



Is It Necessary to Plant Twice?

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Abstract

A common range and restoration seeding recommendation is to plant a cool season cover crop in the fall to provide winter cover if seedbed preparation is completed outside of typical warm-season seeding periods. These plantings are then followed by the seeding of a permanent seed mix in the early spring, often requiring additional weed control, seedbed preparation treatments, or mowing of the cover crop to enable a second seeding. We designed a plot study to determine if planting a native, cool season cover crop at the same time as a permanent native grass seed mix might affect long term establishment of native grass plantings. This study included three replicates of three treatments in of 200 ft² plots at the *South Texas Natives* research facility in Kingsville, Texas. Treatments were 1) native cool season cover crop only, 2) combination of the native cool season cover crop and permanent native seed mix, and 3) permanent native mix only. Plots were seeded in late fall 2016 using a Truax Flex II native seed drill. In fall of 2017, seeded plant density was sampled using a 0.5 m² frame to count the number of seeded plants. Results from this experiment will be used to refine recommendations for native grass seeding in combination with cover crops for the late fall planting season.

Introduction

Cool season cover crop mixes are recommended for planting in order to provide vegetation through the winter months (USDA, 2015). Once the early spring planting window is available, permanent seed mixes are planted in order to establish long term stands of grass (Nixon, 1949). In the South Texas environment, precipitation levels rise in the fall months (September and October) before dropping through the winter and spring and then climbing back up to the peak in June (Temperature, 2017). In South Texas areas, it may be beneficial to plant a permanent seed mix with the cool season cover crop in an attempt to capitalize on the higher levels of fall precipitation. In an effort to increase onsite efficiency and to cut seeding costs, this planting technique was evaluated to determine if one planting could take the place of two plantings over a short interval.



Methods

This study took place at the South Texas Natives facilities in Kingsville, Texas. Kingsville, Texas (27.5°N, 97.81°W) is a humid subtropical climate with an annual average precipitation of 28.98 inches. The average high temperature in Kingsville is 83.1°F while the average low is 60°F. We tested three different seed mixes replicated three times in 200 ft² plots. The three mixes were a native cool season cover crop, a permanent native seed mix, and a combination of both the native cool season and permanent mixes.

The native cool season cover crop consisted of Little barley (*Hordeum pusillum* Nutt. seeded at 10 pounds/acre. The permanent seed mix included a variety of native warm season species listed in Table 1. The combination treatment included both the Little barley and the native warm season species. All three mixes were seeded into prepared ground using a Truax native seed drill, on October 6th, 2016. Once seeded, the plots were never irrigated but received 25 in of rainfall over the 11 month time period. On September 12, 2017 all sites were sampled using a 0.5 m² to determine seeded plant density.

Table 1

Native Permanent Seed Mix		
Variety	Species	% of Mix
Hidalgo Germplasm	4 flower trichloris	10%
La Salle Germplasm	Arizona cottontop	5%
Venado Germplasm	Awnless bush sunflower	5%
STN experimental	Big bluestem	5%
Catarina blend	Bristlegrass	5%
PMC experimental	Brownseed paspalum	3%
Balli Germplasm	Bundleflower	5%
Zapata Germplasm	Clammyweed	5%
Hoeverson Germplasm	Deer pea vetch	5%
Chaparral Germplasm	Hairy grama	10%
Oso Germplasm	Hall's panicum	5%
Mariah Germplasm	Hooded windmillgrass	10%
Carrizo blend	Little bluestem	10%
STN experimental	Milkweed	1%
Goliad Germplasm	Orange zexmenia	5%
Maverick Germplasm	Pink pappusgrass	3%
PMC experimental	Plains lovegrass	1%
Divot blend	Plantain blend	5%
Rio Grande Germplasm	Prairie acacia	5%
STN experimental	Purple three awn	1%
Duval Germplasm	Red lovegrass	5%
Nueces Germplasm	Sand dropseed	5%
Welder germplasm	Shortspike windmillgrass	5%
STN experimental	Silver bluestem	1%
Dilley Germplasm	Slender grama	10%
PMC experimental	Switchgrass	2%
Webb Germplasm	Whiplash pappusgrass	2%
STN experimental	Yellow Indian grass	3%

Results

There were 20 species identified during the sampling process. Of the species identified, only 6 of which were seeded species. The remaining 14 species were determined to be volunteers. The native cool season cover crop plots had no seeded species while the permanent seed mix plots had an average seeded plant density of 0.55 plants/ft² and the combination seed mix plots had a seeded plant density of 0.40 plants/ft².

Discussion

This pilot study has demonstrated that a successful stand of native warm season grasses could be achieved even when planted outside of recommended seeding windows in South Texas. The data showed that after planting the native permanent seed mix in October we were able to get a successful stand established according to NRCS standards (> 0.05/ft²) (NRCS, 2015). However, without the native cool season mix, the area was left exposed through the winter months. The native permanent seed mix and native cool season cover crop combination came just shy of NRCS standards for a successful stand. The native cool season mix addition may have had a negative effect on the seeded plant density at the time of sampling. Additional sampling in the winter months may show that native cool season plants reseeding themselves push the seeded plant density past the required threshold. If pushed above the threshold, the combination of the two mixes would then open up the possibility of two foraging cycles during the same time period.

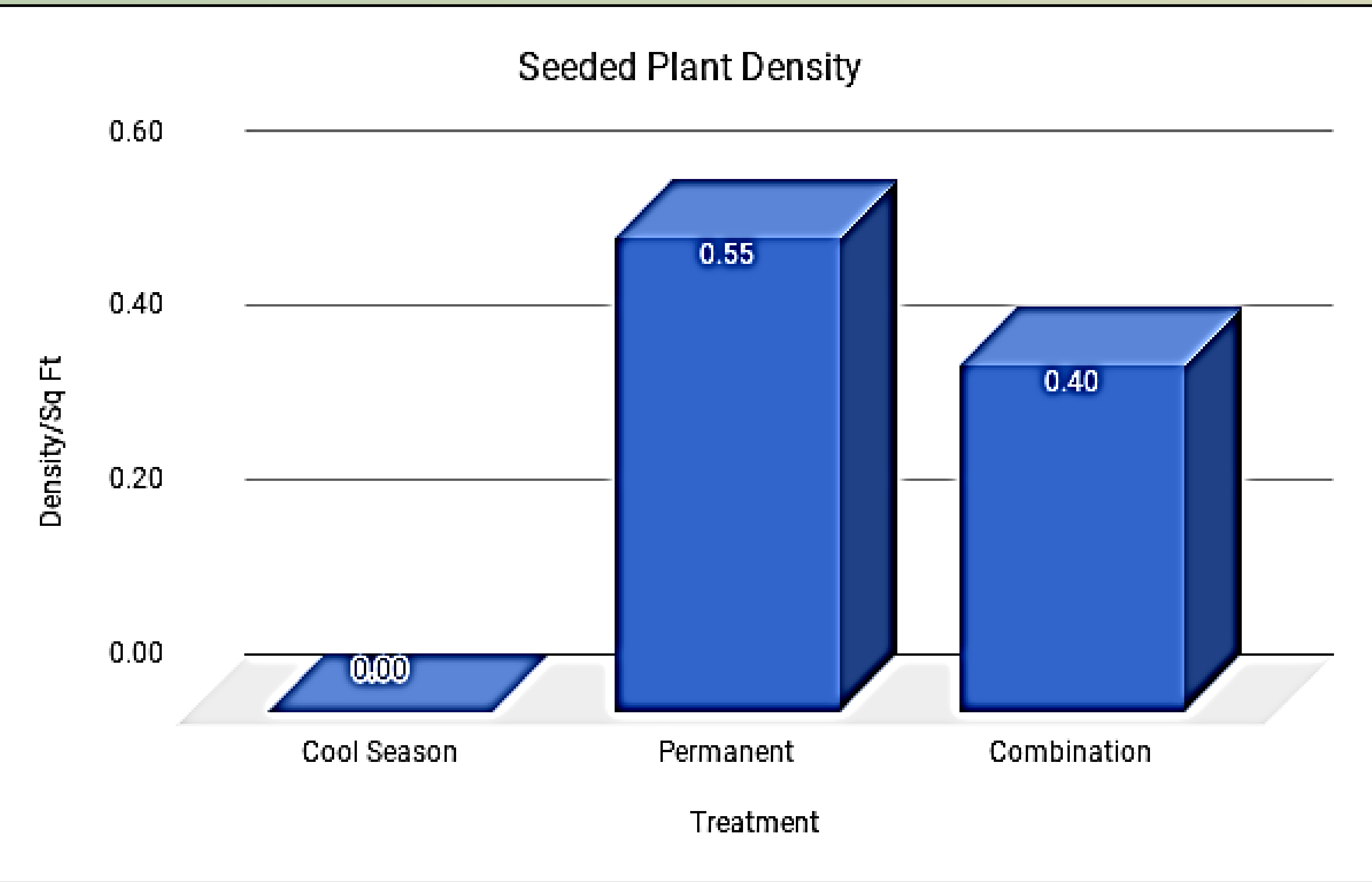


Figure 1

Conclusion

From the results of this pilot study it can be determined that further research, on a larger scale, is needed in determining if native permanent seed mixes can be successful in South Texas when planted outside of recommended seeding windows. A successful stand was achieved per NRCS standards and therefore moving to a larger scale study is recommended to further research goals.

Works Cited

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