# Los Lunas Plant Materials Center
# 2008 Progress Report
# Evaluation of Giant Sacaton for Use in Field Windstrip Plantings

**Study Number: NMPMC-P-9801-CP**

Background information on the Los Lunas Plant Materials Center's evaluation of the native grass species giant sacaton (*Sporobolus wrightii*) can be found in *LLPMC Annual Technical Reports* from 1981 to present and in study NMPMC-9601-CP. This information details the LLPMC's evaluation efforts to develop a selected accession of giant sacaton for a possible plant materials release. This study details information on the evaluation of giant sacaton produced from advanced plantings found at the LLPMC. The production of seed or transplants from the LLPMC is being evaluated to solve a conservation soil erosion concern identified in the LLPMC service area.

NRCS Field Offices in the LLPMC service area continue to be very interested in using the giant sacaton species for windstrip plantings. The plantings are using giant sacaton to control or prevent existing soil erosion on various types of land uses identified by field office personnel.

In 2008, the Los Lunas Plant Materials Center (LLPMC) evaluated giant sacaton plantings at locations in Columbus, Jal, Espanola, Clayton, Estancia, Deming, Lovington, Milan, Hobbs and Isleta, New Mexico and at The Gap, Arizona. In 2008, new giant sacaton windstrip plantings were completed on four sites in or near Taos, New Mexico. Distribution and planting of this native species continues to promote the utility of this species for use as a windstrip, and it further defines its range of adaptability.

## Rancho La Frontera Windstrip Planting – Columbus, New Mexico

The Rancho La Frontera has had two, separate giant sacaton windstrip plantings: the first was installed in 1999-2000 and the second in 2001. The 2001 planting was evaluated on September 22, 2008.

- 1999-2000 Windstrip – See previous *LLPMC Annual Technical Reports* for information and evaluation of this planting.
- 2001 Windstrip – An evaluation for growth and survival of this planting was done on September 22, 2008.
    - The north half of the planting did not appear to have received supplemental irrigation in 2008. These plants were alive, but they had poor forage production, and as of this evaluation the previous growth from 2007 had not been removed. There is a possibility that plants could be lost in the northern section of the windstrip if water is not applied in 2009.
    - The southern half of the planting had received supplemental water in 2008. The forage in this section was very healthy and vigorous; the plants were 45 inches in width and 48 inches in height. These plants had produced an abundant amount of seed stalks with an average height of 76 inches. Survival percentages for the windstrip have not changed since last evaluation; all of the plants are established.

**September 2008 – Rancho La Frontera 2001 Windstrip in Columbus, New Mexico**

The giant sacaton plantings in Columbus have shown that this species can be used for cropland protection in this planting zone. To maintain the desired forage production for proper function of the windstrip, the plants must receive supplemental water and remove the previous season's growth each spring. Additional studies should be conducted to evaluate the amount soil erosion that can be prevented by giant sacaton windstrips and how these plantings can protect different types of high-value, agronomic crops.

The planting site is located in USDA Plant Hardiness Zone 8 at an elevation of 4,230 feet.

No evaluation is scheduled for 2009.

### Tucumcari Outdoor Classroom Windstrip Planting – Tucumcari, New Mexico

See previous *LLPMC Annual Technical Reports* for information on this trial windstrip planting of giant sacaton.

### Bernard Lujan Windstrip Planting – Isleta, New Mexico

This giant sacaton trial windstrip planting was installed in July 2004 on the Bernard Lujan Farm in Isleta, New Mexico. This windstrip provides protection during the windy season for Mr. Lujan's homestead. The planting consists of a single row of giant sacaton planted 5 feet apart and located on the west side of the homestead next to an irrigated alfalfa field. The giant sacaton transplants used in the windstrip were grown at the LLPMC. This planting is part of the adaptability trial of this native grass species for use in windstrips and will enable us to evaluate giant sacaton as a windstrip species in this area of New Mexico. At the October 2004 evaluation the plants had averaged 12 inches in height and 10 inches in width and showed a 100% survival rate.

**October 2008 - Bernard Lujan Giant Sacaton Windstrip in Isleta, New Mexico**

On October 24, 2008, an evaluation for growth and survival of this planting was done. All of the giant sacaton plants looked healthy and vigorous and had produced seedheads. Foliage of the plants averaged 56 inches in height and 44 inches in width. Seedhead height averaged 88 inches and had an average of 12 seed stalks per plant. The plants have been receiving water from the adjacent cropland that is irrigated during the growing season.

The planting site is located in USDA Plant Hardiness Zone 7 at an elevation of 4,890 feet.

Another evaluation is scheduled for 2009.

## Schwebach Farm Windstrip Planting – McIntosh, New Mexico

**September 2008 – Schwebach Farm Giant Sacaton Windstrip in Estancia, New Mexico**

This giant sacaton trial windstrip planting is located in McIntosh, New Mexico. The planting was installed in August of 2004 using transplants grown at the LLPMC. The windstrip was installed along the west side of a farm road adjacent to irrigated cropland. The planting will protect cropland from wind erosion during the windy season (February–May). The planting will be irrigated using water from an existing underground irrigation pipeline. The transplants were planted in two staggered rows and spaced 6-feet apart. An October 2004 evaluation showed the plants had averaged 10 inches in height and 6 inches in width with a 100 percent survival rate. The plants were healthy and vigorous, and they had received an abundant amount of moisture due to heavy rains in the area. This planting has helped us to evaluate the suitability for this species as a windstrip in this area of New Mexico.

On September 23, 2008, the planting was evaluated again for growth and survival. The planting had suffered some damage from the operation of equipment in the adjacent cropland; some of the plants had died. The windstrip had a good amount of weeds which may have led to some competition for moisture in 2008. The remaining plants look healthy and vigorous with an average width of 34 inches and forage height of 40 inches. All of the plants had produced seed stalks averaging in height of 62 inches and having approximately 10 stalks per plant. This planting of giant sacaton has not performed all that well indicating that more moisture may be needed for better production from the plants. The owner will be contacted to see if an increase in water application can be accomplished in 2009.

The planting site is located in USDA Plant Hardiness Zone 6 at an elevation of 6,150 feet.

Another evaluation is scheduled for 2009.

**September 2008 – Keeler Farm Giant Sacaton Windstrip in Deming, New Mexico**

## Keeler Farm Windstrip Planting – Deming, New Mexico

This giant sacaton trial windstrip planting is located in Deming, New Mexico on Keeler Farms. The planting was installed in July 2002 using transplants grown at the LLPMC. The windstrip is located on the west side of an irrigated field and will protect the cropland from wind erosion during the windy season (February - May). The planting will provide evaluation data on giant sacaton for use in windstrips in this part of New Mexico. Survival has remained constant since the last evaluation, and all of the plants appear to be healthy and vigorous. However, this

planting does have a serious weed problem. African rue is growing in the windstrip and must be controlled to prevent damage to the planting and also to keep it from spreading to the adjacent cropland. Mr. Keeler is aware of this problem and has initiated a chemical control program.

On September 22, 2008 the Keeler Farm trial windstrip planting was evaluated for growth and survival. The plants looked healthy and vigorous, and all of the plants had produced seedheads. The plants averaged 50 inches in height and 44 inches in width. The seedheads produced this year had an average height of 88 inches. The planting had not been mowed in 2008, and old growth was still intact in the planting.

The windstrip still contains the noxious weed African Rue and has been chemically treated by the landowner in an attempt to eradicate it. There were other species of weeds in and adjacent to the windstrip, but they did not seem to hinder the growth of the sacaton. The planting continues to be watered using the drip irrigation system. No plants have been lost since the last evaluation, and this windstrip planting is providing protection for the adjacent cropland. During this evaluation new seedlings of giant sacaton were found in the windstrip planting and several are in the bar ditch along Solano road which is located at the south end of the windstrip.

This giant sacaton windstrip planting has had and continues to have excellent forage production. The planting even with the African Rue infestation and other weeds in the windstrip is still giving excellent protection from wind erosion for the adjacent cropland. There has been some seedlings found in the adjacent cropland, but they have been easy to control with tillage and chemicals. The supplemental water from the drip irrigation system has allowed for the production of healthy vigorous giant sacaton plants and this has probably allowed the sacaton to overcome the presence of weedy species in the windstrip.

The planting site is located in USDA Plant Hardiness Zone 8 at an elevation of 4,300 feet.

No evaluation is scheduled in 2009.

### Lovington USDA Service Center Windstrip Planting – Lovington, New Mexico

This giant sacaton trial windstrip planting is located at the USDA Service Center in Lovington, New Mexico. The giant sacaton was planted in 2003 using transplants grown by the LLPMC. The sacaton was planted along the edge of the service center parking lot and along the north side of the service center office building. This planting will help us to evaluate the use of giant sacaton species as a windstrip in this area of New Mexico.

**September 2008 – Lovington ASC Giant Sacaton Planting in Lovington, New Mexico**

On September 23, 2008 the planting was evaluated for growth and survival. The plants averaged 60 inches in height and 50 inches in width and all of the plants had produced seedheads. The seedheads averaged 90 inches in height and were plentiful on each plant. The planting continues to be irrigated by the drip irrigation system. All plants were established and appeared to be healthy and vigorous. A few new seedlings were seen in the landscaping area adjacent to the giant sacaton, but they are small and can be removed easily by hand or by chemicals.

The planting site is located in USDA Plant Hardiness Zone 7 at an elevation of 3,920 feet.

Another evaluation is scheduled for 2009.

### Tatum Memorial Cemetery Windstrip Planting – Tatum, New Mexico

This trial giant sacaton planting was not evaluated in 2008. See previous *LLPMC Annual Technical Reports* for information on this planting of giant sacaton.

The planting site is located in USDA Plant Hardiness Zone 7 at an elevation of 3,990 feet.

The planting is scheduled for evaluation in 2009.

### Tatum Town Park Windstrip Planting – Tatum, New Mexico

This giant sacaton trial windstrip planting was not evaluated in 2008. See previous *LLPMC Annual Technical Reports* for information on this planting of giant sacaton.

The planting site is located in USDA Plant Hardiness Zone 7 at an elevation of 3,920 feet.

An evaluation is scheduled for 2009.

### Ken Dellinger Windstrip Planting – Clayton, New Mexico

In June of 2004, a giant sacaton trial windstrip planting was installed on the Ken Dellinger property in Clayton, New Mexico, using transplants grown at the LLPMC. The planting provides wind protection and landscaping at Mr. Dellinger's livestock sales yard. The windstrip will provide wind protection for Highway 64 located adjacent to the livestock yard. The giant sacaton planting also provides a visual screen from the livestock yard for traffic along the highway. A drip irrigation system provides water to the windstrip.

**September 2008 – Dellinger Giant Sacaton Planting in Clayton, New Mexico**

On September 23, 2008 the windstrip was evaluated for survival and growth. All plants are established and have a 100 percent survival rate. The planting looked healthy and vigorous and all of the plants have produced seedheads. Seedhead height averaged 80 inches and many seed stalks were present on each plant. The sacaton plants averaged 48 inches in height and 40 inches in width and had recieved adequate water for optimum growth. Weeds were present on east side of the windstrip along the existing fence, but they did not seem to have an effect on the growth of the sacaton in the windstrip itself. The survival rate was the same as last year.

The planting site is located in USDA Plant Hardiness Zone 6 at an elevation of 5,060 feet.

Another evaluation is scheduled for 2009.

## City of Jal Windstrip Planting – Jal, New Mexico

**September 2008 – City of Jal Giant Sacaton Planting in Jal, New Mexico**

On April 14, 2006 the LLPMC delivered 100 giant sacaton plants to the NRCS Lovington Field Office and the Sureste Resource Conservation and Development Office for a giant sacaton trial windstrip planting in Jal, New Mexico. The windstrip was planted as part of a landscaping project along Third Street in Jal.

On September 23, 2008 the planting was evaluated for survival and growth. The plants appeared to be healthy, vigorous and had averaged 43 inches in height and 34 inches in width. All of the plants had produced seedheads with an average seed stalk height of 60 inches. Seed stalk production appeared to be less compared to other sacaton plantings, but several stalks were still observed on each plant. The soil in this planting appears to have a high salt content which could have caused some growth problems in the plants. The plants were installed alternately with pine trees along the east side of Third Street and all of the plants had survived.

The planting site is located in USDA Plant Hardiness Zone 7 at an elevation of 3,700 feet.

Another evaluation is scheduled for 2009.

## Eddie Diaz Windstrip Planting – Deming, New Mexico

This giant sacaton trial windstrip planting was installed in 2006 and is located on the Eddie Diaz property adjacent to Highway 180 which is14 miles northwest of Deming, New Mexico. The planting consists of approximately 750 giant sacaton transplants. The giant sacaton windstrip was planted on this site to evaluate its potential in relieving dust problems caused by high winds blowing across Highway 180. The site was once a livestock feedlot and has seen little regeneration of native vegetation since the removal of the livestock.

**September 2008 – Eddie Diaz Giant Sacaton Planting in Deming, New Mexico**

The giant sacaton windstrip is not irrigated and will have to survive on natural precipitation. The plants were installed along man-made furrows which were constructed to capture water during rainfall events. The plants are spaced at 2-foot intervals and as a result, this could hinder the establishment and survival of the planting. The LLPMC recommended 5-foot spacing in the windstrip. The limited rainfall in the area coupled with high temperatures should provide vital data on the establishment of giant sacaton windstrips that do not have access to supplemental moisture.

On September 22, 2008 the Diaz windstrip was evaluated for growth and survival rates. All of the plants were alive, but they were in fair-to-

poor condition. The plants averaged 26 inches in height and 18 inches in width. Approximately 80 percent of the plants had produced seedheads, and average height of the seedhead stalks was 41 inches. The planting did not appear to have received much rainfall in 2008, and the plants had produced only a small amount of forage. The main concern at this site continues to be the spacing of the plants in the windstrip, which may cause less growth in the planting and could alter the survival during a less than normal moisture year. The LLPMC recommends that the spacing be changed to at least 4 feet between the plants. The plants that are removed could be used to create a new windstrip at this same location.

The planting site is located in USDA Plant Hardiness Zone 8 at an elevation of 4,250 feet.

Another evaluation is scheduled for 2009.

### Highway 122 Windstrip Planting – Milan, New Mexico

**September 2008 – Highway 122 Giant Sacaton Planting in Milan, New Mexico**

On August 21, 2006, the LLPMC delivered 1,400 giant sacaton transplants to the Lava Soil and Water Conservation District in Grants, New Mexico. The transplants were installed in a windstrip on state land next to Highway 122 just north of Milan, New Mexico. The windstrip was established to help us evaluate the use of giant sacaton to provide wind protection that has caused reduced visibility on Highway 122. The planting will also help us to evaluate the adaptability of giant sacaton in this part of New Mexico. The windstrip has been watered with a drip irrigation system using water supplied from the city of Milan.

On September 27, 2008, the planting was evaluated for growth and survival rates. The giant sacaton transplants were in poor condition and their survival is uncertain. The plants did not appear to have received any supplemental water from the drip irrigation system in 2008. There is a substantial amount of gopher and prairie dog activity in the planting. No weeds were present in the planting at the time of evaluation. If water could be applied to the planting soon, some of the plants may be able to survive this year.

**October 2008 – Rio Arriba County Fairgrounds Giant Sacaton Planting in Espanola, NM**

The planting site is located in USDA Plant Hardiness Zone 6 at an elevation of 6,520 feet.

An evaluation is scheduled for 2009.

### Rio Arriba County Rural Event Center Windstrip Planting – Espanola, New Mexico

On August 8, 2006, a giant sacaton trial windstrip planting was established at the Rio Arriba County Rural Event Center just northwest of Espanola on Highway 554. One-hundred giant sacaton transplants were planted into two rows using six-foot spacing by personnel from the NMSU Rio Arriba County Extension Office,

Rio Arriba County, NRCS Espanola Field Office and LLPMC.

The planting is located along the west side of the Event Center's access road and act as a visual screen for a property owner next to the Event Center. The planting was installed to provide wind erosion protection along the Event Center. The windstrip will help us to evaluate the adaptability of giant sacaton as a windstrip or windbreak species in this area of New Mexico. The planting has a drip irrigation system for supplemental watering.

On October 15, 2008 the giant sacaton trial windstrip planting was evaluated for growth and survival. There were several plants damaged by gophers. The area had received frost that resulted in damage to the giant sacaton. The average foliage height was 34 inches and average width was 22 inches. All of the plants in the windstrip had produced seed stalks, and the stalks had an average height of 63 inches. The giant sacaton was established, and the amount of growth in 2008 was fair, but the planting has not produced enough forage to provide much wind erosion protection. The planting site was watered using a manually controlled drip irrigation system.

The planting site is located in USDA Plant Hardiness Zone 6 at an elevation of 5,900 feet.

An evaluation is scheduled for 2009.

### Jesse Willie Farm Windstrip Planting – The Gap, Arizona

In July of 2006, Felix Nez of the Dilkon, Arizona NRCS Field Office contacted the LLPMC for assistance as to the possible use of giant sacaton as wind protection for cropland on the Jesse Willie farm near The Gap, Arizona. Mr. Willie's farm is located just north of The Gap on Highway 89. Mr. Willie grows dryland vegetable crops and because of the light texture soil in the area, has a severe problem with erosion on his property. Wind erosion during high wind events damages his crops and is eroding the soil at a high rate.

**September 2008 – Willie Farm Giant Sacaton Planting in The Gap, AZ**

At the request of the Little Colorado River Soil and Water Conservation District, the LLPMC was able to provide 230 giant sacaton plants to Mr. Willie's farm. On August 22, 2006, the giant sacaton transplants were delivered by the LLPMC and installed by Mr. Willie, personnel from the NRCS Dilkon Field Office, The Gap Sub-Office and the LLPMC. The giant sacaton windstrip was installed to help us evaluate its potential in this area of Arizona to reduce wind erosion and possibly water erosion on the dryland farms near The Gap. The windstrip was hand-watered as needed during 2006 and part 2007 and after that, the windstrip depended upon natural precipitation. This trial planting should provide data on the ability of giant sacaton to be used for windstrips in this area without the use of supplemental irrigation.

On September 30, 2008 the windstrip planting was evaluated for growth and survival rates. No plants were lost in 2008. The plants had averaged 45 inches in height and 30 inches in width and had produced seedheads with an average height of 68 inches. The plants were healthy and vigorous and had produced seed in 2008. The plants did not receive any supplemental water in 2008.

The planting site is located in USDA Plant Hardiness Zone 6 at an elevation of 5,890 feet.

Another evaluation is scheduled for 2009.

## Waste Management, Inc. Landfill and Transfer Station Giant Sacaton Planting – Hobbs, New Mexico

Located in Hobbs, New Mexico at the Waste Management, Inc. Hobbs Landfill and Transfer Station, this trial planting site was experiencing damage to its slopes as a result of water erosion. In 2006, The NRCS Lovington Field Office requested assistance from the Los Lunas Plant Materials Center to help revegetate a water-eroded landfill site.

**September 2008 – Hobbs Landfill Giant Sacaton Planting in Hobbs, New Mexico**

The landfill had been closed, and Waste Management, Inc. was in the process of restoring the native vegetation. The landfill had been seeded with a native grass species, and the slopes had been further protected with waddles where the water erosion had occurred.

On July 25, 2007, 1,100 giant sacaton transplants were delivered to the landfill site by the LLPMC and were planted by NRCS personnel, Waste Management employees and several volunteers from local youth organizations. The plants were hand-transplanted and hand-watered after they had been installed. The plants were scheduled to be watered by hand until the end of the 2007 growing season. To help increase the protection of the slopes, the giant sacaton transplants were used in conjunction with the waddles to slow the flow of excess water down the slopes. The waddles were placed perpendicular along the slopes of the landfill, and the giant sacaton was planted on the upslope side of the waddles.

On September 23, 2008, the planting was evaluated for growth and survival rates. Plant survival was approximately 90 percent. The area appeared to have received a good amount of moisture, and the giant sacaton transplants were established. The foliage averaged 18 inches in height and 9 inches in width. Approximately one percent of the plants had produced seed stalks; most of the giant sacaton plants appeared to be unhealthy and had not produced much forage. The giant sacaton foliage was pale green in color, and plant vigor rated only as fair. The planting will rely on natural precipitation in 2009. The previously seeded native grass species were in excellent condition at the time of evaluation, and the planting should prevent excessive soil erosion from the landfill area.

The planting site is located in USDA Plant Hardiness Zone 7 at an elevation of 3,600 feet.

Another evaluation is scheduled for 2009.

## Tony Benson Ranch Windstrip Planting –Taos, New Mexico

**September 2008 – Tony Benson Giant Sacaton Trial Planting in Taos, New Mexico**

This giant sacaton trial windstrip planting is located west of Taos, New Mexico on the Tony Benson Ranch in Section 4 Township 26N and Range 11E. On July 10, 2008, 300 giant sacaton transplants grown by the LLPMC were installed in a fenced-in plot at the Benson Ranch. The transplants were installed by LLPMC personnel, Taos Field Office personnel, and the foreman of the Benson Ranch. The transplants have been irrigated using a hand watering system. Mr. Benson would like to use the giant sacaton windstrip for protection around his buildings and other areas on the ranch. The fenced-in area will keep the plants safe from animals. The planting will continue to be irrigated as needed throughout the growing season this year and into 2009. This trial planting of giant sacaton is a continuation of testing the adaptability of giant sacaton in different locations in the LLPMC service area.

On September 16, 2008, the giant sacaton trial planting was evaluated for growth and survival rates. The plants appeared to be healthy and vigorous, and the forage had grown since installing the planting in July. The giant sacaton plants averaged 15 inches in height and 7 inches in width. No seed stalks were found on any of the plants.

The planting site is located in USDA Plant Hardiness Zone 5 at an elevation of 7,200 feet.

Another evaluation is scheduled for 2009.

## Steve Trujillo Farm Site Giant Sacaton Windstrip Planting –Taos, New Mexico

**September 2008 – Steve Trujillo Giant Sacaton Planting in Taos, New Mexico**

This giant sacaton trial planting is located on the Steve Trujillo farm in Taos, New Mexico. One hundred and fifty giant sacaton transplants were planted on July 9, 2008 into an old abandoned garden plot containing native grass and weeds. The planting was installed along a line northwest to southwest in the southeast corner of the field. Mr. Trujillo wants to evaluate the usefulness of giant sacaton for wind protection and as a possible native grass irrigated pasture. The planting has received supplemental water from the existing acequia located west of the field.

On September 16, 2008 the giant sacaton planting was evaluated for growth and survival rates. The giant sacaton plants had averaged 9 inches in height and 4 inches in width with an approximate 98 percent survival rate. The giant

sacaton plants did not have much growth since the initial planting, and it is likely that this planting will have limited growth due to the competition of other species found at the site. We have recommended removing all other plants growing in close proximity to the giant sacaton.

The planting site is located in USDA Plant Hardiness Zone 5 at an elevation of 6,800 feet.

Another evaluation is scheduled in 2009.

### Taos County Extension Office Giant Sacaton Planting – Taos, New Mexico

This giant sacaton trial planting was installed next to the Taos County Extension Office located in the Juan I Gonzales building at the Taos County Fairgrounds. On July 9, 2008, 36 giant sacaton transplants grown at the LLPMC were planted into an existing, fenced-in demonstration planting area just east of the office building. The area previously was used by the Taos County Extension Office for planting and drip irrigation trials. The giant sacaton was irrigated using the existing drip irrigation system. The purpose of this planting is to evaluate the adaptability of giant sacaton at this location.

**September 2008 - Taos County Extension Office Giant Sacaton Planting in Taos, New Mexico**

On September 16, 2008 the giant sacaton planting was evaluated for growth and survival rates. The plants appeared to be healthy, vigorous and had an average height of 12 inches and width of 5 inches. All of the plants had survived, and the planting has received adequate water from the drip irrigation system. The planting is fenced, but the gate to the area was open at the time of evaluation which could possibly allow the plants to be damaged by animals getting into the site.

The planting site is located in USDA Plant Hardiness Zone 5 at an elevation of 6,900 feet.

Another evaluation is scheduled for 2009.

### Bill Anderson Giant Sacaton Planting - Taos, New Mexico

This planting has not been completed. Mr. Anderson received 100 giant sacaton transplants in July of 2008. The transplants were checked on September 16, 2008. Mr. Anderson has established the giant sacaton into a holding area until he is able to place them into a windstrip site along a roadway. The giant sacaton plants in the holding area were in good health and have exhibited a fair amount of growth since July. The plants are being watered by hand from his domestic well. The purpose of the planting is to evaluate the adaptability of giant sacaton at this location.

**September 2008 - Bill Anderson's Giant Sacaton Holding Area in Taos, New Mexico**

If the planting becomes established in 2009, it will be evaluated for growth and survival.

The planting site is located in USDA Plant Hardiness Zone 5 at an elevation of 8,100 feet.