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STOCKING RATE AND STOCKING STRATEGY FOR STEERS GRAZING ROTATIONAL OR CONTINUOUS STOCKED RYE-RYEGRASS PASTURE

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Background. Selecting appropriate stocking rates for winter annual pastures used for stocker cattle requires knowledge about the environment and forage growth attributes as well as management experience. Sod-seeded 'Maton' rye and 'TAM 90' annual ryegrass pastures were grazed by Bonsmara x Beefmaster steers from mid-Dec. to mid-May to quantify effects of stocking rate (SR), stocking method (SM), and stocking strategy (SS) on gain per animal and gain per acre. Two replicate pastures with 4 steers each were used for each of the following treatments: 1) Stocking Rates; a) Low (LO), 1.0 525-lb. steers/ac initially; and b) Medium (ME), 2.0 525-lb steers/ac initially. 2) Stocking Methods; a) Continuous (CN) and b) 8-paddock Rotation (RT) with about a 2-day residence and 14-day rest. 3) Stocking Strategies; a) Fixed SR (FX)–SR was fixed during entire grazing period; and b) Variable Stocking Rate (VR) – Initial SR were fixed until early March, then both LO and ME SR were increased to 3 hd/ac until termination. Steers were implanted pre-weaning, but were not re-implanted during the winter pasture grazing period. Cattle were weighed at approximate 28-day intervals throughout the grazing period. All steers were dewormed with Eprinex pour-on on Dec. 17 and again on Mar. 4.

Research Findings. The effects on average daily gain (ADG) were due to stocking rate ($P<.0002$) and stocking method ($P<.036$). The ADG of the Bonsmara x Beefmaster steers ranged from about 2.8 lbs/da to 2.25 lbs/da among treatments (Table 1). At initiation, LO SR was about 1 steer/ac and ME SR was about 2 steers/ac. The ADG ranged from 2.71 to 2.82 lbs/da for all LO stocked pastures. All LO stocked pastures, regardless of treatment, showed no differences ($P>.05$) due to rotational vs. continuous stocked or fixed vs. variable stocking rate. Effects of stocking treatments became more apparent at ME stocking rate as ADG declined from 2.62 lbs/da on continuous fixed (CNFX) stocked pastures to 2.25 lbs/da on rotational variable (RTVR) stocked pastures ($P<.05$). At ME, there was a slight decline in ADG with VR strategy compared to FX likely due to reduced forage availability. Gain per animal from Dec. 18 to May 14 (147 days) ranged from 331 lbs on ME-RTVR to 415 lbs on LO-CNVR (Table 1). Only slight differences in gain per animal were detected between FX and VR at any one SR which indicated that the increased stocking via VR strategy in early March increased utilization forage but at little cost to ADG. Gain per acre ranged from 437 lbs/ac on LO-FX for both CN and RT to 907 lbs/ac on ME-CNVR and 875 lbs/ac on LO-CNVR. Gain per acre was affected by stocking rate ($P<.005$) and stocking strategy ($P<.0001$). The increased stocking rates during the last half of the

grazing season increased gain per acre from 85 to 100% at LO SR. At ME SR, the VR increased gain/ac by 23 to 28% over FX stocking strategy.

Application. With the opportunity to increase stocking rate on the rye-ryegrass pastures during the "spring flush" of March to mid-May, gain per acre was doubled on LO SR and increased by about 25% on ME SR. The magnitude of increased gain per acre was attributed to adequate forage DM available to maintain ADG with increased stocking rate. Perhaps the most common grazing management style used for cool-season annual forages is that of "overgrazing" during the winter period. This "overgrazing" refers to constant defoliation via grazing to the extent that insufficient leaf area is available to promote accelerated forage growth during favorable climatic conditions. Thus, one potential management scenario that reduces risk and promotes forage DM is that of using a low stocking rate during fall-winter, with an increased stocking (2x or 3x) at the beginning of the "spring flush." In East Texas, this "spring flush" generally occurs from mid-February to mid-March and is year dependent. Low, fixed SR of rye-ryegrass produces such an abundance of DM that some type of forage-removal management such as hay, silage, haylage, or increased stocking rate is required to prevent delayed onset of bermudagrass growth in May.

Table 1. Average daily gain (ADG), gain per animal (GN/AN), and gain per acre (GN/AC) from various stocking treatments.

STK[1] CTGR	STK RTE INIT[2]	STK RTE OVRL[3]	STK METH	STK STG	ADG	GN/AN	GN/AC[6]
	hd/ac				(lbs/da)	lbs	
LO	1.09	1.09	CONT	FIX	2.73ab[5]	401	437f[5]
LO	1.00	2.11	CONT	VAR	2.82a	415	875abc
LO	1.09	1.09	ROTN	FIX	2.73ab	401	439f
LO	1.06	2.05	ROTN	VAR	2.71ab	398	815abcde
ME	1.85	1.85	CONT	FIX	2.62abc	385	711bcde
ME	2.00	2.47	CONT	VAR	2.50bcd	368	907abc
ME	2.00	2.00	ROTN	FIX	2.32cd	341	677cde
ME	2.00	2.52	ROTN	VAR	2.25d	331	832abcde

[1]Stocking rate categories.
[2]Initial stocking rate.
[3]Overall stocking rate for period.
[4]Stocking methods (STK METH) included continuous (CONT) and rotational (ROTN); and stocking strategies (STK STG) included fixed (FIX) and variable (VAR).
[5]Means in a column followed by a different letter differ @ P<.05.
[6]Gain per acre based on 147 days grazing (12-18 to 5-14).