



Year 2003 Progress Report of Activities



In 2003, 10 different native and introduced salt tolerant plant species were planted on two different sites in southern Kansas. In addition to the species, eight different surface treatments consisting of various kinds and amounts of soil amendments were applied to both sites. Following the first growing season, germination was low and sporadic across the sites with four-wing saltbush, alkaligrass, blue panicum, inland saltgrass, and tall wheatgrass being the most abundant species present. Monitoring of the two sites will continue



Plot drill used to seed varied grasses into brine test site



Typical brine site

The Plant Materials Program also maintains a Website, <http://Plant-Materials.nrcs.usda.gov>, which contains useful plant information such as:

- > Plant fact sheets on over 130 different species
- > Listing of commercial plant vendors who provide plants for use in conservation
- > Listing of current plant-related technical articles developed by the PMC
- > Links to other Websites with additional or supporting plant information

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THE MISSION OF THE PLANT MATERIALS PROGRAM IS SEEKING VEGETATIVE SOLUTIONS TO CONSERVATION PROBLEMS.

Who We Are

The Manhattan Plant Materials Center (PMC) is one of 26 Centers nationwide that use plants to solve natural resource problems. The Center is owned and operated by the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS). The PMC serves a diverse region of the heartland including Kansas, Nebraska, northern Oklahoma, and northeastern Colorado. It is located on 169 acres in the Kansas River Valley south of Manhattan, Kansas.



What We Do

The mission of the Plant Material Program is to develop and transfer effective state-of-the-art plant science technology to meet customer and resource needs. The primary products produced by the Program include the production of improved varieties of plants for commercial use and the development of plant science technology for incorporation into the Field Office Technical Guide (FOTG). Plant and technology development objectives of the PMC include:

- > Water Quality Improvement
- > Erosion Control
- > Range and Pasture Improvement
- > Native American Outreach
- > Plant Variety Selection and Production

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Program Highlights for 2003

Woody Plant Materials Evaluation Summary

Since 1992, 41 different species and varieties of native and introduced tree and shrub species have monitored for establishment, persistence, and growth at the Southwest Experimental Station at Tribune, Kansas. The purpose of the evaluation was to test a wide range of plant materials for potential use in windbreak/shelterbelt and wildlife plantings in the western portions of Kansas, Nebraska, Oklahoma, and eastern Colorado.

To date, of the species planted, the most successful natives in terms of establishment and persistence have been bur oak, New Mexico forestiera, Texas walnut, fourwing saltbush, big sagebrush, skunkbush sumac, buffalo currant, and Arnold hawthorn. The most successful introduced species in terms of establishment and persistence have been Siberian peashrub and Russian almond.



Field trial to evaluate performance of woody plant materials

Shoreline Stabilization Summary

A shoreline stabilization project was initiated in 1998 to determine the effectiveness of applying various bioengineering techniques to eroding shorelines. Several different stabilization techniques were installed including willow stakes, willow fascines, coir rolls, log revetments, and cribwalls. Of all applied methods, the cribwall and log revetment were the most effective in providing protection. The coir roll provided limited shoreline protection as it disintegrated after the first year. The vegetative fascines and live willow stakes applied without any additional structural components were completely ineffective in providing any shoreline protection due to poor establishment.



Typical eroding shoreline due to excessive wave action



Cribwall technique for shoreline stabilization



Log revetment technique for shoreline stabilization

Conservation Reserve Program Enhancement Seeding Summary

A study was initiated in 1997 to evaluate the effectiveness of various seedbed preparation treatments and planting methods on the establishment of native and introduced forbs/legumes in existing CRP stands of native grasses. From 1998 to 2003, plant densities were monitored across the different treatments. Both native and introduced species responded similarly to the varied treatments. Early spring burning followed by drill seeding and early spring disking followed by broadcast seeding resulted in the greatest forb/legume plant densities.

Actual plant numbers for both native and introduced species have steadily declined over the six years. Although the introduced species initially had greater densities across the varied treatments compared to the natives, they have declined at a much faster rate. The native plant densities although initially less than the introduced have experienced less of a decline. The persistence of introduced forbs / legumes is probably more influenced by the availability of moisture, whereas natives are more effected by the lack of management which typically results in excessive litter buildup.



Introduced and native forbs/legumes establishment on existing stands of CRP

Economic Impact - Seed and Plant Production - What is it Worth?

During 2003, commercial growers produced over 376 tons of seed from plant materials previously provided to them by the PMC. The value of this commercially-produced material totaled more than 7 million dollars.

Reclamation of Saline Sites

Small areas of pasture and rangeland have been damaged through the spillage of brine water associated with oil drilling activity. Natural saline seeps have formed in cropland fields due to cropping practices, geology, soils, and drainage configuration. These sites are typically high in salts, low in organic matter, have poor soil structure, and are extremely difficult to revegetate without considerable economic input.