575 people attended with an average of 21 participants for each event. Twenty-six pasture walks attended by 485 people occurred in 1996, with an average attendance of 19 per walk.

Eighty-two percent of the “walkers” were farmers and the remainder were from agribusiness or agricultural agencies. Ninety percent had never attended a pasture walk before 1993.

Participants overwhelmingly (98 percent) agreed that the pasture walks helped increase their ability to assess livestock production problems and found that the information provided was useful to them. Changes were most likely to be made in management (68 percent), nutrition (51 percent), and breeding (41 percent).

In the 1996 survey, attendees were asked about more specific changes made after attending a pasture walk. Among the more common alterations were:

- tried frost seeding (50 percent)
- tried a new forage variety (50 percent)
- adopted a new fencing or watering strategy (50 percent)
- reduced use of chemicals and fuel (36 percent)
- started to stockpile pasture for late fall or winter grazing (29 percent)
- increased recording of pasture movements (26 percent)

In 1996, the respondents managed about 100 acres per producer. Over three years, 67 percent of the producers increased the number of acres grazed and 63 percent increased the number of cows they raised. When asked how these changes affected farm income, 50 percent indicated that income had increased and 45 percent said income held steady.

*Pasture sampling.* Pasture quality and quantity were monitored on two farms during two growing seasons to test pasture productivity under producer management. Key questions asked in the monitoring program were: Is there enough pasture for the feeding period? Is the quality good enough? Will there be sufficient pasture at the end of the month?

At the Andrew Jackson Demonstration Farm in Jackson County, 47 beef heifers were grazed from mid-June 1995 on an area comprised of permanent bluegrass and improved mixed pasture grasses. Average daily gain was 1.17 lb. On May 1, 1996, 50 head of crossbred steers started grazing 51 acres of pasture in a rotational grazing system using a variable density paddock system. Twenty-two head grazed 92 days with average daily gain of 2.02 lb. and 27 animals grazed 140 days, gaining an average of 2.07 lb. per day.

On the Don and Donna Klosterman farm in Dubuque County, measurements and samples were taken in 1995 and 1996 in paddocks prior to grazing the dairy cows and the beef cow-calf pairs. Heifers and dry cows also grazed for part of the season. Approximately 150 acres
were intensively grazed. The pastures, converted from crop ground, were made up of various grass-legume mixes.

Data collected at both sites showed the height measurements and estimated amounts of forage on offer to a group of cattle on a regular basis throughout the pasture season. Forage quality samples were based on taking half of the height of the pasture being offered to the cattle for the grazing period. Height measurements and samples were taken weekly during the first to middle part of the grazing season and less often later in the season. Also at each farm, one paddock was measured weekly to monitor pasture growth rate and quality differences before and after grazing.

The pastures that the cattle entered had the most forage present in May and June. Average live forage dry matter on-offer averaged 2,550 pounds per acre compared to the season average of 1,870 pounds. The average crude protein percentage of the pasture offered to the cattle groups for the season ranged from 21.2 to 24.4. The shifts in the composition of the pasture to higher levels of legumes later in the season are shown by higher calcium levels as the season progresses. Pasture growth rates varied greatly with seasonal and weather influences.

During the second year, removal rates were estimated for pastures being sampled weekly. The Jackson farm showed 3,073 pounds of live dry forage matter harvested in five grazing events while the Klosterman farm had a 4,962 pound harvest grazing the paddock four times. Consumption of forage offered was 40 percent and 47 percent, respectively.

Also in 1996, winter stockpiled pasture was monitored after the conclusion of grazing for the season. At the Jackson farm, dry matter increased from 660 pound of live forage dry matter per acre to 1410 pounds. Dry fall weather decreased yields, and quality and quantity dropped throughout the winter. On the Klosterman acres, the stockpiled pasture increased from 1.025 pounds to 1,650 pounds. Yield and quality declined after frost and dropped significantly after snowfall.

The results of the Milk90 program showed that the pasture available throughout the season can be of good quality for supporting milk production. June and July showed the lowest milk amount produced per ton of forage.

**Producer profiles.** Six producer profiles describing grazing operations were completed. Copies were made for distribution by ISU Extension and NRCS, and for use at grazing programs. Many were distributed at pasture walks hosted by the producers profiled.

**Conclusions**

Pasture walks appear to be an acceptable “training ground” for producers trying to establish management intensive grazing systems. The survey results showed that people came, learned, and made changes. Information presented at the walks was deemed useful and the participants’ ability to assess livestock production problems increased dramatically. Farmer profiles can be used as an introduction to grazing systems management or as a com-
parison and incentive for those already practicing intensive grazing.

Steer gains at the Andrew Jackson farm and success with the Milk90 program show that pasture can provide highly productive forage for an entire grazing season. The challenge will be to grow and harvest more pasture to increase productivity. Having adequate pasture on offer may be more of a limiting factor than quality. More measurements are needed to determine when pasture height begins to limit intakes.

Stockpiled legume grass pasture can be of excellent quality. Quantity is related to when grazing begins, rainfall, and occurrence of frost. Quality declines after a hard frost and both quality and quantity deteriorate after snowfall.

**Impact of results**

Management intensive grazing is a viable alternative for expanding a dairy or beef enterprise. Improved utilization of pasture and animal management practices by participants have reduced production costs and helped improve profitability and sustainability of their farm operations.

Pasture walks can be an excellent learning experiences for those considering or already involved in management intensive grazing.

The presence of a strong facilitator, outside speakers, and farm data summaries will help make the pasture walks of continuing value. The farmer profiles are useful in showing producers “real farm” examples of how intensive grazing can work for them.

**Outreach**

In addition to the 53 pasture walks that were a major project component, other outreach activities were conducted. Among them were the 1995 and 1997 Hay Expos, field days at the Jackson farm, three grazing workshops, and several Northeast Iowa Crop Conferences. A Teamwork Tour on Farming Systems and Learning Approaches held in July 1996 discussed the pasture walk learning approach. Grazing displays have been made available at various livestock group meetings.

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