



Demonstration Planting Project Update

July 26, 2010



Figure 1. Conducting step-point transect sampling at the Comanche Ranch planting on June 8, 2010. Seeded native grasses and forbs had 65% basal cover, and density of 4.8 plants per square foot.

We sampled each planting in June and July. The performance data collected really puts in perspective how well many of the plantings have done. In all of the plantings, we have followed the methods of the Natural Resources Conservation Service (NRCS)-*Conservation Practice Standard-Range Planting-Code 550* ([click here for a link](#)). This document is used by many agencies to guide native restoration plantings. Roughly 8,000 acres in South Texas are

planted and evaluated annually by these standards through conservation programs such as EQIP, CRP, WRP, and GRP. Evaluating the Demonstration Plantings under these criteria is beneficial to a large portion of seed consumers.

Summer 2010 Sampling Results

The NRCS Practice Standards rank plantings with 0.5 plant/ft², 1-2 years after seeding as satisfactory or successful. Seven of 9 plantings met the NRCS criteria to be classified successful at this sampling period (Table 1). Final evaluation of seeded plant stands is traditionally done at two years post-planting, but it is often done sooner, if the plant community shows evidence of being well established. The plantings at Butch Thompson's place in Kleberg County, the Las Cuatas Ranch in Jim Hogg County, the Comanche Ranch in Maverick County, and the Temple Ranch in Duval County had at least 4x the necessary seeded plant density to be ranked as successful plantings. One of two plantings at the Cactus Jack Ranch just met the criteria for success, while the other there had about twice the necessary 0.5 plant/ft² density required, as did the Rancho Blanco plot. I would rate the Cactus Jack and Rancho Blanco plantings as the two most difficult restoration environments studied in this project, because of extreme past exotic

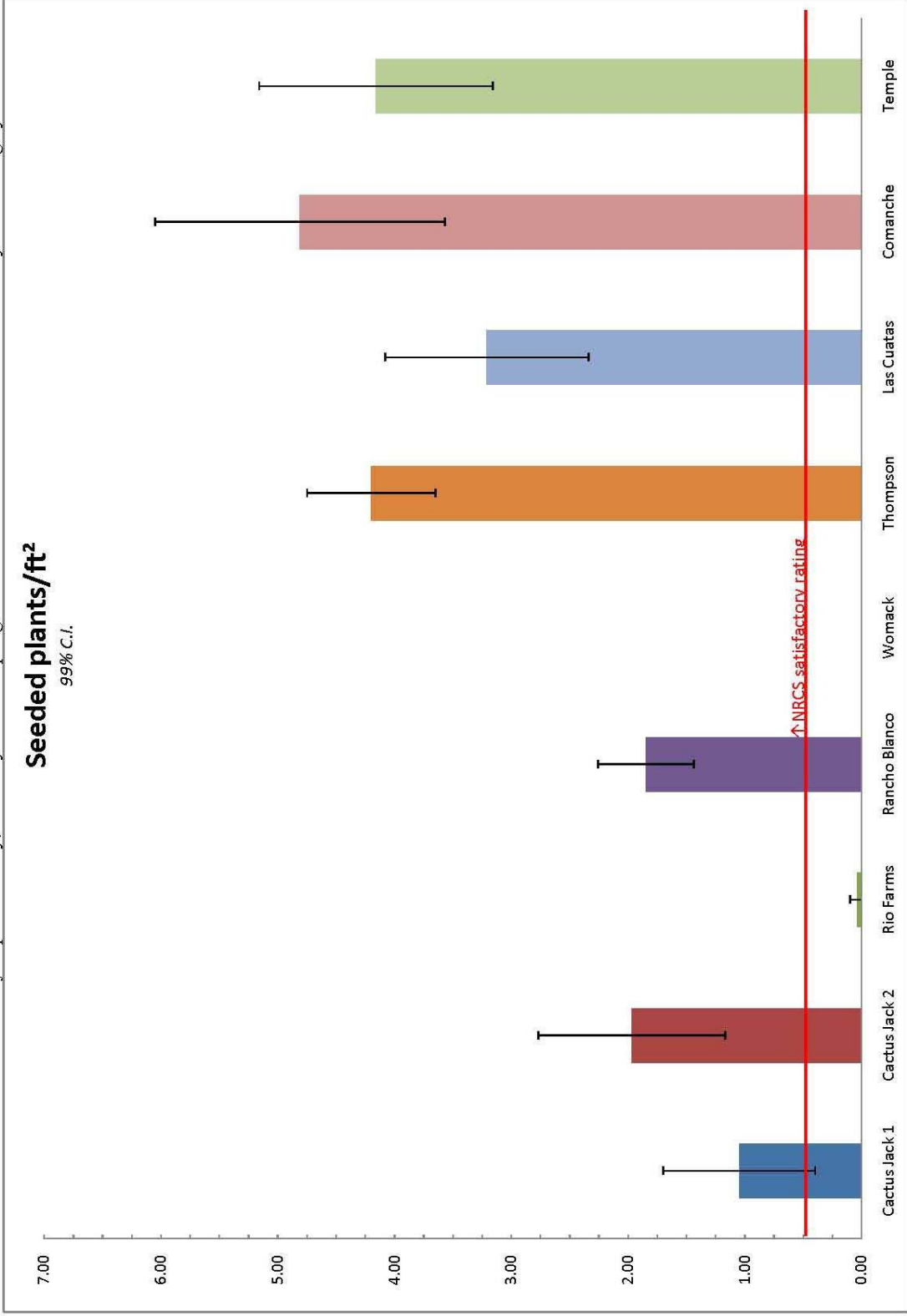


grass infestations on those sites. The performance of those two plantings is *very exciting*.

Figure 2. Quadrat used to estimate seedling density.

Two of 9 plantings did not meet the criteria for a satisfactory rating. The Womack Ranch planting has been somewhat of an outlier from the start. We have yet to see appreciable emergence of any of the warm season seeded plants. This site is still dominated by native forbs from the seedbank, mostly annuals such as sand sunflower and cowpen daisy. In total, 16 native forb species were documented on this plot in June, and no grasses of any kind, seeded or volunteer. This planting may put a number on the patience required when planting seed in some areas. Or, it may reveal a dichotomy in useable plant materials between the central and western portions of South Texas and the north-eastern portions of South Texas. We also have some concerns over having appropriate seed for use on very coarse textured (sandy) soils along the Gulf Coast. To address this we've begun work with two widespread, early-successional species (red lovegrass and sand dropseed) for these areas. In the interim we will keep a close eye on the Womack site and see what it teaches us. The Rio Farms planting had a scattering of seeded plants at this evaluation but is like the Womack planting in

Table 1. *South Texas Natives* Demonstration Project plant density, June/July 2010 sampling. Red line denotes threshold for satisfactory stand rating by NRCS criteria.



that it is dominated by native forbs. Annual sunflower and coreopsis are dominant here, along with 13 other annual plants. We have no doubts about seed adaptation here, given other very successful plantings in the Lower Rio Grande Valley and the fact that we grow seed of many of these same plants nearby at Rio Farms. The poor/slow performance of this planting is likely a function of planting date. Planted last November, the site has been inundated with rain since. It is doubtful that many of the native grasses have had the soil temperatures or light intensity needed to germinate. Very good numbers of the cool season seeded plants were documented at both Rio Farms and the Womack Ranch in March, leading us to think neither planting depth nor seed distribution is a problem at either site. The Womack Ranch and Rio Farms plantings may eventually provide some confirmation of what we have found in other seeding trial work, in that planting date can have significant influence on early establishment, but has less effect on performance 2-3 years after planting. *All of the successful plantings in this project were seeded between August 20 and October 10.* Rio Farms was planted in mid November 2009 and the Womack Ranch in February 2010.

Species composition of successful plantings

Across all sites Dilley Germplasm slender grama and Welder Germplasm shortspike windmillgrass continue to be the greatest contributors of seeded plant cover. But, in this sampling period we documented the highest amounts of others species from the seed mix. We quantified consistent increases in La Salle Germplasm Arizona cottontop and Catarina Blend Bristlegrass at several sites, and a sharp increase in Goliad Germplasm orange zexmenia at the better performing plantings. Prairie acacia, a traditionally hard to establish, but very desirable wildlife plant was documented at three locations. Confirmation of establishment of late successional plants like bristlegrass, prairie acacia, and orange zexmenia on restoration sites is very important. While the natural succession of various plants overtime after disturbance is well documented in natural plant communities, the process has been poorly documented in restoration plantings, however it is suspected to occur. Many of these species will never be quick-to-establish in restoration plantings, but as time goes by they may be increasingly important contributors to the plant community.



Figure 3. Dominant perennial forbs beginning to establish and flower at the Las Cuatas Ranch (l) and Thompson Ranch (r). Both photographs from June 2010.

Exotic grass “reinvansion resistance”

The winter of 2009-2010 was one of the harshest in a decade for most of South Texas. As a result, sub-tropical exotic grasses such as buffelgrass and guineagrass were very slow to green-up this spring. Observations at all of the plots suggest a reduction in exotic grasses this summer. It is very likely the cool winter and above average spring rainfall gave natives a temporary competitive edge. Given that rains have been very consistent throughout the warmer months, exotics will likely perform as well or better than in the past by this fall. At this juncture, it is best to proceed cautiously with making inferences on data on native plant establishment vs. exotic resistance in this “outlier” season. Since weather likely had the major impact on this relationship in the last 6 months, we want to wait until the end of 2010 to approach this hypothesis. After the October data collection, we will report on competitive ability of the seeded natives vs. exotic grasses based on the data. The drought-monsoon nature of our climate underscores the need for long-term projects such as this. By 3 years post seeding, most of these plantings will have undergone a severe drought, and abnormally wet year, and likely another different set of climatic conditions in 2011. Collectively the data should allow us to make a reasonable inference on if, and to what degree native plantings can impede exotic grass invasion.

Summary of cool-season sampling conducted in March 2010



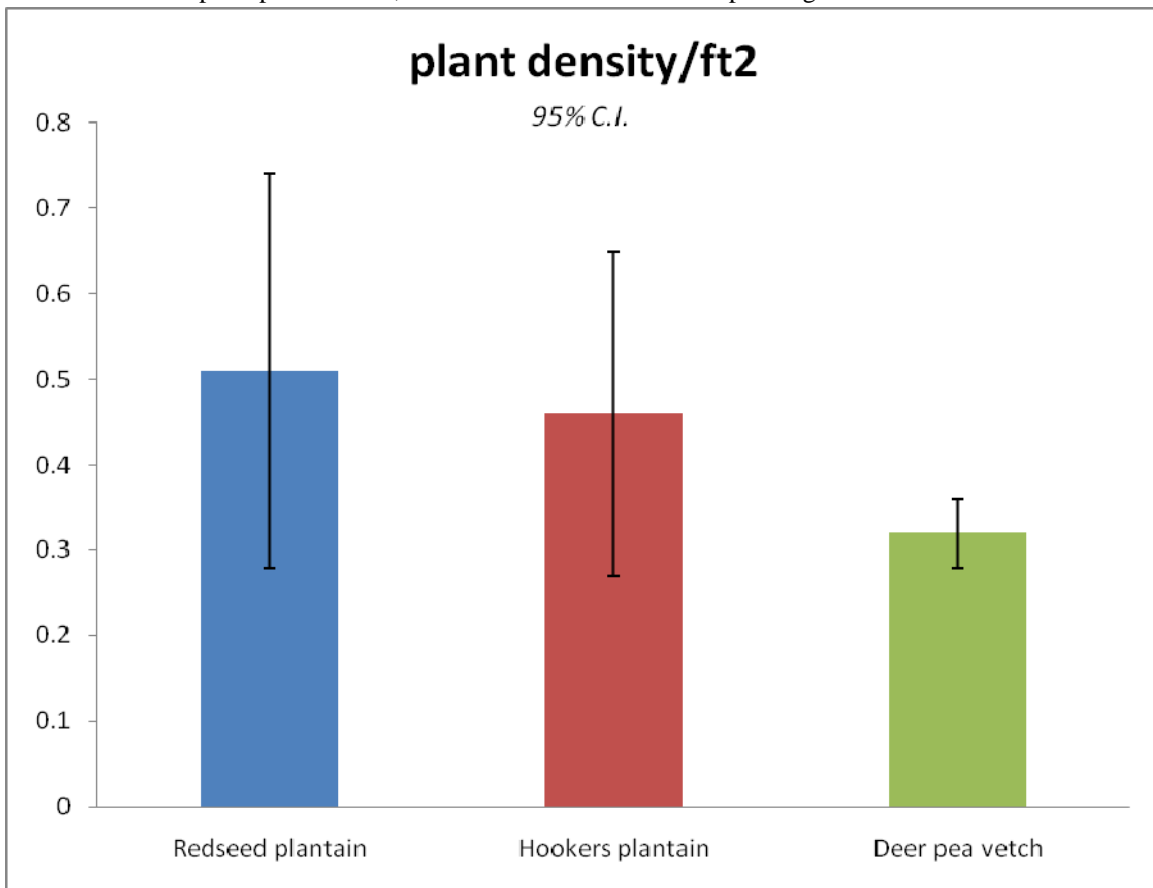
Figure 1. Hookers plantain at the Las Cuatas Ranch in Jim Hogg County. Plant density averaged 11 plants per ft² when sampled on March 1, 2010. Canopy cover of Hookers plantain was estimated at 15%.

While winter rains and cold temperatures likely suppressed exotic grasses in the past six months, these conditions were ideal for evaluation of the cool-season seed mix components used in the project. We seeded 3 cool-season annuals on each site: deer pea vetch, redseed plantain, and Hookers plantain. Collectively, these species were 19% of the project seed mix. Table 2 shows the performance of these plants across all nine planting sites. Collectively, mean seedling density of the cool season plants was 0.43 plants per ft². This alone ranks the plantings near a satisfactory in terms of seedling density. This cover is of course annual, and seasonal, but is important nonetheless. The otherwise poor-performing plantings at the Womack Ranch and Rio

Farms had the highest seedling density of deer pea vetch of any of the sites. We think these cool season plants will provide a very good option for wildlife food plots and reclamation plantings during the winter for South Texas. We've had some difficulty convincing the commercial seed industry to grow these plants, but these data show fairly consistent, good performance across the region should help convince them.

Deer pea vetch had the most consistent performance across the sites, whereas the plantains were more variable between sites, influenced by suitability of the two species to the given soil type. Generally speaking, Hookers plantain did well on sandy textured soils (especially the Las Cuatas planting) and redseed plantain performed best on fine textured loams and clays. If a restoration project overlaps multiple soil series we will continue to recommend the inclusion of both in the seed mix. At sites where these plants had good performance they produced copious amounts of seed this winter. An important evaluation of the plants ability to reseed and persist will be done this winter. These data should give us more definitive ideas of just where each is best adapted, and recommend for use.

Table 2. Cool season plant performance, March 2010 at 9 South Texas planting sites.



Summary and future work plan

The summer evaluation of the Demonstration Plantings yielded some excellent data quantifying the performance of these plantings. To put this information in perspective, compare our success rate of 77% to the historically low success rates of range seedings (predominately utilizing exotic grasses) in the southwest of 10%. The success rates we've observed can be attributed to planting the right plants with the right methods. With continued effort, we hope to push the success rate even higher in future plantings.

Beginning in October, we will make the rounds again for fall sampling. STN recently filled our Native Plant Collections and Evaluations Manager position. Tony Falk will begin in the position on September 1. Tony just completed his M.S. degree here at CKWRI, and has been an STN team member working on an extensive native seeding project with Texas Parks and Wildlife for the past two years in the Lower Rio Grande Valley. I'll personally accompany Tony to the plantings in October, and would like to introduce him to each of you or your managers if possible. He will be a great asset to this project, and has my utmost confidence to do the job right, and be respectful of your wishes, privacy, and ranch policies.

If the rain stops long enough that we can *get to* his ranch, in September we'll plant the final plot using this demonstration seed mix at Dr. Greg Smith's property near Premont. We'll also be planting a replacement plot at the Killam Tynan Ranch this fall. Adding more spatial and temporal replication to this effort should provide an ever better evaluation of the seed releases.

Please keep in mind that beginning September 2011, STN plans to start another series of demonstration plantings with a bigger and better native seed mix. For these new plantings, we would like give some of the more complex restoration environments our best effort. If you have an especially problematic site on your ranch, such as an old oil & gas production location, and would like to continue contributing to this effort please let us know. We would prefer the next round of sites each to be in the 5-10 acre range. Also, if you have brush management work planned, we are interested in combining restoration seeding trials with those practices.

Thanks for being a part of this exciting project, and don't hesitate to call if we can help with your native plant restoration efforts.

Sincerely,



Forrest S. Smith

South Texas Natives Coordinator