



**A REPORT FROM
WEST TEXAS NATIVE SEEDS**

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WEST TEXAS NATIVE SEEDS

The abundant and diverse wildlife that West Texas is known for needs healthy stands of native vegetation in order to thrive. Improving the commercial availability of diverse, regionally-adapted native seed mixes through West Texas Native Seeds will improve the success and effectiveness of native plant community restoration efforts across West Texas.

West Texas Native Seeds is a multi-agency collaborative project to provide native seeds for the restoration of wildlife habitat and disturbed lands across West Texas. The project is a joint initiative of the Borderlands Research



Desert grasslands provide an abundance and diversity of native plants for many wildlife species.

Institute at Sul Ross State University and the Caesar Kleberg Wildlife Research Institute at Texas A&M University-Kingsville.

West Texas Native Seeds is modeled after the Kleberg Institute's successful South Texas Natives project. Over 30 native seed sources have been developed for South Texas in the last decade through the South Texas Natives project. These efforts have resulted in the



West Texas Native Seeds is a collaborative effort between the Borderlands Research Institute and Caesar Kleberg Wildlife Research Institute.

commercial seed production of native plants allowing for tens of thousands of acres of habitat restoration and reclamation annually across the region. With habitat fragmentation and disturbance becoming a growing concern in West Texas, the development of native seed sources and restoration techniques is needed in order address habitat restoration at a regional scale.

Our goals:

- Collect, evaluate, and release seed sources of West Texas native plants to commercial seed producers to make locally-adapted native seeds readily available to consumers in large quantities at reasonable prices.
- Develop and disseminate restoration and reclamation strategies that can be successfully used to reestablish native plants in disturbed or degraded habitats.
- Promote the use of native plants in rangeland restoration; highway right-of-way restoration; oil and gas, and energy transmission right-of-way reclamation; and horticultural plantings.

WHY NATIVE SEEDS?

The restoration of native plant communities is a growing need in West Texas. Providing habitat for wildlife, revegetating highway rights of way, and reclaiming oil and natural gas fields are common restoration needs. Commercial sources of locally-adapted native seeds for these kinds of projects are critical for successful restoration, yet two major challenges exist for successful restoration: 1) the lack of locally-sourced native seed and 2) the continued use of exotic species.

Although some grass species native to West Texas are already available through commercial seed dealers, the sources those seeds are grown from almost exclusively originate from elsewhere. Take sideoats grama for instance, the state grass of Texas and a plant found widely throughout the state. Isn't a sideoats grama just sideoats grama no matter how you slice it? The answer is no. The plant species itself may be native to the region but the genetics and adaptations of the currently available commercial seed sources are not.

"El Reno" sideoats grama originates from central Oklahoma while "Haskell" comes from North Texas and "Vaughn" from central New Mexico. Each of these areas have very different climates and soils than those found in West Texas. Research shows that many plants established outside of their range of adaptation may germinate and grow for several growing seasons but they often will not persist and reproduce over the long term.

Native seed can be hard to come by, sometimes because consumer demand often exceeds producer supplies. As a result, exotic grasses are often planted to prevent soil erosion in reclamation projects or following habitat improvement efforts. However,



Sideoats grama is found throughout United States, but only seeds from local populations will consistently persist and reproduce over the long term.

research clearly shows that exotic grasses have many negative impacts on wildlife and the ecosystems they are introduced into.

Exotic species, especially in monoculture stands, disrupt the entire ecosystem by decreasing the biodiversity of native flora and fauna. Not only do they use up the water, space, and resources native species need, native wildlife most often prefer native grasses and forbs for food and shelter. As an example, researchers have documented 50% fewer bobwhite quail on sites dominated by exotic grasses in South Texas compared to sites with native grasses. Similar results were found for scaled and Gambel's quail. Researchers working in West Texas have also found that vegetation dominated by exotic grasses is the least desirable habitat for both of these western quail species.

There are no quick fixes to address the issues of habitat degradation or disturbance. However, using seeds developed from populations native to West Texas is one way to ensure that a grassland restoration project is successful and will thrive in the challenging environments of West Texas. It is also a means to help our native wildlife flourish.

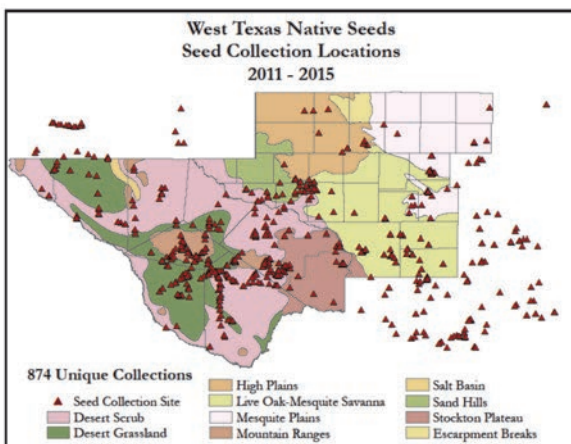
DEVELOPING NATIVE SEED SOURCES: PRIORITIES AND COLLECTION

So, how do we develop native plant seed sources? There are 5 steps to developing a native seed source: (1) establishing a priority collection list, (2) collecting seed, (3) plant evaluations, (4) increasing seeds through field plantings, and (5) commercial increase and release.

The first step in the process is to develop a priority collection list of plant species. Species are selected based on their level of importance to wildlife and the ecology of West Texas, as well as indications that large-scale commercial seed production would be possible. Each species is chosen for its potential to meet restoration needs—from highway rights-of-ways, to wildlife habitat enhancement, to rangeland re-seeding. Our collection list was developed collaboratively with our group of technical advisors and includes nearly 90 native plant species.

Seed collection is the next step. In this phase, project staff and cooperators actively begin to gather a large number of collections from dif-

ferent populations of selected species for evaluation from across 37 West Texas counties. Our goal is to get a broad geographic and genetic representation of each of the target species for study. Collection of a species typically takes 1-3 years, and is influenced by the variable climatic conditions of the region. Our goal is to make 2 collections from different soil types within each West Texas county where each species occurs. Since 2010, we have made over 900 seed collections of 116 plant species from across the program area, almost exclusively from private lands.



Working with private landowners, we have made over 900 seed collections of 116 plant species from across West Texas.



Researchers with West Texas Native Seeds work to collect seeds from American basketflower in Jeff Davis County.

DEVELOPING NATIVE SEED SOURCES: EVALUATION AND INCREASING

After seed is collected, it is cleaned, cataloged, and then placed in cold storage. When a reasonable number of seed collections have been made for a plant species (e.g., collections obtained are representative of the diversity of the species' occurrence and range), the evaluation process begins. A small portion of the original seed collections of each species is propagated in a greenhouse. Seedlings are then transplanted into field research plots and evaluated over time by several criteria including seed germination, seed production, growth rate, biomass production, and survival.



Species selected for evaluation are first grown in a greenhouse before they are evaluated in the field.

The evaluation of populations in a common environment under controlled conditions allows us to compare the populations objectively, in order to make the best decisions for selection of populations to be included in future releases. From data collected during at least 2 years of evaluation in these controlled settings, we identify populations with the best natural adaptation for successful restoration use across the region. These naturally-suited plant populations will be candidates for a regional seed release of the species for West Texas.

Once the populations for a release are identified, the original collections of those populations are used to establish seed increase fields.



Researchers use traditional farming techniques to grow native plants during the increase phase.

We utilize the original seed for establishing seed increases because we want to maintain the genetic integrity of the wild population as much as possible. Seed harvested from these fields is provided to cooperating commercial seed dealers, who then plant larger fields. Seed harvested from the commercial increase sites will eventually make its way to consumers as a selected native germplasm.



Once the evaluation process is completed, select populations are released to commercial seed companies.

This development process ensures that our native seed productions offer superior seed quality; retain the genetic makeup of naturally occurring plant populations from the region; and have the best natural adaptations for successful use in restoration planting.

RESTORATION AND RECLAMATION BEST PRACTICES: SITE FAMILIARITY AND SOIL CONSERVATION

Taking the time to properly plan, prepare, and implement a restoration planting can greatly increase the chance of success. Suggested best practices follow these simple tips.



Any rangeland restoration project on your property should incorporate the expertise of a natural resource professional.

Know your site—It is important to know what kind of soil you have; what potential plant communities that soil can support; site topog-



Any large scale disturbance on your property (e.g., oil and gas operations) can have devastating effects to the habitat. Accelerating recovery using native seed sources is critical for ecosystem function.

raphy; expected rainfall patterns; and land use history of the specific site. The potential plant community of soils and ecological sites varies greatly across West Texas. A little research can prevent wasted time, efforts, and resources.



Maintaining soil health during restoration practices will help ensure speedy recovery of desert grasslands.

Conserve your soil—In cases where significant soil disturbance will take place, such as pipeline construction, top soil can be removed, stock-piled, and regraded onto the site after construction prior to reseeding. Additionally, mixing of soil horizons should also be minimized. Establish a plan to control erosion on slopes. If planned and installed properly, erosion control structures like wattles can help facilitate plant establishment by capturing moisture on the planting site.

RESTORATION AND RECLAMATION BEST PRACTICES: PLANT SELECTION AND SEEDING STRATEGIES

Restoring ecosystem function following major disturbances is a priority for all land managers.

Know plants appropriate for your site— Identifying the right seed sources for a project is a key factor for a successful planting. Use only locally-adapted, named variety native plant seed sources when possible. Seed sold as Variety Not Specified (VNS) is often of unknown origin from seed in the wholesale market and may not perform in West Texas climates and soils. Purchase seeds by the Pure Live Seed (PLS) pound basis. This ensures that the seed



Using native seeds can have substantial impacts on restoration success. Just 4 months following a pipeline installation, rangeland recovery with native seeds (left) far exceeded that using a “standard industry mix” (right).

is viable and that you are not paying for inert matter and unfilled seeds. Use a diverse seed mix whenever possible. The greater the number of species being planted often associates with higher probabilities of success of restoration seedings.

Consider how you plant—Take the time to do proper site preparation. First aggressively control invasive plant species to minimize re-invasion of the site. Both the existing plants

and seedbanks of those plants should be controlled. Adequate control of seedbanks usually requires repeated treatment with tillage or herbicides. Plant when success is likely rather than strictly by a calendar. Plant with good existing soil moisture timed with a high probability for precipitation afterward. Site preparation should be done based on the planting method to be used. Prepare a firm seed bed and use planting equipment appropriate for the type of seed to be planted. Drill seeding, broadcast seeding, and hydroseeding are all viable planting techniques for native seeds.



With a little forethought you will be on your way to restoring a diverse native habitat that is more productive and more resilient.

HOW YOU CAN HELP...

West Texas Native Seeds is a relatively new initiative that is designed to provide landowners, managers, and natural resource specialists with regionally adapted native seed sources as well as habitat restoration decision support in West Texas. In order to help our program grow we are seeking partners to provide access for seed collections and planting trials as well as financial support (infrastructure, vehicles, farming equipment, development).



We are also pleased to announce that our first two plant material releases will be available in 2017. Silver bluestem and whiplash pappusgrass will soon be available through the commercial seed trade for restoration plantings across West Texas. Our staff are available to assist you with technical assistance regarding seeding and restoration recommendations. If you are interested in restoring native habitats to your property we can help.

To find out how we might be able to assist you with your rangeland restoration needs, please contact:

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