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Grazing Schools Improve the Sustainability of Pasture-Based Livestock Enterprises

Dennis W. Hancock

Asst. Professor and Forage Extension Specialist

University of Georgia

3111 Miller Plant Sciences Building

Athens, Georgia

dhancock@uga.edu

Abstract: *Implementing intensive grazing management can improve the three primary aspects of sustainability of enhancing profitability, natural resource stewardship, and quality of life. Participants in Georgia Grazing Schools (GGS) held between 2007-2010 were surveyed to assess near-term (six-42 month post-meeting) impact of the workshops on these aspects of sustainability. Respondents reported increased profitability, with nearly 18.9% and 18.9% reporting an increase in net returns of 20-30% and over 30%, respectively. Respondents also highly rated principles learned and experiences gained at the GGS as aiding them in meeting goals of improved natural resource stewardship and quality of life on their farms.*

Introduction

Sustainable pasture-based livestock enterprises can be defined as having the following three general traits: 1) profitable over the long term; 2) provide good stewardship of natural resources; and 3) maintain a high quality of life for farmers, ranchers, and their communities (SARE, 2011). Pasture-based livestock enterprises in the southeastern U.S. are typically not managed in such a way as to optimize efficient forage use, extend the grazing season, or enhance the sustainability of the enterprise.

Pastures in these enterprises are typically continuously stocked and grazed only during the growing season of the dominant perennial forage crop. Therefore, there is a reliance on mechanically harvested and conserved forage (e.g., hay, silage, etc.) when pasture growth slows or stops. Recent increases in fertilizer, fuel, and supplemental feed prices draw into question the long-term profitability of such enterprises (Redmon, 2000). Alternatively, intensively managed grazing systems and strategies to extend the grazing season can reduce conserved forage needs and increase profitability (e.g., Adams, Clark, Coady, Lamb, & Kielson, 1994; Hoveland, McCann, & Hill, 1997). Further, an intensively managed grazing system can reduce the risk of soil erosion, nutrient runoff, and pathogen loading in streams relative to continuously stocked pastures (e.g., Schwarte et al., 2011). Moreover, farmers who use intensively managed grazing methods have also reported substantially higher rates of satisfaction with their quality of life (Ostrom & Jackson-Smith, 2000).

Program Purpose and Methods

Personnel from University of Georgia Extension and the Georgia office of the USDA-Natural Resource Conservation Service have collaborated to provide several educational workshops on grazing management. Since 2007, the intensive 2-day Georgia Grazing School (GGS) has been held annually during September of each year. The workshop rotated annually between sites in northern and southern Georgia. These programs were typically generic relative to the livestock enterprise of the participants, but a second workshop was conducted in 2010 that was specific to dairy producers.

Each workshop agenda consisted of 15-18 multi-disciplinary educational modules in the classroom and five-eight experiential learning activities (Table 1). The exact agenda (e.g., <http://www.caes.uga.edu/commodities/fieldcrops/forages/events/GS10/GS10Agenda.pdf/>>) varied with the demonstration opportunities available at the individual location. Focus was placed on the combination of classroom instruction and experiential exercises reinforces the principles, increases the participants' confidence in the learned skill, and improves retention of the learned skills (Richardson, 1994; Bennett, Penrose, & Bartholomew, 1997). Further, enrollment in a GGS was limited to 35 participants so as to ensure a relatively low student to instructor ratio (Bennett, Penrose, & Bartholomew, 1997). Participants were also provided a notebook with slide sets and handouts from the workshop, as well as additional reference material for further review. Additionally, all of the notebook materials and electronic decision aids used during the workshops were archived on a searchable webpage (e.g.,

<<http://www.caes.uga.edu/commodities/fieldcrops/forages/events/GS10/GS2010.html/>

>).

Table 1.

Classroom Educational Modules and Hands-On Learning Experiences
at the Georgia Grazing Schools (2007-2010)

| Classroom Modules | | Hands-On Learning |
|--|--|--|
| Manipulating forage growth & grazing behavior | Soil fertility & nutrient cycling in grazing systems | Pasture allotment & paddock sizing exercise |
| Forage species: Yield, distribution, & quality | Managing, utilizing, & maintaining legumes | Pasture Condition Score (PCS) exercise |
| Extending the grazing season | New weed management tools for grazed pastures | Fence & water source examples/installation |
| Fence design & maintenance | Managing forage surplus | Estimating available forage |
| Water system design & maintenance | Managing forage deficits: quantity & quality | Sampling pasture, hay, & silage for quality |
| Grazing systems & methods | Forage & grazing economics | Weed ID in the field |
| Segregating herds by animal class & nutritional need | A case study of grazing economics | Optimizing water, mineral, & portable shade location |
| Optimizing paddock size, number, & layout | Cost-share programs that aid the transition | Calibrating & adjusting a no-till drill |
| Paddock planning tools on the internet | Risk management programs for livestock producers | |

The goal of the Georgia Grazing Schools was to enhance profitability, stewardship of natural resources, and quality of life on the pasture-based livestock enterprises of our participants. The objectives were to teach/demonstrate techniques, technology, and critical thinking skills to encourage and foster the development of intensively managed grazing systems.

Program Evaluation

In June 2011, an online survey (Zoomerang, <<http://www.zoomerang.com>>) was sent via email to 126 valid email addresses representing the 147 participants of our GGS during 2007-2010. The deadline for participation was September 15. The survey contained 33 questions that asked participants to provide data on the change in their operational parameters (livestock system(s), total grazing acres, grazing acres that are intensively managed, etc.), practice changes, percent change in net farm income from their pasture-based livestock enterprises, and the usefulness of the GGS workshops in helping them to achieve their goals for natural resource stewardship and quality of life.

A total of 41 surveys were completed (32.5% response rate), which is similar to the number of respondents reported by Jensen et al. (2009). Participants were asked to anonymously provide information about changes in their pasture-based enterprises since their attendance at the GGS. Because the sampled population included participants who had attended the GGS within the past six to 42 months, the changes should be viewed as near-term impact. Responses assessed for practice changes compared respondent estimates from before and after the GGS using a standard t-test for significant difference.

Results

Of those who had not already implemented an intensively managed grazing system (37), 87.9% indicated that they had begun practicing more intensive grazing management since attending the GGS. Those responding otherwise qualified their response by indicating they had not made changes primarily because of extraneous factors in their personal and financial lives. A majority (83.7%) of the respondents attributed their experiences and skills learned at the GGS as a major reason for the changes they made. Average respondent response also indicated that there had been significant increases in farm size, the number of acres in intensively managed grazing, and the number of paddocks used in their grazing system (Table 2). Their responses indicate a significant increase ($P = 0.016$) in the average number of total animal units (1000 lbs of body weight) per farm. This mainly was the result of

increased ($P < 0.05$) numbers of beef cows, dairy cows, and goats per farm, on average. The relative increase in acreage appears greater than that reported for the northwestern U.S. (Jensen et al., 2009).

Table 2.

Mean Farm Size, Livestock Population, and Grazing System of Respondents Before and After Attending the Georgia Grazing School

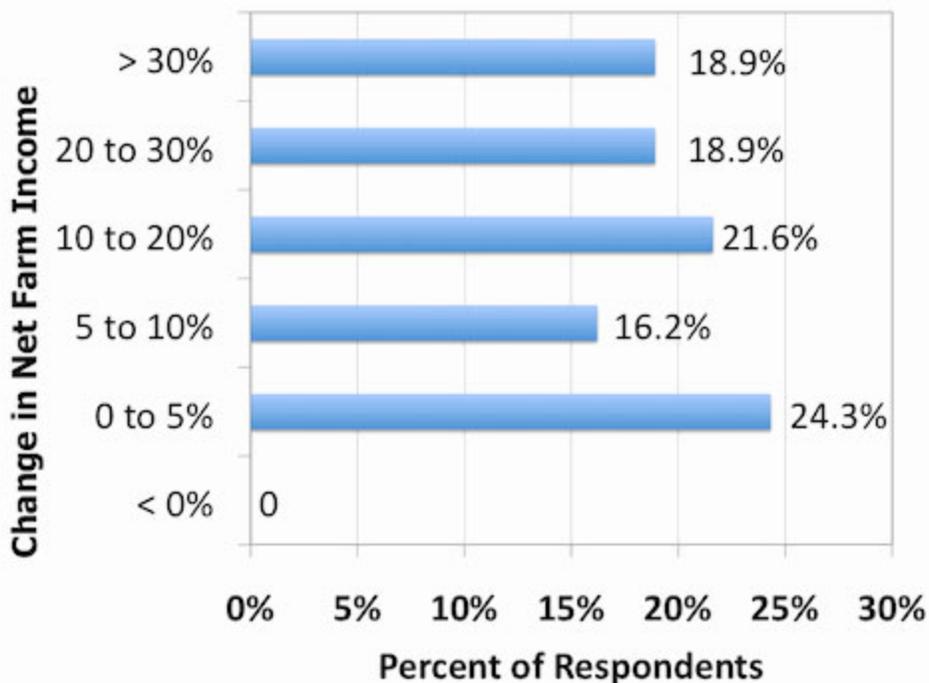
| Indicator Assessed | Before | After | N | SE |
|--|---------------|--------------|----------|-----------|
| Acres Farmed | 144 | 167 | 38 | 13.0 |
| Acres Under Intensive Grazing Management | 80 | 143 | 38 | 16.2 |
| Number of Paddocks in Grazing System | 5.8 | 11.6 | 38 | 1.26 |
| Number of Total Animal Units | 250 | 314 | 38 | 29.3 |
| Number of Beef Cows | 61.2 | 71.8 | 29 | 5.65 |
| Number of Retained Stocker Calves | 53.9 | 51.9 | 24 | 11.7 |
| Number of Purchased Stocker Calves | 68.7 | 113 | 4 | 11.5 |
| Number of Horses | 6.2 | 6.7 | 14 | 1.35 |
| Number of Dairy Cows | 700 | 929 | 7 | 56.7 |
| Number of Goats | 15.6 | 19.1 | 7 | 0.59 |
| Number of Sheep | 30 | 30 | 1 | - |
| Note: Those who were not farming (e.g., Extension and NRCS personnel) were excluded. | | | | |

Respondents indicated that these changes have enhanced the primary aspects of sustainability in their pasture-based livestock enterprises. First, all respondents that were farming indicated that their net farm income had not decreased since attending the GGS (Figure 1). Given the increase in input prices and macro-economic issues from 2007 until 2011, a report of no decrease in net farm income is instructive. Additionally, nearly 20% of respondents indicated their net farm income had increased by over 30%. In a separate response, 85% of respondents indicated that principles and techniques learned at the GGS helped them meet goals for increased farm profitability. In addition to giving it credit for improvements in profitability,

respondents indicated that the skills learned at the GGS also helped them meet goals related to improved stewardship of natural resources and their quality of life (Table 3).

Figure 1.

Changes in Level of Net Farm Income Since Attending the Grazing School



Note: Respondents were asked to indicate which range in net farm income change best represented their farm.

Table 3.

Impact of the Principles and Techniques Covered at the Grazing School on Participants' Natural Resource Stewardship and Quality of Life Goals

| Goal | Mean | SE |
|---|------|------|
| Improved soil health and fertility | 3.9 | 0.14 |
| Improvement in water quality | 3.8 | 0.14 |
| Decreased soil erosion | 3.6 | 0.15 |
| Improvement in lifestyle and/or enjoyment of the farm | 3.9 | 0.17 |
| | | |

| | | |
|---|-----|------|
| Improvement in daily routine on the farm | 3.6 | 0.17 |
| Note: Participants were asked to score the impact on a scale of 1 to 5, where 1 = "No Help" and 5 = "A Major Help". | | |

Conclusion

A large majority of the participants in the GGS have implemented an intensively managed grazing system and have begun to see improvements in sustainability as a result. Since attending, GGS participants have, on average, increased their number of paddocks, intensively managed grazing acres, total livestock population, and the size of their farm. For many of these participants, changes since attending the GGS have resulted in a substantial increase in profitability for their pasture-based enterprises. Additionally, principles learned at the GGS have helped participants meet goals of improving their natural resource stewardship and quality of life. Educational workshops on intensive grazing management can help farmers improve the sustainability of their pasture-based livestock enterprises.

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