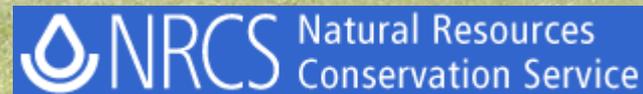


Tall Fescue Pastures for Productivity and Environmental Quality

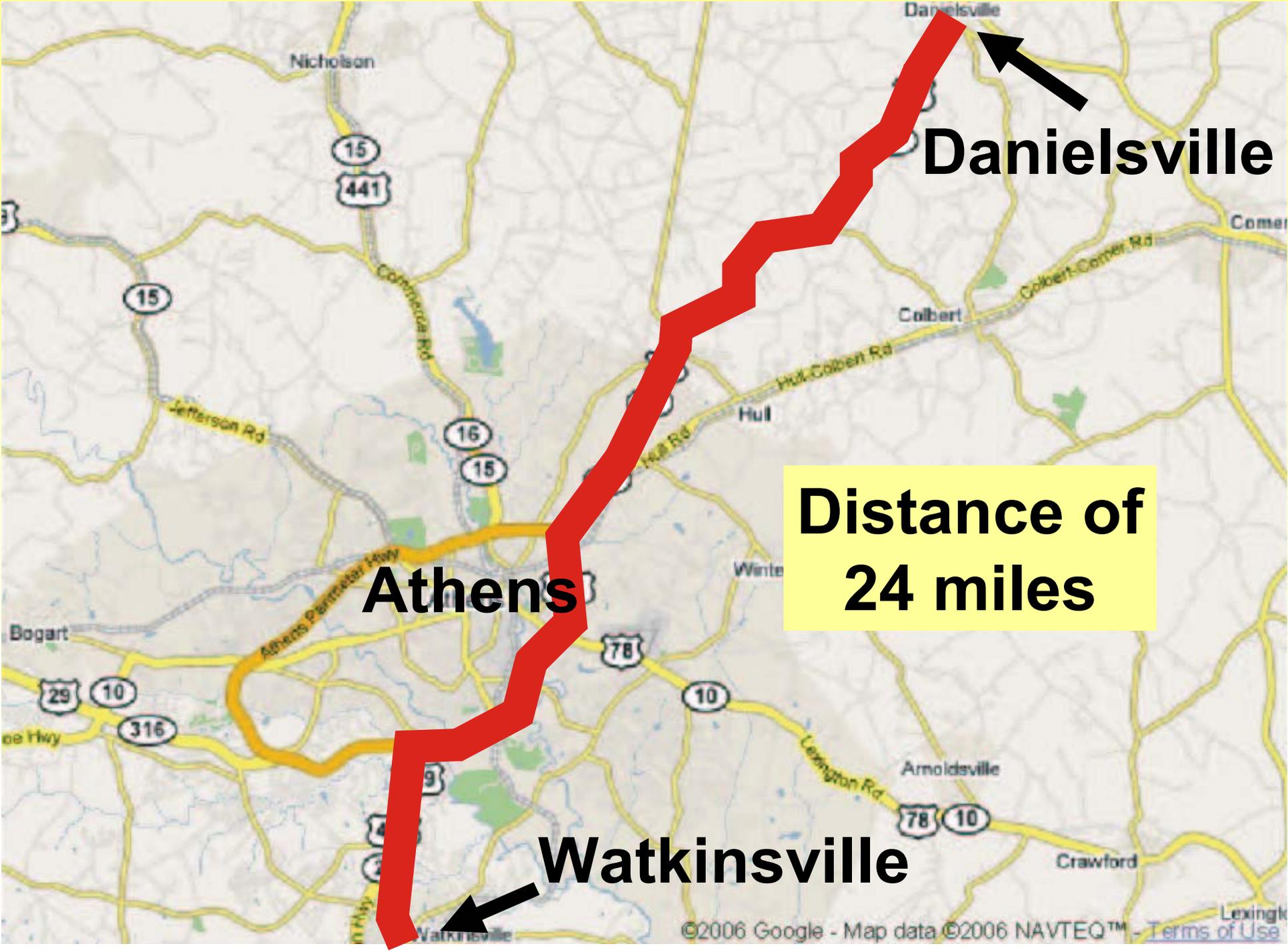
Overview of a grant received from:
Georgia Grazing Lands Conservation Initiative (GGLCI) Program administered by USDA – Natural Resources Conservation Service (NRCS)

Being implemented by:
Madison County Cattleman's Association (MCCA) in cooperation with USDA – Agricultural Research Service (ARS)



THE UNIVERSITY OF GEORGIA
COLLEGE OF AGRICULTURAL & ENVIRONMENTAL SCIENCES

Watkinsville GA



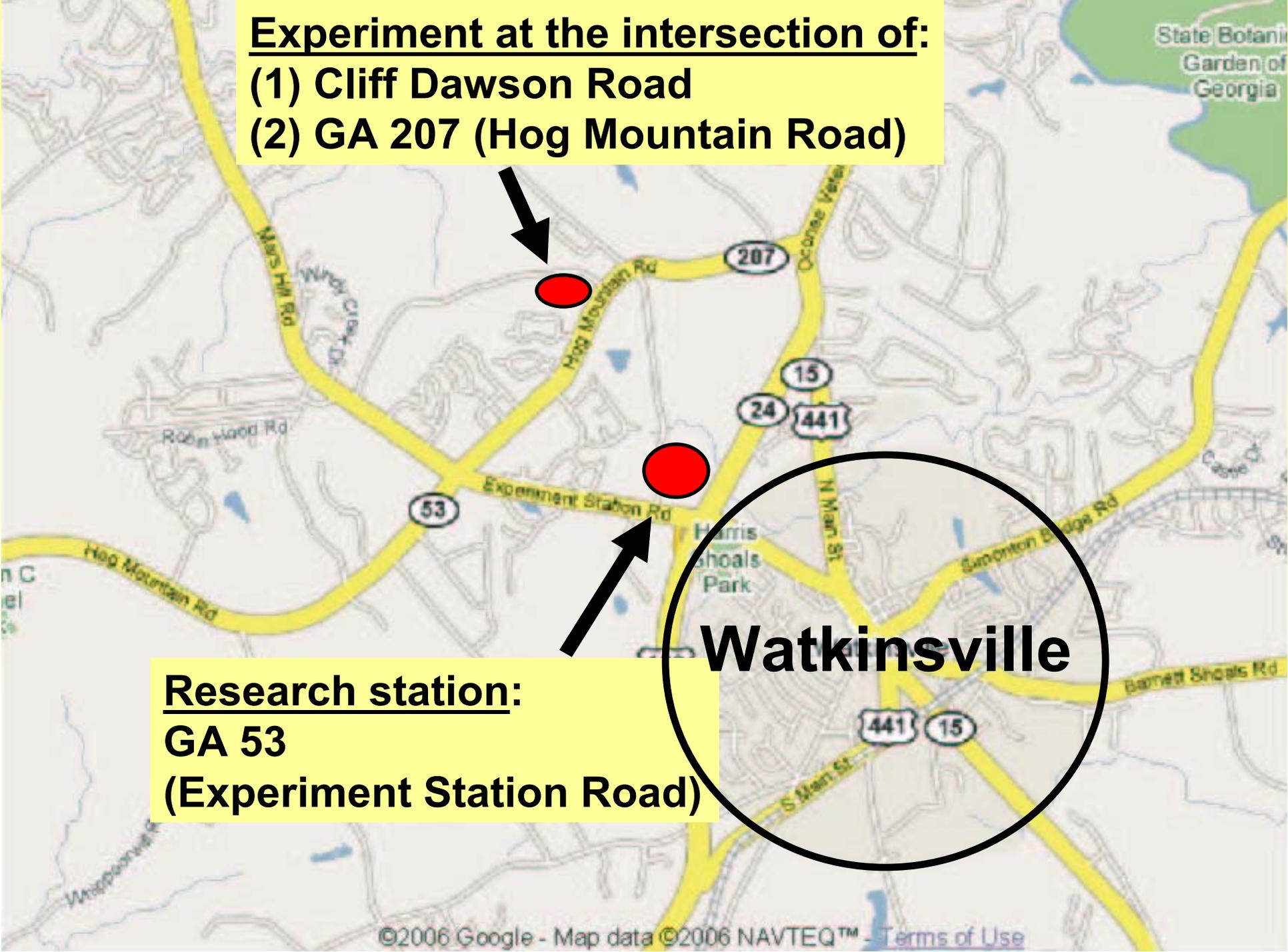
Athens

Danielsville

**Distance of
24 miles**

Watkinsville

Experiment at the intersection of:
(1) Cliff Dawson Road
(2) GA 207 (Hog Mountain Road)



Research station:
GA 53
(Experiment Station Road)

Watkinsville

An aerial photograph of a rural area with a yellow overlay. The overlay consists of a thick yellow line forming a large irregular shape, and a network of thinner yellow lines within it that divide the area into several irregular polygons. A yellow arrow points from the bottom left towards the center of the outlined area. Labels in yellow text are placed over the image: 'Cliff Dawson Road' at the top, 'GA 207' on the right side, and 'Experimental Site' at the bottom left.

Cliff Dawson Road

GA 207

**Experimental
Site**

What are the Issues?

Time

Productivity

Balance

Environmental Quality

1. Soil quality
2. Water quality



Profit



Seasons
Years
Decades

Objective

- ✓ Measure the effects of fertilization source and tall fescue-endophyte association on:
- Tall fescue persistence
 - Cattle performance and production
 - Soil quality
 - Water quality



Experimental Design

- ✓ 14, 2.5-acre paddocks of 'Jesup' tall fescue
 - All with water flume to collect water runoff
- ✓ Total of 7 treatments, each replicated twice
 - Six treatments grazed by yearling heifers



Fertilization Source

- Inorganic
- Broiler litter

×

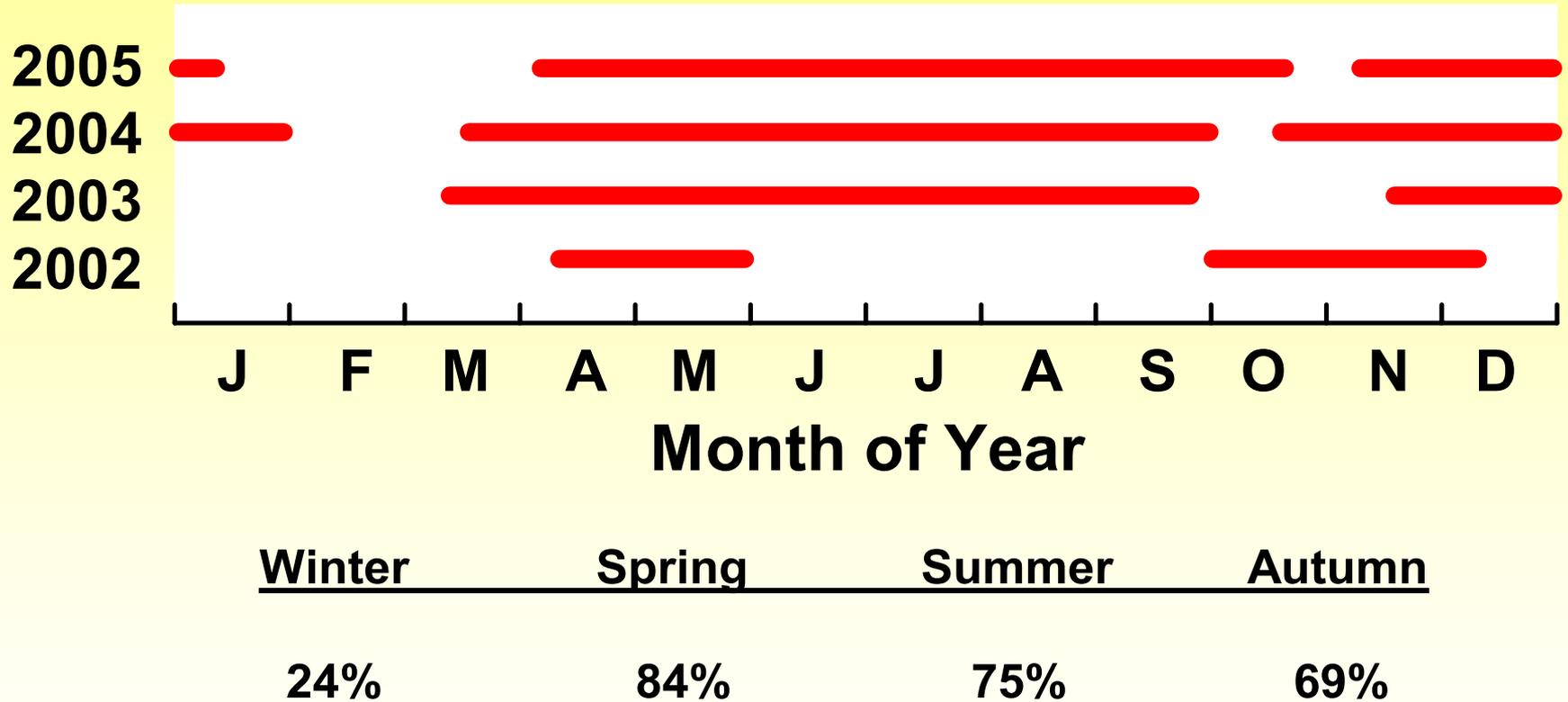
Tall Fescue-Endophyte Association

- Endophyte-free
- Novel endophyte
- Wild-type endophyte

- One treatment cut for hay
 - inorganic fertilizer, novel endophyte



Time of Grazing



2005 – 71%
 2004 – 82%
 2003 – 66%
 2002 – 33%



Effect of Fertilization Source

Years 1-3

Response	Inorganic		Broiler Litter
Forage mass (lb/acre)	1312	>	1250
Stocking rate (head/acre)	0.97	ns	0.93
Stocking weight (lb/acre)	893	ns	857
Average daily gain (lb/head/day)	1.6	ns	1.5
Live-weight gain (lb/acre)	547	ns	511

No significant interactions between fertilization source and tall fescue-endophyte association with any response variable.



Cattle Performance

Years 1-3

Average daily gain of heifers on pasture (lb/head/day)

Period	Free	Novel	Wild
Winter	1.7 <	2.1 >	1.5
Spring	2.1	2.2 >	1.4
Summer	1.5	1.5	1.3
Autumn	1.3	1.4 >	0.9
Yearly	1.7	1.8 >	1.3



Cattle Production

Years 1-3

Live-weight gain of heifers on pasture (lb/acre)

Period	Free	Novel	Wild
Winter	54	62	56
Spring	266	273 >	218
Summer	105	104 <	131
Autumn	113	117	87
Yearly	538	555	493



Plans for the Future

- 1. Continue to measure cattle and pasture response variables for long-term evaluation**
- 2. Measure soil quality changes with time in response to grazing, type of fertilization, and endophyte association (e.g. compaction, soil organic matter, and microbial diversity)**
- 3. Measure water runoff quantity and quality from paddocks (routinely for nitrogen and phosphorus; occasionally for ergot alkaloids and fecal bacteria)**
- 4. Work directly with MCCA to conduct a major field day**
- 5. Work with MCCA to distribute research results in user-friendly formats**
- 6. Cooperate with cattle producers to obtain relevant scientific information on a routine basis**