Are grazing managers getting a

Mixed Message?

by ***Troy Smith***

There might be nearly as many opinions about grazing as there are graziers. Perhaps that is as it should be. After all, every livestock grazing enterprise is unique. Each and every manager has different resources, different challenges and different goals. When you put a group of serious graziers together in the same room, it usually sparks lively discussion about what works and what doesn't.

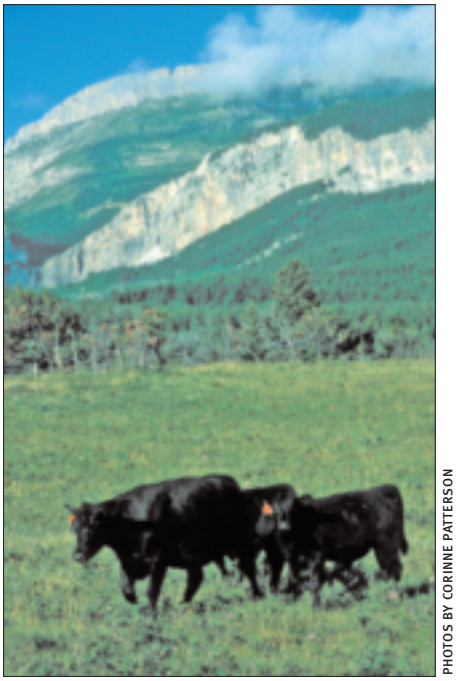
It seems the "experts" do not agree on whether it is best to practice season-long, continuous grazing or a pasture-rotation strategy. Even the land-grant university scientists who study effects on plants, animals and pocketbooks harbor different opinions about how to manage grazing lands for optimum results. From the scientific community, as well as the fraternity of seasoned range managers, comes a mixed message.

Grazing intensity, rather than rotation, is the primary factor determining long-term grazing outcomes on vegetation, livestock and financial returns.

Viewpoints

Seated in one camp are the traditionalists who favor season-long, continuous grazing. There are ranches where a herd of animals may graze year-round on one large tract of rangeland. However, season-long, continuous grazing usually involves assigning a set number of animals to a specific pasture for the duration of a grazing season — typically during the period of time that forage plants are actively growing. In many cases, the manager decides how many animals the pasture should carry for the season, turns them in when the grass greens up and leaves them until forages go dormant.

Rotational grazing involves the use of multiple pastures, in sequence, to allow pastures in the grazing system to undergo a period of rest during the growing season. In a rest-rotation system, one or more pastures may not be grazed at all for an entire year. More common are deferred-rotation systems whereby at least four pastures are grazed sequentially during the grazing season. Typically, each pasture is grazed for a few weeks and the sequence for use is changed each year. Deferred-rotation systems may also allow for seasonal rotation, relegating some pastures for use in winter, or when forages are dormant. An estimated 60% of range and pasture managers in the United States apply deferred-rotation practices.



PHOTOS BY CORINNE PATTERSON

►Season-long, continuous grazing usually involves assigning a set number of animals to a specific pasture for the duration of a grazing season.

While their numbers have increased during the last 10-15 years, producers practicing management-intensive grazing (MiG) remain in the minority. Theirs are the most aggressive rotation systems, whereby animals are moved through more, smaller pastures, or paddocks, at a relatively rapid pace. Individual paddocks may be grazed for only a few days before animals are moved to the next paddock in a planned rotation. With MiG, paddocks are exposed to higher grazing pressures during the period of use, but receive longer periods of rest. Managers may also be able to use some paddocks more than once during the growing season, returning animals to previously grazed paddocks after periods of rest and regrowth.

True believers in rotational grazing claim their methods target optimum forage and livestock production, and lend greater sustainability to their operations. Many are openly critical of continuous grazing, saying the practice contributes to range degradation. However, New Mexico State University range scientist Jerry Holechek says continuous grazing is getting a bum rap.

Take another look

Speaking at the 2004 Nebraska Grazing Conference, Holechek told producers that rotation seems to have worked moderately well for many ranchers. However, he said continuous grazing works, too — at least as well and usually better.

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►The scientific community as well as seasoned range managers don't always agree. Producers may be better off considering their own unique environments when choosing a grazing system.

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Holechek pointed out that research comparing continuous and rotational grazing systems has shown much inconsistency regarding effects on rangeland vegetation. Across all studies, forage production averaged only 7% higher in rotation systems. He called rotation most beneficial in humid regions, where forage production has been 20%-30% greater than with continuous grazing. In semi-arid and arid regions, however, Holechek believes rotation offers no definite advantage.

"A commonly held belief has been that continuous or season-long grazing over time will degrade rangeland vegetation. However, actual research studies from a wide variety of range types show continuous grazing at conservative to moderate stocking rates has generally increased vegetation productivity and given an upward trend in rangeland ecological condition," Holechek stated.

"Livestock productivity and financial returns have generally been higher under continuous or season-long grazing than rotation grazing," he added. "Financial returns per acre average about 4% higher under continuous or season-long grazing than rotation grazing."

Holechek insisted that grazing intensity, rather than rotation, is the primary factor determining long-term grazing outcomes on vegetation, livestock and financial returns. But his staunch defense of continuous grazing did not sit well with many in the audience. Soon after concluding his remarks, Holechek was cornered by a group of vocal dissenters anxious to educate the professor regarding the advantages of well-managed rotational strategies.

"One of the basic tenets of landscape ecology is that we can't necessarily apply what we see on a small scale to a much larger scale."
—Wayne Hanselka

Most of those same rotational grazing advocates wore "I told you so" looks as another conference speaker later echoed their sentiments. Forage management consultant R.L. Dalrymple told about his involvement in grazing management for The Samuel Roberts Noble Foundation in Ardmore, Okla. He explained how rotational grazing systems utilizing eight to 24 pastures or paddocks per herd of livestock were implemented on the Noble Foundation properties. The major benefits, Dalrymple said, were improved quantity and quality of forage plants and, ultimately, increased livestock product yield per acre.

With higher stock density, each of the multiple paddocks is grazed for a short period, followed by rest. Dalrymple explained that animals graze less selectively, so more plant species are utilized, including most weeds. Plant vigor among desirable perennial grasses improves, and populations of annual weeds decline.

"With improved forage came increased animal performance," Dalrymple added. "We've seen calves gain in excess of three pounds per day on grass. That means more pounds to sell."

Scientific proof?

All across the United States and around the world, significant numbers of producers claim improved range condition, more sustainable grazing enterprises and higher profits have resulted from rotational grazing practices. To date, however, there is little scientific research to support their claims. If anything, the gap between science and practical experience has widened during the last 20 years.

Researchers have made a great many attempts to measure the merits of rotational

Table 1: Relative likelihood of accomplishing management objectives on upland range sites during the growing season with different grazing systems when stocking rate, averaged over all pastures, is moderate for each system (comparative index values[a] where 5 = most likely, 1 = least likely)

Controlling variables and management objectives	Season-long, continuous	Five-pasture rest rotation[b]	Five-pasture deferred rotation[c]	10-pasture MiG[d]
Stocking rate and date of grazing:				
►Provide nesting cover for prairie grouse	3	5	3	1
►Maximize average daily gains	5	1	4	4
Number of pastures:				
►Minimize fence and water expenses	5	3	3	1
►Improve grazing distribution	1	3	3	5
►Minimize risk of mistakes on selecting a turnout date and making pasture moves	5	3	3	1
►Facilitate livestock management	1	4	4	5
►Minimize time required to monitor herbage resources	5	3	3	1
►Flexibility in accomplishing individual pasture management objectives	1	2	4	5
Date of grazing and stocking rate:				
►Improve range condition	1	2	5	3
►Increase vigor of preferred plant species	1	3	5	4
►Heal disturbed sites	1	3	5	5

[a]Comparison index values in this example are based on observations and published studies in the Nebraska Sandhills.
[b]One pasture rested, balance grazed once.
[c]Each pasture grazed once.
[d]Most pastures grazed twice.
Source: *Integrating Management Objectives and Grazing Strategies on Semi-arid Rangeland,* University of Nebraska Extension Publications.

systems against continuous grazing. Most studies have concluded that continuous grazing is no better or no worse than rotational grazing in terms of livestock production. Why does the conundrum persist? If the benefits of rotational grazing are so intuitively obvious to a good many producers and a growing number of range scientists, why can't they be demonstrated through research?

"I'm not a research scientist. My job is to apply research to management," says Wayne Hanselka, Texas Cooperative Extension range specialist. "But one of the basic tenets of landscape ecology is that we can't necessarily apply what we see on a small scale to a much larger scale."

Most research studies of rotational grazing, Hanselka explains, have been carried out through the use of small paddocks. Researchers have also used a small pasture under continuous grazing for the control treatment. This is intended to mimic real-world, commercial operations. But in the real world, continuous grazing is usually applied to pastures that are much larger.

In small, continuously grazed research pastures, there is more even utilization of forage than with continuous grazing in large pastures. With the latter, because of the greater expanse of acreage and freedom of movement, animals are more selective in what they choose to eat. This results in more patch-grazing and the uneven forage utilization for which continuous grazing is most often criticized.

Hanselka says that experimental conditions involving continuous grazing of many small pastures may not be a fair representation of what most often happens on larger landscapes. He also worries that some research has compared continuous grazing at moderate or even conservative stocking rates with rotational grazing at heavier stocking rates.

"That's kind of like comparing apples and oranges," Hanselka states.

Despite the lack of supportive formal research, Hanselka believes rotational grazing has proven its worth in practice. University of Nebraska professor of agronomy and horticulture Walt Schacht agrees. However, Schacht believes Holechek is correct in saying continuous grazing can be made to work. Range and pasture can be maintained in good condition with continuous grazing if stocking rates are kept at conservative to moderate levels and if animals are well-distributed. The latter, however, can be hard to control.

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►Most research involving rotational grazing has been conducted using small paddocks.

Set grazing objectives

When it comes to grazing management, there is no one system that fits all or even most enterprises. Each grazing operation's land, livestock, labor and financial resources are different, and so are each manager's goals.

"Selection of a grazing system should be based on clear objectives for resource-management and livestock production," says Pat Reece, University of Nebraska range ecologist. "Until managers have written and prioritized their objectives, they really can't choose a satisfactory grazing system."

Reece and a pair of Nebraska colleagues, Extension range and forage specialist Jerry Volesky and agronomy and horticulture professor Walt Schacht, are co-authors of *Integrating Management Objectives and Grazing Strategies on Semi-arid Rangeland*. The publication explains management practices that optimize the sustainability of range-based enterprises. It also provides a decision-support tool that helps managers select grazing systems best-suited to natural resource management and livestock production objectives.

Targeting management for the semi-arid climatic region that includes most of Nebraska's 24 million acres of rangeland, the publication illustrates how different grazing systems may complement a variety of management objectives. Comparisons are based on moderate stocking rates for all grazing systems (see Table 1, page 84).

For example, season-long, continuous grazing has been shown to provide the greatest likelihood of maximizing average daily gain (ADG) of livestock. Since fewer pastures are required, expense for fence and stock water may be minimized. This system also minimizes risk associated with selection of a turnout date.

However, continuous grazing offers the least flexibility in accomplishing individual pasture management objectives. It is usually least effective for improving range condition, increasing vigor of preferred plants or healing disturbed sites. A five-pasture deferred-rotation system, where each pasture is grazed once during the grazing season, is most likely to further these objectives.

According to the grazing guide, a 10-pasture management-intensive grazing (MiG) system is most likely to aid grazing distribution and facilitate livestock management. This system also serves reasonably well to enhance range condition, plant vigor and healing of disturbed areas. The downside to MiG often includes higher fence and water expenses and increased risk of making mistakes when selecting turnout dates and making pasture moves. Certainly, this system requires more time to monitor pastures and plan utilization.

When providing for nesting cover or when other wildlife habitat enhancement is a priority, the best choice may be a rest-rotation system, allowing one pasture to rest each year.

The experts agree that no particular grazing system offers a guarantee of success. In the end, it's good management that makes the difference.

Readers interested in obtaining a copy of the grazing management guide should contact Pat Reece, University of Nebraska Panhandle Research and Extension Center, 4502 Ave. I, Scottsbluff, NE 69361-4907 and ask for Extension circular EC01-158, or visit *http://ianrpubs.unl.edu/range/ec158.htm*.

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"My bias is that with rotation grazing of multiple pastures, managers have more flexibility," Schacht says. "They can attempt to control more variables. They can control the time of year, duration and frequency of grazing, as well as the stocking rate. And they have better control over animal distribution."

With properly managed rotational grazing, plant communities should respond favorably and provide improved range condition over time, Schacht adds. That can provide higher carrying capacities for livestock and the ability to produce more pounds per acre. But when producers apply rotational grazing and see improved forage and livestock production, it's not just because continuous grazing was so bad. Often, Schacht says, it's because the producers have become better managers.

Perhaps grazing management is an art as well as a science. Texas A&M University rangeland ecologist Richard Teague says science has tended to minimize differences in research results, but there are huge differences in the capabilities of people who manage grazing lands.

"Attitude and capability are big factors. And scientists and producers who say (certain practices) won't work often won't go see ranches where those practices are applied with success," Teague states. "Of course, some people have managed to fail, usually because they try to practice different methods without really thinking about it. Most tend to carry too many animals and remove too much vegetation. Successful managers don't do that."

Teague says some of the most valuable resources available to producers are local "grazing clubs." Through these support groups, graziers can consider all that science has to offer, but also share in the success and failures of participants. Fortunately, Teague notes, there are very good managers across the country and around the world. And while climate, landscapes and other circumstances may differ greatly among grazing operations, producers and scientists may be able to learn the most from people who are making it work.