

## Grazing evaluation of annual and perennial cool-season forage systems for stocker cattle in North Alabama

This information sheet highlights the results of a 2-yr stocker cattle grazing evaluation in North Alabama (2013-2015).

### Why evaluate cool-season annuals vs. perennials for stocker cattle?

Cool-season forages are commonly used in stocker production systems in Alabama. Tall fescue is the predominant cool-season perennial grass species adapted to the lower transition zone. Producers in this region often have either a perennial cool-season (tall fescue) or perennial warm-season (bermudagrass) as their dominant forage base. Often, southeastern producers consider using cool-season annuals to support livestock production during the cooler months of the year. To date, there have been no evaluations that concurrently assess the differences among annual and perennial-based cool season forage systems for winter grazing in the lower transition zone.

### What are the forage mixtures that were evaluated?

#### Treatments

'Nelson' annual ryegrass – with or without 'Dixie' crimson clover  
'Nelson' annual ryegrass + 'Graze King' cereal rye – with or without 'Dixie' crimson clover  
'Texoma MaxQ II' novel endophyte tall fescue – with or without 'Durana' white clover

### How were they established?

Existing novel endophyte tall fescue stands were established in October 2011 and used in previous research. Cool-season annuals were established each fall by drilling into a prepared seedbed following extension recommendations. All treatments were fertilized with nitrogen in the fall following establishment, and treatments not containing legumes received additional nitrogen in early spring.

### How were they managed?

Evaluation parameters included real-world management common to the area, therefore treatments were continuously stocked using yearling crossbred steers at a fixed stocking rate of 2 steers/acre. Grazing was initiated once available forage DM was above 1,800 lb DM/acre and terminated when steer ADG fell below 1 lb/d or available forage DM was estimated to be less than 1000 lb DM/acre.

### What are the key results and conclusions?

- Cereal rye provided the earliest grazeable forage and proved to be the most cold-hardy of all forage species in this evaluation. Grazing began in March of each year on annual ryegrass treatments. Novel endophyte tall fescue grazing was initiated later in the season, and provided forage furthest into the summer (see **Figure 1**).

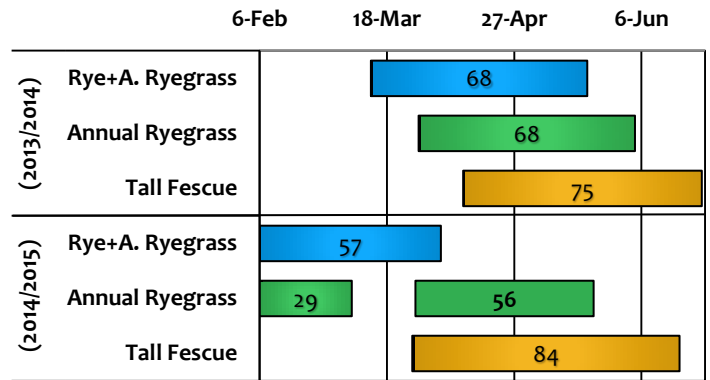
- No differences were observed in the number of grazing days, forage or animal production among treatments containing legumes vs. those receiving spring nitrogen application in Year 1. Annual ryegrass and tall fescue treatments receiving nitrogen had greater forage production than those containing legumes\* in Year 2 (11,000 lb DM/acre/yr vs. 8,000 lb DM/acre/yr, respectively). \*Legume establishment was unsuccessful in Year 2.

- Steer ADG and body weight gain per acre (see **Table 1**) was greatest on ryegrass and tall fescue, and lowest on cereal rye treatments. Gain achieved was between 1.8 and 2.5 lb/d for steers throughout the duration of the study.
- All treatments produced forage high in nutritional value throughout the growing season, ranging from 58 to 75% total digestible nutrients and 12 to 15% crude protein.

**Table 1.** Average daily gain, gain per acre, and return over grazing costs per acre for grazed cool-season forage systems.

		Annual ryegrass	Rye + ryegrass	Tall Fescue
Average Daily Gain (lb/day)	Year 1	2.49 <sup>a</sup>	1.76 <sup>b</sup>	1.87 <sup>b</sup>
	Year 2	2.46 <sup>a</sup>	2.46 <sup>a</sup>	2.11 <sup>b</sup>
Gain Per Acre (lb/acre)	Year 1	342 <sup>a</sup>	244 <sup>b</sup>	307 <sup>ab</sup>
	Year 2	426 <sup>a</sup>	284 <sup>b</sup>	359 <sup>a</sup>
Estimated Returns Over Grazing Costs Per Acre†		(\$31.90)	(\$23.93)	\$19.41

†In this analysis, an average value of gain of \$0.96 per lb. was used to calculate the estimated revenue per acre.



**Figure 1.** Gantt chart illustrating the time and length of the grazing season for each forage system.

- Novel endophyte tall fescue treatments had greater profit potential per acre compared to annual systems due to lower establishment costs, similar levels of forage production, and a greater number of potential grazing days within this region.
- Cool season forages are a viable option for extending the grazing season serving to mitigate reliance on stored feeds during the coldest months in the Southeast.

### Producer Implications:

Information obtained from this evaluation may be used by producers considering cool-season forages as an option to extend grazing during the cooler months in the lower transition zone of the Southeast. Intensive management with adjustments to stocking rate and grazing method throughout the grazing period can help producers improve forage utilization and efficiency with the cool-season forages evaluated. Development of year-long forage grazing plans will help producers determine which of the evaluated forages, or combination of these forage components is most feasible within their specific forage system.