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Production of a videotape series to promote forage-based livestock production in the Upper Midwest

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Production of a videotape series to promote forage-based livestock production in the Upper Midwest

Abstract

Although properly managed grazing can increase farm income and enhance environmental quality, it has not been widely used in the Upper Midwest. Instead, grazing has been viewed as an adjunct to row crop production, and state-of-the-art management techniques have been adopted slowly. However, recent research has developed forage grazing systems that can compete economically with row crops, especially on more erodible land. In order to implement such systems successfully, producers need practical information on the technical aspects of grazing and pasture management. Most grazing videos produced prior to this project were tailored to other geographic regions or weren't sufficiently detailed. The five videotapes produced in this project cover controlled grazing, principles for managing pasture plants, animal management, fencing and water systems, and year-round systems for the Upper Midwest.

Keywords

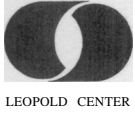
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Disciplines

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Background

If managed properly, forage-based livestock systems have the potential to increase farm income while enhancing environmental quality. But forage use has not been optimized in the Upper Midwest because previous, less intensively managed forage utilization systems have not competed economically with row-crop production. More recently, refined grazing technologies are competing better, especially on more erodible lands, as high-intensity grazing of beef allows a pasture stocking rate 40% higher than continuous grazing.

But managing intensive grazing systems successfully is a complex task. The cost and amount of fencing is just one factor affecting the feasibility of intensive grazing. Another is the incorporation of legumes, which can increase calf production over nitrogen-fertilized grass pastures. Furthermore, because the feeding of stored forages during winter accounts for approximately one-third of the costs associated with cow-calf production, a system's profitability may be improved by extending the grazing season during the winter. This is done by incorporating grazing of corn crop residues and stockpiled forages.

To encourage adoption of more refined grazing technologies, project investigators produced an educational video series to provide

producers with the information they need to implement these systems successfully in their own operations.

Videotape is an effective medium for transferring such technology because it is flexible and self-paced. It is an excellent medium for demonstrating complex processes such as grazing management, where the ability to see the techniques (such as fencing and watering) under discussion can accelerate learning and ease comprehension. It can also bolster enthusiasm and cater to a wide variety of learning styles and time constraints. While videotape has been used before to promote improved grazing management in the United States, earlier efforts have not addressed technical aspects such as defoliation management, paddock layout, or the economics of fencing and watering options, particularly under midwestern conditions. Presenting these concepts as modules in a series of videotapes with appropriate supporting materials allows producers and educators to control the pace and content of the instruction.

The main objective of this project was to produce a videotape series demonstrating the economic advantages and technical methods of improved grazing management practices. General goals included helping farmers increase profit from forage-based livestock en-

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\$15,750 for one year

terprises and increasing the amount of land in the Upper Midwest planted to forages.

Approach and methods

A series of five videotapes was planned, each ranging from 12.5 to 21 minutes in length. Project investigators arranged with Iowa State University (ISU) for professional assistance with production. Script preparation and film recording in pastures were given first priority to ensure that scenes pertaining to early spring grazing could be filmed appropriately. The first script, "Managed Grazing: Fencing and Watering" was completed by June 15. "Managed Grazing: Introduction" was completed shortly thereafter. The segment, "Managed Grazing: Animal Management" was completed next, followed by "Managed Grazing: Year-Around Resource Management," then "Managed Grazing: Managing Pasture Plants." All scripts were reviewed by members of the Leopold Center's Animal Management research issue team.

Coordination of script preparation with filming and publicizing the series' availability once it was completed constituted the project coordinators' major responsibilities. Producers carried out filming and editing. In some cases, stock footage was used to supplement filming, and in cases where the script could not be completed prior to filming, extra footage was taken to assure that the visual information would support information important in the script. By January 1995, the footage was placed on continuous videotape for presentation at an ISU grazing conference.

The five videotapes, tailored for the Upper Midwest, consist of an introduction to controlled grazing, managing pasture plants, animal management, fencing and watering approaches, and year-round grazing systems.

Because of the need for winter footage, preparation and editing of the segment on year-round resource management did not begin until April 1995. And because of the need for additional spring footage, preparation and editing of the pasture plants segment did not begin until June 1995. By August, tapes had been reviewed by all investigators, and final footage was taped to obtain more desirable scenes for emphasizing key points.

Videotapes were duplicated, and one copy of each set was distributed to every ISU County Extension Office. In addition, the availability of the series for sale was announced both in the print media and on various computer bulletin boards.

Findings

This videotape series was designed to serve as part of an integrated approach to educate producers about how to employ intensive rotational grazing practices that best meet the needs and utilize the resources of their individual operations. The major points and recommendations conveyed in the videotapes are these:

- (1) Because feed costs represent the single largest expense for production of livestock, maximum use of grazing will maintain viable livestock industries in the Midwest by improving grazing's competitiveness.
- (2) A controlled grazing system will increase the profitability of forage-based livestock production systems by increasing forage production and quality, maintaining high-quality forage species, improving manure distribution, and improving animal handling and movement while reducing soil erosion and water pollution.
- (3) Enlightened grazing management considers the growth requirements and characteristics of pasture plants, nutrient needs of the animals, economic factors, and daily decisions about animal movement.
- (4) Excessive grazing should be prevented because it can limit the plant leaf area and root development needed to optimize growth.



- (5) To optimize pasture management, the growth habits of different pasture plants in different seasons must be considered.
- (6) The duration of grazing in paddocks should correspond to the differences in plant growth for each season. Hay harvest or grazing with extra animals may be necessary to utilize excess forage growth and keep plants in an immature state.
- (7) Because it takes 5 to 6 days for plant regrowth to begin after grazing in mid-summer, it is essential to allow a total of 35 to 45 days of rest before a given paddock is re-grazed.
- (8) Factors that need to be considered in the development of a rotational grazing system include the feed intake of the animal as affected by the animal's size and production stage, the sward (pasture forage) height, forage nutritive value as affected by plant maturity, pasture productivity as affected by soil quality and forage species present in the pasture, and the expected length of the grazing season.
- (9) In developing a controlled grazing system, paddock size, stocking rate, animal behavior, watering systems, milking systems (for dairy cows), reproductive management for breeding animals, and parasite control need to be considered.
- (10) The stocking rate for a pasture may be calculated from the pasture size, the number of days of grazing or rest for a given paddock, sward height of the pasture as it relates to forage density, forage removal rate, and the size and production stage of the animal.
- (11) Paddocks in a controlled grazing system should be constructed as close to square as possible because animals tend to graze in a circular motion. Gates should be highly visible, and water should be available in every paddock.
- (12) A good fencing system will be composed of a low-impedance energizer charged with a mainline source, adequate grounding of three feet grounding rod per joule of energizer output, the appropriate type and number of wires for a specific location and animal species, and proper tightening and splicing.
- (13) An optimal controlled grazing system will deliver water by a pressurized system, gravity flow, or mechanical pump to each paddock of the system.
- (14) The waterer should refill before the next animal attempts to drink.
- (15) Grazing-based animal production systems in the Midwest must match animal numbers, genetics, and management with the types and amounts of forages available at different seasons of the year.
- (16) Grazing of corn-crop residues or stockpiled hay crop forages in the fall and winter may reduce the amounts of stored feeds needed to maintain beef cows during the winter *by 1 to 1.5 tons/cow*.
- (17) To optimize grazing in a year-round system, it is best to adjust the breeding season of various species so that maximum nutrient requirements occur in late spring and minimum nutrient requirements occur in mid to late winter.

Implications

Because of the greater forage production associated with rotational grazing systems, stocking rates may be increased by 40% over continuous grazing without adversely affecting individual animal performance. By extending the grazing season with corn crop residues or stockpiled hay crop forages, producers can reduce the need for stored feed and sell their excess hay. Net returns would range from approximately \$90 per beef cow from a system that combines summer rotational grazing and winter stockpiled forage grazing, to approximately \$30 per beef cow from a system utilizing continuous grazing during summer and feeding of hay in a drylot in the winter.

Because the average cow herd size is 36 cows, utilizing an intensively managed grazing system would increase net income of a farm by \$2,165 at equal stocking rates, compared to operations with less intensive grazing management, and \$3,032 if the producer used the greater efficiency to increase stocking rates. Furthermore, since there are approximately 33,000 farms in Iowa with beef cattle, incorporation of improved grazing practices would increase farm income in Iowa alone by \$50 million per year if 50% of the producers imple-



"Stockpiling" of forage for winter feeding can significantly reduce the need for purchased hay.

mented improved grazing practices on their farms. Because livestock production has a multiplier effect of nearly \$6 for each \$1 of net farm income, if 50% of Iowa producers incorporated improved grazing practices, the increase in Iowa's economy alone would be \$300 million. This potential increase could be realized in other midwestern states as well.

The ISU Beef Cow Business Records have shown a difference of \$231 net profit per cow between high-profit and low-profit operations in Iowa. Since most of this difference is attributable to differences in feed costs, the improvements in returns resulting from improved grazing practices may be even greater than the research estimates.

Incorporation of improved grazing into dairy operations should significantly improve net returns from these enterprises as well. USDA research has shown that grazing of dairy cattle will increase net returns by \$101 per acre compared to confinement management. Because 652,500 acres of Iowa land are used for dairy production, an increase in net returns of \$6.6 million from dairy production could be expected if only 10% of the dairy farms utilized management-intensive grazing to a significant extent.

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The improved returns resulting from intensive grazing management should provide the incentive for producers to maintain forages on highly erodible lands. Because the difference in soil erosion between the production of row crops and forages is 10.3 tons per acre per year, maintaining those acres in forages should significantly reduce this soil loss. The greatest impact of this project may relate to the two million acres of Iowa land that have been enrolled in the Conservation Reserve Program. If producers choose to leave half of this land in forages, 10.3 million tons of soil will be kept out of water sources in Iowa alone.

This video project revealed areas on which information is lacking, such as the best forage species and management practices for late winter grazing to minimize production costs associated with stored feeds. Because grazing management in early spring affects seasonal productivity of summer pastures, the optimum conditions under which to initiate grazing in summer pastures need to be identified. Supplementary feeding schemes to maximize the productivity of different animal species also need further study.

Education and outreach: A copy of the videotape series was distributed to each ISU County Extension Office. The option to purchase the series for a nominal charge was also announced in print media and on computer bulletin boards. News releases were sent along with the tapes to each county extension office. As of December 1995, 61 copies of the series had been purchased. A publication to accompany the series and an evaluation form will be distributed in 1996.

Cooperative efforts: Research personnel from ISU worked closely with ISU Extension Communications staff both to generate the technical information and produce the video. USDA Natural Resources Conservation Service staff also made substantial contributions to this project. The assistance of five cooperating farmers was also essential to produce a high-quality series on this topic.