

Progressing Pasture

Research explores relying less on feeding hay and more on grazing.

by Troy Smith, field editor

By his own admission, Jason Rowntree didn't know what he was doing. The Michigan State University (MSU) animal scientist relied on guidance from more experienced managers when designing a beef cattle production system considered unconventional for operations located near the 45th parallel north. Feeding harvested forages to cattle for more than half of the year was considered normal and necessary in the region Michigan folk describe as "halfway to the North Pole." But Rowntree was determined to rely less on feeding hay and more on grazing.

For nearly a decade, Rowntree has been coordinator for MSU's Lake City and Upper Peninsula Extension AgBioResearch Centers. The overarching objective of his research has been to increase the resilience of food production in the United States. He's convinced that answers lie in integrated crop and livestock production systems.

More specifically, Rowntree has been studying the roles grazing livestock can play in improving land. He's certain that better grazing management is key to the sustainability of forage-based cattle operations in the area.

Holistic management

This past winter, through a series of meetings organized by the Nebraska Grazing Lands Coalition and University of Nebraska Extension, Rowntree shared from

what he and his MSU colleagues have learned. He explained how he came to embrace the holistic resource management concepts espoused by Allan Savory, including intensively managed grazing systems. To develop and implement a plan for using forage resources, Rowntree sought mentors from among grazing management consultants such as Idaho's Jim Gerrish, Missouri's Doug Peterson and the late Terry Gompert of Nebraska.

Rowntree explained how, from the 1980s through 2009, the Lake City research farm acreage included 300 acres for grazing and 270 acres in hay production. "But we fenced it all and added water so we could graze everything," he said. "And we sold the haying equipment. Eliminating hay-making cut 500 hours per year off our tractor time and reduced labor costs."

Noting the availability of both average- and high-quality hay, Rowntree said hay can be purchased for less than the cost of making it. By strip-grazing cool-season pastures and cover crops, moving cattle daily on average, the grazing season was extended. Hay feeding was delayed, typically, until December. Buying hay resulted in the import of nutrients which were applied when hay was unrolled in areas of greatest need.

Explaining how recently purchased hay cost \$80 per ton, Rowntree said the hay contained nearly \$60 worth of nitrogen, phosphorus and potassium (NPK). And most of that

ends up added to the soil where hay is fed, through manure, urine and what little hay goes uneaten.

"As a result, we eliminated the usual NPK fertilization. We do apply lime, and we use a little nitrogen when planting cover crops," Rowntree added.

Another thing Rowntree has learned is that cow size matters. When he came to MSU, the average weight of commercial cows in the research herd was about 1,500 pounds (lb.), with some of the larger cows weighing 1,800 lb. or more. Now the mature cows average somewhere between 1,200 and 1,250 lb.

"We think the sweet spot in our system is a 1,200-lb. cow with moderate milk," Rowntree stated. "Compared to the big cows, they are more profitable."

It's not that the smaller cows eat so much less than bigger cows. Rowntree said his grazing studies showed that all cows consumed about the same amount of forage — approximately 30 lb. per day on a dry-matter basis — regardless of size. But during the late-summer forage quality slump, big cows lost weight while smaller cows could actually gain body condition. To Rowntree, this suggests that smaller cows convert low-quality forages more efficiently. But cows of moderate size and milk production also yielded more pounds of calf per cow exposed, than did large, heavy-milking cows.

Output vs. profitability

Summarizing the changes made through grazing management, Rowntree noted that significant progress was made in relatively few years. In 2009, the research farm ran 190 animal units for 142 total grazing days, harvesting 74 cow days per acre. In 2015, 325 animal units grazed for 192 days, harvesting 110 cow days per acre.


“In six years, forage utilization per acres increased by over 30%. We ran more animal units and extended the grazing season by 50 days,” Rowntree emphasized. “It illustrates how, through management of the same total acreage, we can make the farm or ranch bigger.”

Rowntree said researchers must share the blame for a decades-long emphasis on increasing output —



bushels and pounds — with too little study of the economics and particularly the long-term costs.

“We focused on finding a recipe for maximum output, but it had little to do with profitability. We were forgetting that 80 to 90% of

the variability is explained by costs,” Rowntree told producers. He hopes that his research will continue to show how grazing management can do both — cut costs while still increasing production. 

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