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The effect of rapid paddock movement on yearling steer weight gain and forage condition in north-central Nebraska ,USA

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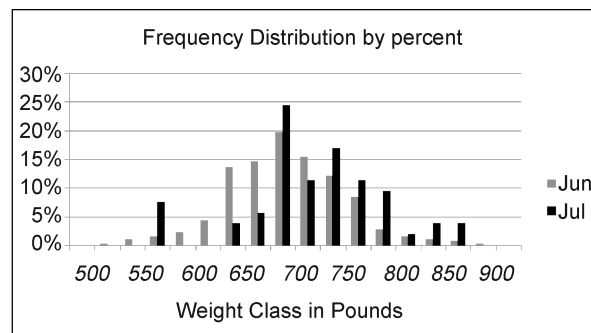
Key words : ultra-high stock density ,yearlings gain

Introduction Approximately 400 yearling steers in a mixed group of low-to-moderate quality animals of varying sizes and breeds were provided to the contract grazer by a backgrounding operation whose objective was to minimize winter feed costs and capitalize on summer gains . Most of the animals appeared to have Brahman and Charolais influence .

The grazing property can be found on the headwaters of the Elkhorn River in north-central Nebraska (42°9'357"N ;99°0'531' W) . Annual precipitation is approximately 1000 mm ,with annual variations from approximately 500 to 1500 mm . Most rain falls in May and June ,and as thunderstorms in July and August . The average summer temperature for the region is 20°C . Summer daytime temperatures over 38°C with high humidity and no wind are common .

The grazed pastures are low-lying ,flat ,and generally subirrigated (depth to water approximately 1 meter) . Water-filled potholes lie adjacent to stabilized sand dunes . Soils are poorly developed except in low-lying marshy areas ; parent material is derived primarily from windblown sands . Pasture vegetation varies from former haylands (*Bromus inermis* and *Trifolium spp* .) ,to low-lying grasslands of *Panicum virgatum* , *Agrostis alba* , *Sorghastrum nutans* , and *Andropogon spp* . *Euphorbia esula* and *Glycyrrhiza lepidota* are significant weeds . Average annual production is around 3 ,000 kg/ha .

Materials and methods Pastures are permanently divided with electric and barbed wire into 20 ha and further subdivided by temporary electric fence into 4-5 ha paddocks (100-125 animals/ha) . 275 ha were used in the grazing program . Approximately 40% of this area was grazed twice ,once at the beginning of the season and once at the end . Copious groundwater delivered by pipeline into 1.5M portable tanks was available to the livestock at all times . Upon arrival ,the extremely nervous animals were carefully acclimated to electric fencing and frequent paddock movement . Low stress handling methods were employed at all times ,with most paddock moves made on foot . Midway between the grazing season pasture management changed from 30 animals per acre density , moved every two to three days , with approximately 50% forage removal ,to 50 animals per acre density ,moved every 18-24 hours and 30% forage removal .



Results and discussion The average steer in-weight was 275 kg ; average out-weight was 355 kg . The adjacent figure shows weight distributions after 41 and 67 days . The table below shows weight gain and average daily gain with time . The increase in average daily gain from 0.49 to 1.04 kg/day coincided with changes in grazing management . Post grazing re-growth increased in the more lightly grazed pastures utilized for less than 24 hours compared to the more heavily grazed longer utilized pastures and weed consumption increased . Fly infestations were reduced as time-in-paddock decreased . No animals were lost during the grazing program .

	8-May	18-Jun	14-Jul	10-Aug	Period					
Average Weight in Pounds (kg)	604	<u>275</u>	692	<u>315</u>	720	<u>327</u>	782	<u>355</u>		
Weight Difference in Pounds(kg)			88	<u>40</u>	28	<u>13</u>	62	<u>28</u>	178	<u>81</u>
Days			41		26		27		94	
Average Daily Gain in Pounds(kg)			2.15	<u>0.98</u>	1.08	<u>0.49</u>	2.30	<u>1.04</u>	1.89	<u>0.86</u>

Yearling steers born and raised on the ranch gained approximately 80 kgs more than the contract steers over the same period . This is attributed to superior genetics ,local adaptation ,and more favorable winter backgrounding .

Conclusions Increased stock density with extremely short-duration grazing and limited forage removal coincided with increased weight gain and improved pasture recovery . Fly infestations were reduced and weed consumption increased as time in paddock was reduced . Livestock demeanor and sociability were improved by increased handling . Locally adapted yearlings gained more than foreign stock .