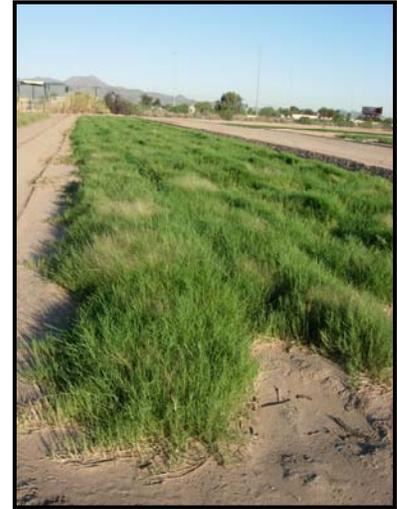


## Introduction

Year 2007 was the third and final year of a unique interagency collaborative project with a double objective: to develop two species releases of regional adaptation to southern Nevada, and to establish fields of these species with local commercial growers. This year the Tucson Plant Materials Center (PMC), Bureau of Land Management-Las Vegas Field Office (BLM) and High Desert Resource Conservation & Development (RC&D) released a second species and put it into commercial production.

Scratchgrass (or Alkali muhly) (*Muhlenbergia asperifolia*) is the second riparian species released for this project as a selected class of certified seed. Named Moapa germplasm Scratchgrass after one of the collection sites used to develop the release, this species has great potential for conservation use, growing by stolons, rhizomes and seed.

This year at the Tucson PMC, both Moapa Scratchgrass and the previous year's release, Vegas Alkali sacaton (*Sporobolus airoides*), were harvested for seed. Increase fields (G0) of Moapa germplasm Scratchgrass were planted in the spring following the commercial plantings in Nevada. Alkali sacaton increase fields (G0) planted the previous year were harvested for the first time.



Scratchgrass field at Tucson PMC in July 2007

## Moapa germplasm Scratchgrass: a second species for commercial seed production

In mid-October 2006 Moapa Scratchgrass was harvested at the Tucson PMC for the first time. A total of 4.5 lb of seed was harvested from the 0.25 ac. Following the seed harvest, five 40-lb haybales were also cut from the field. Seed were conditioned with the Hammermill and Clipper, and tests determined the germination rate to be 44.5%.



Scratchgrass plugs growing in the PMC greenhouse

In April 2007, plugs were sown with seed from the October harvest. When only half of the plugs sprouted seedlings, an inspection under the microscope determined that one of the bags was virtually empty of seed (full of chafe). The seed conditioning process not only separates stems and other inert material from the seed, but also separates seed by size and weight. In order to include all of the genetic material from the seed harvest into the plugs going to Nevada, both sizes of seed – the large and the small (mostly chafe) – had been used. Plugs were reseeded with the viable seed and with

an increase of fertilizer the new plugs were ready for planting in only 4 weeks- just in time for the trip to Nevada.

The week of May 21-25 plantings of Scratchgrass was scheduled at the two farms in Nevada. This year, the second species was planted into commercial production to complete the goal of the project, in addition to two other motivations at issue: large public events planned at both sites, and the opportunity to inspect the previous year's plantings.

A total of 13,500 plugs were transported to Nevada, with the intention of planting 1.5 ac at Moapa School in Overton and 0.5 ac at Sunrise Acres in Pahrump. Due to knowledge about the weedy conditions at Moapa School and the previous year's difficulty planting in Pahrump, the Tucson PMC's 4 person crew split their forces between the two sites in preparation for the plantings. One team drove directly to Pahrump to ensure adequate preparation of the fields, and within a few hours the fields were ripped deeply enough for the planting the following day. The second team traveled to Moapa, where the second planting was to take place. They had made previous arrangements to meet with Teri Knight, the RC&D coordinator, and local supporters of the project, Elise McAllister and Chris Green, to hoe the fields of the previous years' planting of Vegas Alkali sacaton.



Teri of High Desert RC&D and Mary and Ramona of the Tucson PMC finish weeding Moapa School fields (May 2007)

After a day of hoeing, several of the Alkali sacaton rows were clean of weeds, and deemed presentable for the public event. It was clear that the fields at Moapa School were not being maintained. The day's work also proved that consistent efforts of manual

weed control could prove successful if employed. It was decided only 0.5 ac (rather than 1.5 ac) of Moapa Scratchgrass would be planted, as it would be all the school could maintain weed-free. The maintenance of these fields would be under close scrutiny for the next several months.



The public event in Pahrump hosted a crowd including Senator Reid's aide, who presented an award to the farmer

Good showings of the public and involved agencies arrived for the plantings at both locations. A

highlight at each event was the presence of an assistant to Senator Harry Reid, who presented awards of excellence to each of the farmers, emphasizing the importance of this kind of work for environmental conservation in Nevada. The plantings at both locations went smoothly and efficiently, with enthusiasm and overall success.

### 2007: A dry year at the PMC

Upon return to Arizona following the Nevada plantings, 0.8 ac of increase fields (G0) of Moapa germplasm Scratchgrass was planted. The plugs established and for three weeks began to extend across the field until early July, when the PMC well was shut off for replacement. It was not until October that the well was flowing water again, and in the meantime it was questionable whether the young Scratchgrass plants would survive the long drought. As it turned out, the few rains of summer provided the moisture the plants required for survival. The Scratchgrass increase fields did not thrive that year, but gave testament to the durability of native plants, particularly this planting, in that they did not succumb to drought conditions.



Jace, Heather and Leslie of the Tucson PMC plant a field of Scratchgrass (June 2007)

The 0.65 acres of increase fields (G0) of Vegas Alkali sacaton planted in October 2006 grew consistently during spring 2007, producing 49 lb of seed in June. They too suffered during the summer, however. The fields were mowed and baled following the seed harvest to decrease the impact of the drought, producing 50 hay bales. Immediately



Increase fields of Alkali sacaton at Tucson PMC in June 2007

following the first irrigation in October they greened up and began to put up seed heads, although due to the late timing in the season, this seed was not harvested.

In contrast, the composite field (F1) of Alkali sacaton planted in 2005 seemed to not miss a beat. Despite the drought, the fact that the plants had been established for 2 years permitted a seed harvest of this 0.25 ac field in September (4.5 lb), before the well was even completed.

## **Vegas germplasm Alkali sacaton: a year in production**

Although the purpose of the 2007 plantings in Nevada was the establishment of the second species, Scratchgrass, the focus of attention was on Alkali sacaton, because these fields represent the success of the project thus far. To quote the previous year's annual report,

This is a pilot project, so the process of establishing first-time native seed growers through a collaborative project between two federal agencies and the local RC&D is completely experimental.

This issue of success continues to be in question, but after a year in production, the Alkali sacaton fields give a certain amount of insight. The continued apparent indifference by Moapa School ultimately caused their contract to be cancelled in November.

Certainly not everyone involved was indifferent. During the year following the 2006 plantings in Nevada, the High Desert RC&D coordinator Teri Knight provided consistent oversight and hands-on assistance to both farmers. She visited both farms frequently and provided the agency partners with updates on the condition of the fields. When needed, Teri asked for technical assistance from the PMC, on such topics as irrigation rates, herbicides to use, and herbicide application rates and timing. An On-Farm Assessment and Seed Production worksheet was developed by the PMC to evaluate condition of the Alkali sacaton and Alkali muhly fields, to be used by the RC&D coordinator and the farmers (Attachments A and B).

In addition to RC&D's vigilance, Ramona of the Tucson PMC visited both farms twice, in April and July, for additional on-site assistance. Ramona's first visit was only weeks prior to the planting of the second species in May. Evidence of continued challenges by the farmers— lack of ownership and lack of experience— was apparent at each visit, but the opportunity for improvement, with the promise of hard work, was always present.

Challenges encountered in 2007 at Sunrise Acres Farm in Pahrump were different from Moapa School's but still significant. New and consistent weed species continue to persist in the fields, despite the assertion by the farmers that they had been manually removing them. Noxious weeds, including Red brome, Bermuda grass and a recent occurrence of Tamarisk, threaten the viability of the harvest. Low and uneven irrigation rates, causing the plants to stay small, were



Uneven distribution of water across the Alkali sacaton field at Sunrise Acres caused some plants to stay small

addressed by the RC&D and the local NRCS field office in August with new higher volume sprinkler heads. Seed production increased, and although not enough to warrant transport of PMC equipment from Arizona, the ripe seed heads could not be resisted, and were hand harvested by Teri herself in October.

The fact that the farmer did not assist in this endeavor was troubling, and this lack of ownership confounds the success of this production.

September's harvest from Sunrise Acres of 23 lb of plant matter was sent to the PMC for cleaning. A total of 262g (0.6 lb) of seed was produced. A second hand harvest— of both species this time— was conducted by the RC&D and BLM employees in late November. Again, this effort was conducted without the assistance of the farmer. The increase in irrigation rates and seed yield, as demonstrated this fall, is promising. Accomplishments in weed control and overall proven ownership— thus ultimate success— of these fields will remain to be seen.



Alkali sacaton harvest (August 2007). Teri Knight could not be in the picture because she was busy being the photographer.

### Reflection on the project

Alkali sacaton, after a year in commercial production, provided the project partners a chance to reflect on the three-year project as a whole. The opportunity to develop regional releases from a very unique environment such as the Mojave was invaluable to the understanding of species diversity within small geographic areas, and the importance



A young scratchgrass plant survives the drought at the Tucson PMC (January 2008)

of including as many collections of genetic material into the original seed mix as possible. The second phase of the project, the establishment of commercial growers, was also enlightening but made evident the challenges involved in the ultimate goal of the project, a dependable seed source available into the future.

The lessons learned from this pilot project will be useful for related future endeavors as well as those beyond the scope of the project. Native seed production is not easy or as straight-forward as some may think. Future projects involving commercial native seed producers will involve close scrutiny in terms of previous experience, farm equipment already in possession, and examination of their current fields (and proven low tolerance to weeds). Enthusiasm is another critical

element, but cannot replace experience. Over the next year, Sunrise Acres will continue to receive technical assistance, as needed. The Tucson PMC anticipates going to Pahrump in summer or fall 2008 for a first substantial harvest of both species- using the flail vac purchased last year. Hopefully after that, with personal ownership and perseverance, the farmers at Sunrise Acres will be producers all on their own. We will also continue to look for additional and promising growers for these two species releases, Alkali sacaton and Scratchgrass, to ensure that riparian areas in southern Nevada will have an opportunity to be restored.