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Presenter Information

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Fire and grazing to improve wildlife habitat on introduced grass monocultures in Texas

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Key words : fire, grazing, exotic grasses, wildlife

Introduction Guinea grass (*Urochloa maxima*) and bermudagrass (*Cynodon dactylon*) were introduced into the USA with the objective of improving forage production for cattle. However, these grasses became invasive and replaced native plant communities valuable for wildlife. Invasive plant species are considered the second most important threat to conservation of biodiversity (Zalba et al. 2000). Prescribed fire can be used to stimulate regrowth, and improve quality and preference by grazing animals as well as to increase insect abundance, wildlife and cattle usually concentrate on burned areas due to these factors. This phenomena provides an opportunity to use prescribed fire, followed by grazing, to reduce stands of invasive exotic grasses and allow native plants an opportunity to recolonize these areas.

Materials and methods We conducted two companion projects in Willacy and Bee counties, Texas, to test the idea that prescribed fire followed by cattle grazing can reduce the amount of invasive exotic grasses present. In the first study (Willacy County) we evaluated the effect of a summer (June) burning and intensive cattle grazing on guineagrass density and native plant species richness. Guinea grass density and native plant composition were monitored monthly for 7 months post-burning. Four treatments with three replications resulting from the combination of prescribed burning (burning and no burning) and intensive grazing (grazing or no grazing) were evaluated. In the second study (Bee County) we evaluated the effect of prescribed burning (November) and overseeding of armadillo burr medic (*Medicago polymorpha*) on cover of forbs and insect abundance. Four treatment combinations with three replications were evaluated: seeding or no seeding, and burning or no burning, all treatments were grazed by cattle. In both studies a randomized complete block design with a factorial arrangement of treatments was used to analyze the information. Main effects and interactions were considered significant at $\alpha < 0.05$.

Results and discussion At the Willacy County site, prescribed burning reduced ($P < 0.05$) guineagrass density with an average of 58,667 plants/ha compared to 93,333 plants/ha in non-burned areas. These results agree with Skovlin (1971), who indicated that guineagrass is susceptible to hot fires. Native plant species richness in the burning—grazing treatment increased from 1 to 4.3 species/0.25 m², an increase of 330% at the end of the study. Contrasting information has been reported by Drawe and Kattner (1978), indicating that percent composition of grasses and forbs was affected by early summer burns when combined with mowing. Ten important forbs used by white-tailed deer (*Odocoileus virginianus*) and six used by northern bobwhite (*Colinus virginianus*) were newly recorded or increased 1 yr after application of the burning treatments. Cattle and white-tailed deer preferred burned areas.

At the Bee County site, cover of forbs in general was greater ($P < 0.06$) in the burned areas with more than 60% compared to less than 33% for the unburned areas. Overseeding armadillo burr clover did not affect the cover of forbs ($P > 0.05$), however, insect abundance of three different families was higher ($P < 0.05$) in the burned and seeded areas. Abundance of insects is very important for diets of birds such as northern bobwhite.

Conclusions The results of these studies suggest that prescribed burning and cattle grazing can lead to an increase in native plant species richness reducing guineagrass density and increasing insect abundance, both of which are desirable for wildlife.

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