



## South Texas Natives eNews

News from the South Texas Natives Program at the Caesar Kleberg Wildlife Research Institute

### Aerial Seeding Applications for Native Plant Restoration in South Texas

**By Forrest Smith**

*South Texas Natives Coordinator*

Pearsall, TX-Rangeland seeding from fixed-wing aircraft is common restoration application in the Western United States. Aerial seeding of native plants in South Texas has scarcely been an option in the past, because of the lack of native seed for use here. Recently though, NRCS personnel in the central Rio Grande Plains have been successfully implementing the technique in tandem with native grass and forb mixes.

While the use of specialized rangeland seed drills is a proven method for seed application, a variety of limitations inhibit drilling native seed in South Texas. For one, cost of ground-based seed applications is high, often \$20-25 per acre. Another complicating factor to drilling native seed is the lack of availability of adequate native seed drills. At present, fewer than 5 of these drills are known to reside in South Texas, and obtaining one for use can be difficult. Cost for new drills can exceed \$10,000.

Calibration and operation of these complex machines are not easy tasks, but bear heavily on success. Finally, many restoration seeding locations are not drill friendly, because of rocky terrain, brush control residues, or variable topography.



Fall 2010

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Forrest S. Smith

Aerial seeding has several advantages, greatest of which is cost. Aerial seed applications range as low as \$8-\$12 per acre, depending on the distance of the planting site from the aircraft's home base. Aerial seeding can be conducted over extremely rough terrain, such as gravelly or rocky sites, brushy areas, or sites where brush work has left accumulations of litter or woody plant residues that can wreak havoc on sensitive native seed drills. Aerial seeding can also be completed very rapidly in comparison to drill seeding. Whereas most rangeland drills plant swaths with widths of 12 feet or less, seeding via fixed-wing aircraft is typically done in passes of 50 foot widths or more. A 500 acre seeding can be done in hours via air, whereas planting the same area with a drill could take days. Seed can be flown-on when soil conditions prohibit ground travel such as when the seedbed is too wet for tractor travel, or too dry and fluffy. Aerial seeding can also be quickly implemented when rain is imminent.

Range plantings in the Pearsall area coordinated by NRCS personnel Ryan Walser and Dusty Crowe were visited recently. These native seeding projects were implemented from 2006-2009 following mechanical brush management efforts to improve herbaceous vegetation to provide for wildlife and livestock. Native grasses and forbs were aerially seeded immediately following root-plowing or roller chopping of dense brush. On all these sites, excellent establishment of the native seed has been documented. Seed distribution and plant density were as good as would've expected had these areas been drill seeded, given the planting rates and seed sources used. This on-the-ground proof of successful aerial seeding of native vegetation in South Texas is very exciting.

South Texas Natives plans to begin research on this promising technique in the near future. This fall, we hope to implement an aerial seeding trial in Nueces County with King Ranch. A mixture of native grasses will be aerially seeded on sites where native grass response after brush work is historically poor, because of apparently low reserves of native seed in the seed bank. By augmenting the native seed bank on these sites, we hope initial grass canopy cover can be increased, limiting weed infestations and impeding exotic grass invasion. Drill seeding would scarcely be an option on these sites, because the cost and duration of the application would not be feasible under the ranch operations. Aerial seeding trials will also be part of an upcoming series of demonstration plantings to begin in fall 2011. On some of these sites we will compare aerial seeding to standard drill seeding techniques to ascertain the cost-benefit relationship of each planting method in an experimental setting. Future projects will seek to provide more specific recommendations such as ideal seeding rates and environmental conditions for aerial applications, and answers to the technical question such as whether packing or rolling is necessary on some soils after aerial seeding.

Aerial seeding has tremendous potential in South Texas. In a region where pastures and range improvement projects are often measured in thousands of acres, seeding from the air is one of the most logical and cost effective seed application techniques. We hope to provide solid information, and refinement of aerial seeding methods as needed to guide restorationists' use of the practice. As native seed availability improves, cost-effective, large scale planting methodology will be increasingly important for successful use of new native seed sources.

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*South Texas Natives  
Coordinator*

Texas A&M University-  
Kingsville  
Caesar Kleberg Wildlife  
Research Institute  
700 University Blvd.,  
MSC 218  
Kingsville, Texas 78363  
361-593-4525 [forrest.  
smith@tamuk.edu](mailto:forrest.smith@tamuk.edu)



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