PERSPECTIVES

Outside the Box

► by **Tom Field,** *professor of animal science, Colorado State University*

Effective land, forage monitoring systems

Effective cattle breeders are skilled observers of animal performance and use planning and assessment strategies to implement a breeding program that yields desirable results. These same skills can make a significant difference in the success of managers who broaden their scope to include vegetation, soil, watersheds and wildlife in their overall management plan.

Gather baseline data

The first step in developing an effective land and forage monitoring system is to acquire baseline data for a range or grazing site. The information needed includes historical use, historical conditions, maps, climatic and weather data, soil profiles, vegetation classification and persistence, and wildlife pressure. Simultaneously, the management team needs to create a detailed vision for the resource that addresses issues such as: the goals and objectives for financial return; relationships with the people in the community; and the performance of soil, plants, water, wildlife and livestock. It is difficult, but important, to consider the interrelationship of these objectives and how they affect one another.

Measure with matrices

Following the development of baseline data and management goals, the formation and implementation of a monitoring plan allows for the measurement of progress toward predetermined objectives. The Society for Range Management (SRM) suggests using a simple matrix to begin to assess land health (see Fig. 1).

If your assessment of a site puts all the answers in column one ("A lot"), then you can feel reasonably comfortable that the site is healthy. If the second column ("Some") describes the site, then it is a good opportunity to consider improvements to move from average to good health without the pressure that accompanies a score that lands in the third column ("A little"). When land is in poor condition, immediate and oftentimes costly attention to the situation is warranted.

As the resource plan evolves, effective and more detailed monitoring protocols can be implemented. Keep in mind that a single observation yields very little management value — the trend line created from repeated measurement provides the powerful information upon which to make effective changes. For example, the trend in animal use, moisture levels, presence and volume of invasive plant species, and forage production and utilization are excellent measures of productivity.

Document evaluations

While there are people who seem to have extraordinary memories and can recall weather and pasture conditions from the past with relative ease, the vast majority of managers depend on tangible evidence from the past such as photos, data or journal notations. As part of sound monitoring, it is essential to select representative sites that can be observed regularly. Each site needs to be identified and mapped — the use of global positioning system (GPS) technology is an effective means to determine precise location. Dennis Cosgrove, an Extension forest specialist with the University of Wisconsin-River Falls, suggests that pasture assessment should include evaluation of several characteristics:

- ► Desirability of plant community. Are the right plants available?
- ► Diversity. Is the plant community multispecies, and is it an adequate mix of cool- and warm-season plants, grasses and legumes, forbs and browse?

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Fig. 1: Matrix to begin assessing land health

Healthy ground cover (forest, shrubs, grass or cropland)	A lot	Some	A little
Weeds or plants that hold the soil poorly (thistle, Mustard weed, etc.)	A lot	Some	A Little
Bare ground	A lot	Some	A little

Source: Society for Range Management, Texas section, land management for small ranches.

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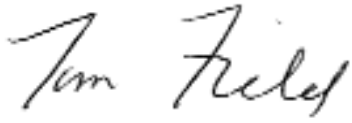
- ► Density. Does the plant community minimize bare ground?
- ► Vigor. Are the plants in a desirable state of health and growth rate?
- ► Utilization. What is the timing and duration of animal pressure? What percent of the plant stand is being utilized in each grazing season?
- ► Even distribution. Are the animals utilizing the pasture and plant species uniformly?
- ► Erosion. Is the soil stable on the site? Are there tangible indicators of gullies, streambank degradation or blowouts resulting from poor plant cover?
- ► Woody species. Is brush invasion a problem?

In addition to physical measurements, photographs provide meaningful historic documentation. The availability of digital cameras simplifies the process. The use of an effective recording system is central to putting data into a meaningful format, and such forms can be obtained from the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), Extension offices or specialists at a land-grant university. Do not overlook these informational and technical resources, as they can help you save considerable time and frustration.

Enjoy the view, then take action

One of the most enjoyable experiences of agricultural production is standing on a rise of land overlooking a great set of cattle grazing a productive landscape. The next time you find yourself enjoying a similar scene on your own property, consider the multiple dimensions of the resources within your view. Then, take it one step further and ponder the ecosystem that lies below the ground. The subterranean environment is the basis for the success of every grazing enterprise. Take the time to spade up the root mass at monitoring sites as a means to assess what is happening underground.

For both novice and experienced land managers, continuing education is critical to long-term success. Make it a priority to attend grazing and resource management seminars and workshops, and don't forget to include these educational opportunities as part of the compensation package for employees. Good resource management is a team effort and, in the end, provides the foundation upon which the dreams and aspirations of grazing enterprises are built.



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Editor's Note: *Tom Field is a professor at the Colorado State University (CSU) Department of Animal Sciences, where he is responsible for the seedstock cattle breeding program of the university teaching herd, composed of Angus and Hereford cattle. He directs the Seedstock Merchandising Team and teaches Food Animal Sciences, Beef Production and Family Ranching. He is a contributor to the research efforts of the CSU Beef-Tec program. A frequent speaker at beef cattle events in the United States and internationally, Field is also a partner in his family's commercial cow-calf enterprise, which uses Angus as an important genetic component.*