

AmeriCorps Volunteers visit Kahoolawe

HOOLEHUA PLANT MATERIALS CENTER

PMC News - Vol. 2, Issue 4, Fall 2007

On July 16-19, 2007, our AmeriCorps volunteers were fortunate enough to visit the island of Kahoolawe to see conservation work being implemented using plant materials that they helped produce here at the Hoolehua Plant Materials Center (PMC). Christy Molena and Misty Nakayama are both Molokai girls that are volunteering for the summer. Kristen Coelho is also a Molokai girl, but she has volunteered to work for an entire year. Her term will end in November.

There are many different practices being implemented to control erosion on the island. We were able to see the pilgrass bales at work and kawelu aalii, and aweoweo seedlings growing where soil had accumulated.

While on island, we helped to install a new idea. Paul Higashino calls them “pu’e”. A pile of kiawe mulch about ½ a 5-gallon bucket is laid on the bare, hard ground. A small indentation, about the size of a fist, is made in the center of the pile. Aalii seed is then planted in the indentation. Many of the pu’e, that had been previously planted, were already showing signs of life. Aalii seedling have germinated and are beginning to take hold. Can this be the answer? We hope to go back, in the future, to see life where there was none before.



Switchgrass Used for Construction

MANHATTAN PLANT MATERIALS CENTER

Plants for the Heartland - Vol. 14, Issue 1, Winter 2007

American Indians Studies programs examined the cultural and scientific aspects of switchgrass. As part of Haskell’s Native Grass Project, faculty and students spent time analyzing switchgrass use across the U.S. and found the Caddo people typically used it for building homes and shelters. Williams indicated that students working on the Shelters constructed of willow poles and native grasses were a way for the Caddo Indians of Louisiana’s Red River Valley to escape the relentless heat of the summer sun. A replica of one of these traditional structures stands at Haskell Indian Nations University in Lawrence, Kansas.

Students, faculty, and friends of the university completed the arbor in early November, as an environmental project funded by the U.S. Army. The Army is interested in using switchgrass for its ability to heal damaged terrain and help limit soil erosion. “In the Army, we

are really interested in using switchgrass for erosion control in training areas, and if you mix it with other grass species, you get a really good, solid erosion control system,” said Bill Severinghaus, Technical Director of the U.S. Army Construction Engineering Research Laboratory (USACERL) of Champaign, Illinois. “It was hoped that if Army installations would restore their lands using switchgrass, then tribes could come to the forts and harvest the switchgrass for cultural uses,” said Lorene Williams, Haskell English Professor and Principal Investigator on this project.

The student interns of the Native Grass Research Project at Haskell’s Environmental Science and project had gained a new appreciation of their heritage. Phil Cross, a member of the Caddo tribe, was the engineer and construction boss for the project. Cross indicated that his tribal ancestors would work very quickly to build an arbor shelter and put one up in a few hours. However, it took the inexperienced group working part time about a week to finish the project.



The grass bundles for the arbor came mainly from the nearby Baker-Haskell Wetlands and were selected, cut, bundled and bound by Haskell students. Manhattan Plant Materials Center staff members Alan Shadow, Soil Conservationist, and Rich Wynia, PMC Manager, harvested some bundles of switchgrass from the PMC and participated in the initial ring of grass being attached to the framework of the shelter.

Elementary Education major Tiffany Wisdom was among the many students from the American Indian Studies Program who helped cut and bundle the grass, watching and learning the construction process from the beginning. Wisdom watched as Charles Allen, a Louisiana botanist and author, and others pieced together the willow pole framework that would eventually support the grass walls of the arbor shelter.

Allen indicated that switchgrass was valued by the Caddo Nation and other tribes because of its resiliency in all seasons and weather conditions. Williams stated, “Switchgrass is a very durable grass. It’s very strong and once the grass is harvested and placed in overlapping rows on the structure it is water proof.” Allen stated that switchgrass is a hardy species of grass that is common throughout the Great Plains. It is one of the four grass species that define the tallgrass prairie. The other species are big bluestem, little bluestem, and Indian grass.

The arbor shelter, which is about eight feet tall, is outside the Eric Allen Greenhouse on the south side of the campus. A few dozen species of tall warm-season grasses are also growing in and around the greenhouse behind Tam-I-Nend Hall on the Haskell campus. The arbor will be used as a social gathering place and for classroom purposes.

New Study Underway to Enhance Post-wildfire

GREAT BASIN PLANT MATERIALS CENTER

Great Basin Plant Materials Center Newsletter – January 2008

Equipment and Strategies to Enhance Post-wildfire Establishment and Persistence of Great Basin Native Plants



Many native plant communities in the Great Basin have been altered by the encroachment of annual weeds, particularly cheatgrass, and an accompanying increase in fire frequency. The Great Basin PMC is part of a collaborative project led by the US Forest Service's

Rocky Mountain Research Station investigating revegetation technology to restore native plant communities following fire.

The stated objectives of the study include:

- 1) Examine seeding techniques for Wyoming big sagebrush
- 2) Test seeding technology for native species
- 3) Compare modified rangeland drill and experimental no-till drill
- 4) Examine use of US Geological Survey proposed emergency stabilization and rehabilitation monitoring protocols for gauging seeding success
- 5) Examine livestock grazing effects on diversity in native plant seedings

In the fall of 2007, study plots were established near Mountain Home, Idaho and Burns, Oregon. Other collaborators include the USDI Bureau of Land Management, USGS Biological Research Division, and NRCS Aberdeen Plant Materials Center.

New Buildings Planned for Construction in 2008

Construction on a new shop, equipment cleaning pad, fueling station, chemical storage building, and equipment storage shed is set to begin in the spring of 2008. An historic barn (*shown below*) is currently being used to store equipment. In addition, a cultural resources



inventory contract has been awarded to document structures that will be impacted by building construction. A cultural resources inventory is scheduled for completion in early February, after which construction on the new buildings will begin.

Native Seed Hay Bales for Restoration

TUCSON PLANT MATERIALS CENTER

La Semilla Newsletter – Vol. 4, Issue 1 - January 2008

Out of the initial results of the Boer lovegrass study (story on page 2 of newsletter), a second attempt was made during the summer of 2007 to establish natives into a site exposed to exotic lovegrasses—this time without the disturbance of a seed drill. Native seed hay bales were spread across the site instead of drilling seed. Hay bales provide a promising, new approach for restoration, having both seed and mulch.

These hay bales were harvested from a mixed species field planted at the PMC from seed originating from the Appleton-Whittle Research Ranch. As in the Boer lovegrass study, adaptation of the seed was



not in question, because this planting took place on the Babocomari Ranch, a neighbor of the Appleton-Whittle.

Switchgrass Genetics Compared

BISMARCK PLANT MATERIALS CENTER

Plant Chat Newsletter – Vol. 7, Issue 4 – Fall 2007

Plant geneticist Michael Casler sampled the DNA from more than 75 naturally occurring switchgrass plants collected throughout the Midwest and compared them with samples from the cultivars Blackwell, Cave-in-Rock, Pathfinder, and Shawnee. Casler is with the USDA-ARS at Madison, Wisconsin. No one had ever before examined the genetic similarity between native switchgrass plants with the more commonly planted cultivars. He found that plants from each individual population were as variable as those from geographically distant populations, and the remnant populations were very similar to the cultivars.

The good news is that so called “improved” switchgrass cultivars are, genetically speaking, very similar to populations of plants being used for native restoration. Casler stated, “Our findings show that switchgrass that’s grown for biofuel can also be grown for conservation and other uses without fear of possible genetic contamination. We need to pay attention to the origin of switchgrass seed populations, but we’ve learned that seeds can be transferred widely within the hardiness zone in which they originated.” Switchgrass is a popular conservation plant that has seen increased interest in recent years as a renewable biofuel resource. (This information was taken from an article written by Erin Peabody in the September 2007 issue of *Agricultural Research*.)

Our Mission: Develop and deliver plant-science technology to meet the nation's natural resources conservation needs.

“Helping People Help the Land”

The USDA is an equal opportunity provider and employer.