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Comparison of companion grazing and single species grazing on leafy spurge infested rangeland

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Abstract:

A study was established near Mandan, North Dakota in 1996 to study the effects of companion and single species grazing on leafy spurge infested rangeland. The study evaluated the control of leafy spurge, grazing efficiency, and livestock performance among three grazing treatments; cattle only (CO), sheep only (SO), and cattle and sheep (CS). The research study consisted of three replicated 8 ha blocks. Each of the replicates was subdivided into four 2 ha plots and treated with either a CO, SO, CS, and a non-use control (NU). Treatments were randomly selected within each block. Each 8 ha research block had one plot grazed by two yearling steers (CO), one grazed by ten mature ewes (SO), and one grazed by one yearling steer and five mature ewes (CS). Stocking rates were approximately 3.7 AUM/ha for the CO, SO, and CS treatments, respectively. A significant reduction in leafy spurge stem density occurred after two grazing seasons on the SO treatment. Leafy spurge stem density was reduced from 10.4 ± 0.9 (S.E) stems/0.1 m^2 quadrat in 1996 to 2.5 ± 0.6 (S.E) stems/0.1 m^2 quadrat in 1998, a reduction of 75% after 2 years. No changes occurred in leafy spurge stem density on the CS, CO, and control (NU) treatments after 2 years. Herbage production was similar for graminoids, forbs, shrubs, and leafy spurge on the NU for the growing season of 1996, 1997, and 1998. Leafy spurge degree of disappearance increased on all treatments from 1996 to 1998. Degree of leafy spurge disappearance on the SO went from 76% to 98% and the CS went from 62% to 88% from 1996 to 1998. The CO also had an increase in leafy spurge disappearance with 23% in 1996 to 50% in 1997 and 1998. Graminoid degree of disappearance was similar within and between grazing treatments. Steer average daily gain (ADG) was not different between treatments (CO and CS) for either years

of the study. There was no change in steer ADG between years on the CS. The cattle only treatment, however, had an ADG of 0.80 ± 0.03 (S.E.) in 1996 and significantly decreased to 0.56 ± 0.03 (S.E.) in 1998. Ewe ADG was not different between treatments (SO and CS) for either years of the study, similar to the steer performance results. In both SO and CS treatments there was a decrease in ewe ADG between years 1996 and 1998; 0.07 ± 0.01 (S.E.) to 0.02 ± 0.01 (S.E.) on the SO and 0.07 ± 0.01 (S.E.) to 0.03 ± 0.01 (S.E.) on the CS. Sheep in a single species grazing environment provided a greater control of leafy spurge than companion grazing after the first two years of a ten-year study. Companion grazing improved the performance of the steers; however, it had no negative or positive impact on sheep performance compared to single species grazing. In these three years, this improvement in steer performance was seen by having a less negative impact on performance versus the reduction in performance as seen on the CO between years.