Effects of simulated mob-grazing on native and non-native grass species

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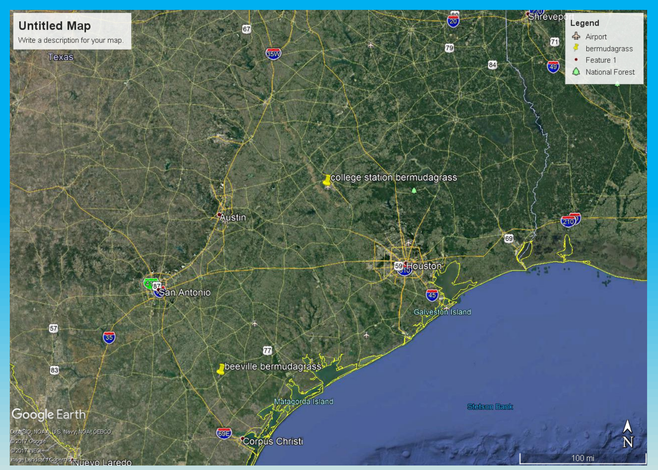
ABSTRACT

Mob grazing is a controversial grazing management practice that has not been extensively tested in Texas. In this project we attempted to simulate mob grazing, decrease canopy cover, and increase bare ground through very high-intensity grazing with a management goal of favoring seeded native species over undesirable weeds and exotic grasses. We used 40 mature cows to graze 0.5 ac mixed stand plots of native and non-native species for a total of 12 hours. This experiment was conducted at The Texas A&M AgriLife Research centers in Beeville and College Station, Texas. Plant height and canopy cover were measured the day before grazing was initiated and the day following completion. In College Station we increased bare ground by 55%, and by 38% in Beeville. In order to get a better idea of how cattle could be effecting species composition and effects on each class of vegetation present, we will continue to collect data on these plots over time. Insights into the vegetation changes caused by mob grazing will be useful to guiding landowners and managers about the expectations of utilizing this grazing management style in Texas.

Introduction

Rangeland managers have used grazing particularly mob grazing as a tool to manage unwanted species and possibly increase the amount of native plants present. Mob grazing utilize a high stocking rate for a short duration to increase hoof action and reduce foraging selectivity creating uniform intense utilization. The idea behind using this technique shorty after seeding is that the cattle would remove the unwanted weedy species and provide a more favorable environment for the perennial seeded plants to thrive. We tested mob grazing's effect on bare ground, canopy cover, and height in areas previously seeded with a diverse native seed mix. We were also interested in the response of the seeded native plants and if they would come back stronger due to the cows decreasing the canopy cover of the unwanted species.



Methods

This experiment was conducted at Texas A&M Agrilife Research station in College Station, TX (30.6280° N, 96.3344° W) and the Texas A&M Agrilife Research station in Beeville, TX (28.4008° N, 97.7483° W). Each of these sites contained 0.5 ac plots that had been seeded 3 months prior to the onset of the mob grazing with a diverse native seed mix. The resulting vegetation was a mix of volunteer, seeded native, and non-native species. Mob grazing was simulated by allowing 40, 2,000 lb mixed breed cows to graze each 0.5 acre plot for a total of 12 hours. Canopy cover and average plot height was sampled the day before grazing and then again the day following grazing. Percent canopy cover of vegetation was ocularly estimated with 20 x 50 cm quadrats (Daubenmire 1959).

Results

Simulated mob grazing reduced canopy cover and increased bare ground which is what we were hoping for from this experiment. The Bare ground increased from a pre-graze state of 5% to over 40% at both sites (Figure 2). Canopy cover was reduced from over 120% in pre-grazing to less than 60% post grazing (Figure 3). The average height of the sampled plots was reduced from 60cm to 15 cm in Beeville, and from 65 cm to 35 cm in College Station (Figure 4). We also looked at the effect of simulated mob grazing on seeded native plants specifically. In College Station the canopy cover of seeded species was reduced from 3% to 0 and in Beeville it was reduced from 18% to 1% (Figure 5).

Figure 2. Percent bare ground present in pre and post grazing at both College Station and Beeville

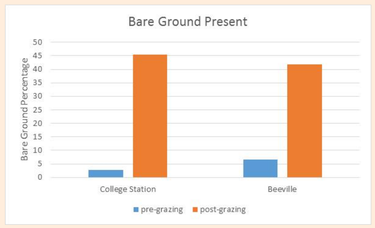
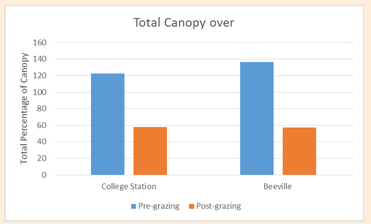


Figure 3. Total canopy cover present in pre and post grazing at both College Station and Beeville



Discussion

This experiment was done to see if we can use simulated mob grazing to increase the percentage of bare ground present, and decrease the amount of canopy cover which we are hoping will allow native plants to thrive in the reduced competition. The potential remains for increased seeded plant production if results follow those seen by Gurda, A., M. Renz, and G. Brink who found that mob grazing reduced weed stems and significantly increased forage production (2014). However, we are still guarded in our expected results as it is possible that the simulated mob grazing had little effect on the competitive advantage of seeded native species, which would be similar to what other researchers have found (Lawrence et al 1995). We will continue to monitor the site and evaluate the potential of this treatment to manage newly seeded areas.

Figure 4. Average plant height present in pre and post grazing at both College Station and Beeville

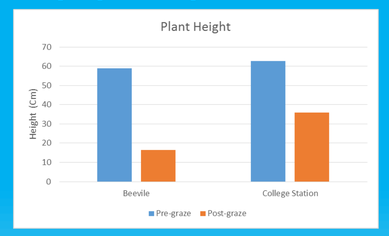
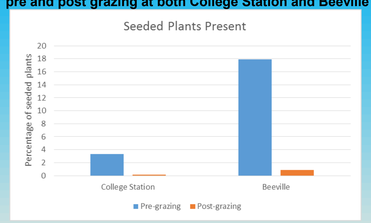


Figure 5. Percent canopy cover of seed plants present in pre and post grazing at both College Station and Beeville



Conclusion

After analysis of what had changed from pre-grazing and post-grazing we were able to see that mob grazing managed to do what we wanted which was to increase the amount of bare ground present. We also observed how mob-grazing changed the plants that were present in the plot. The cows managed to reduce the amount of seeded plants drastically which led us to believe they were more fond of the seed mix than what was originally growing in the area which consisted of Bermudagrass.

Works Cited

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