

Supplementation of stocker cattle grazing annual ryegrass

This information sheet highlights the results from a stocker cattle grazing and supplementation evaluation in Central Alabama.

Ryegrass and Stocker Cattle

Stocker cattle are newly weaned cattle that graze high-quality forages from weaning until they are between 700 to 900 pounds (lb). Stockering has become a common practice for adding weight to cattle before they are sent to feedlots for finishing. In the Southeast, grazing fall stockers on a high-quality pasture such as annual ryegrass can be profitable and produce good weight gains.

Supplementation: Why, What, and How Much?

Supplementing cattle grazing high-quality cool season annuals such as ryegrass with a high-energy supplement has been shown to increase weight gain and enable greater stocking rates. Both high-starch supplements such as a corn-based ration, and high-fiber supplements like hulls and pulps can produce these beneficial outputs. Supplements should be fed at low levels calculated as a percentage of animal body weight (% BW). Research suggest that energy supplementation at 0.30% BW improves digestible energy intake, while minimizing negative effects on forage digestibility. However, numerous studies have been conducted evaluating supplementation levels ranging from 0.2% BW to 2.0% BW.

Objective:

While research has been conducted to evaluate supplement **type** and **level** individually, little work has been done to evaluate both type and level simultaneously. The objective of this study was to determine how type and level of energy supplementation with locally available feedstuffs affect stocker performance and forage utilization from annual ryegrass.

Supplement Types and Levels Evaluated:

Types: Cracked corn (CC), pelleted citrus pulp (CP), pelleted soybean hulls (SH)

Levels: 0.25, 0.50, 0.75% BW

Treatments: Supplement Type x Level

Cracked Corn 0.25% BW	Citrus Pulp 0.25% BW	Soybean Hulls 0.25% BW
Cracked Corn 0.50% BW	Citrus Pulp 0.50% BW	Soybean Hulls 0.50% BW
Cracked Corn 0.75% BW	Citrus Pulp 0.75% BW	Soybean Hulls 0.75% BW

An unsupplemented control (CON) was also included.

Establishment and Management:

Thirty 2-acre pastures were planted with annual ryegrass in October of 2013 (Year 1) and September of 2014 (Year 2). Only 20 pastures were viable in year 1 due largely to inclement weather in that year. Pastures were randomly assigned to 1 of the 9 supplementation treatments or the unsupplemented control. Cattle were stocked with 4 crossbred steers weighing approximately 523 lbs (2 animals/acre). Grazing began when forage mass was approximately 855 lb dry matter (DM)/acre. Grazing lasted 98 days in year 1 and 118 days in year 2. Cattle were removed from pasture when forage quantity and quality could no longer support ADG of 1.5 lbs.

Key Results and Conclusions (Table 1 and 2)

- Supplemented cattle gained more than unsupplemented cattle
- There was no difference among the supplement types with respect to ADG
- Supplementation at 0.50% BW resulted in maximum ADG from fibrous supplements
- Starchy supplements reached maximum ADG when fed at 0.25% BW
- Implementing an energy supplementation system resulted in ungrazed forage being left in the pasture which could allow for greater stocking rates

Table 1. Animal performance of stocker calves grazing annual ryegrass

	Treatments†									
	CC 0.25%	CC 0.50%	CC 0.75%	CP 0.25%	CP 0.50%	CP 0.75%	SH 0.25%	SH 0.50%	SH 0.75%	CON
Initial BW (lb/hd)	525	520	520	526	528	521	522	522	526	525
Final BW (lb/hd)	812	775	805	774	791	772	769	795	787	742
ADG (lb/d)	2.62	2.32	2.60	2.27	2.40	2.30	2.25	2.50	2.40	1.98

†Where CC = cracked corn, CP = citrus pulp, and SH = soybean hulls at 0.25, 0.50, or 0.75% BW, respectively.

Table 2. Forage mass (lb DM/acre) responses as related to energy supplement type and level.

	Treatments†									
	CC 0.25%	CC 0.50%	CC 0.75%	CP 0.25%	CP 0.50%	CP 0.75%	SH 0.25%	SH 0.50%	SH 0.75%	CON
Initial Forage Mass (lb DM/acre)	939	778	796	959	803	846	1021	947	820	861
Final Forage Mass (lb DM/acre)	588	463	495	335	463	502	441	497	509	239
Change in Forage Mass (lb DM/acre)	-351	-316	-301	-624	-340	-344	-580	-450	-310	-622
Residual Forage Mass‡ (% of initial)	71	61	65	42	62	56	55	58	68	32

† Where CC = cracked corn, CP = citrus pulp, and SH = soybean hulls at 0.25, 0.50, or 0.75% BW, respectively.

‡Residual Forage Mass is calculated as the mass of the forage remaining at the end of the grazing season in comparison with the mass of the forage at the beginning of the grazing season. It is expressed as a percent (%) of the initial forage mass (lb DM/acre).

Final Thoughts:

Implementing an energy supplementation system for stocker cattle grazing a cool-season annual increases ADG and enables greater stocking rates. Neither type nor level of supplementation greatly affects ADG. Level of supplementation more greatly affects forage utilization and potential stocking rates than does supplement type.

References:

Kunkle, W. E., J. T. Johns, M. H. Poore, and D. B. Herd. 2000. Designing supplementation programs for beef cattle fed forage-based diets. *J. Anim. Sci.* 77:1-11.

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