

# Manhattan Plant Materials Center

Manhattan, Kansas



A newsletter in support of the Plant Materials Program for Colorado, Kansas, Nebraska, and Oklahoma

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## Plant Materials for Soil Bioengineering

Soil bioengineering techniques are used to establish living systems for slope, shoreline, or streambank stabilization. Plant materials that are locally available, root easily from cuttings, and that are adapted to fluctuating moisture regimes play an integral role in the success of the system. To investigate the potential of local woody materials for use in bioengineering projects, the Manhattan Plant Materials Center collected 30 individual cuttings of each of the species listed in Table 1.

The cuttings were planted at two different slope positions within an artificially created wetland cell at the Center. The lower slope planting position was immediately adjacent to the water surface, which resulted in continual saturated moisture conditions throughout the growing period. The other planting position was mid-slope. The mid-slope position was initially saturated at the beginning of the growing period, but then was let go dry to mimic a typical mid to upper streambank environment. The only additional moisture received at the mid-slope position was from precipitation.

To evaluate the effects of different pre-planting treatments, one-third of the cuttings from each species were soaked in water for 48 hours prior to planting, one-third were treated with rooting hormone, and the remaining one-third served as the control.

### Summary

It appeared from evaluating the planting at the end of the growing period that the treatments of soaking and applying root hormone had no significant affect on the survival rate of any of the species. Therefore, for summary purposes, the percent survival for each species was based on the average of the two treatments and control for both slope positions.

The two different moisture regimes, as determined by the planting position on the slope, appeared to affect

the survival of some of the species evaluated. The black, 'Streamco', and sandbar willows and cottonwood showed no difference in percent survival at the two moisture regimes. Silky dogwood had a higher percent survival at the higher moisture regime (lower slope position) as did false indigo and buttonbush.

Overall survival of the cuttings for both slope positions showed 'Streamco' and sandbar willow at 100 percent, followed by silky dogwood and cottonwood at 93 percent, black willow at 87 percent, buttonbush at 70 percent, false indigo at 20 percent, and rough-leaf dogwood at seven percent.

Table 1. Percent survival of cuttings subjected to different moisture regimes.

SPECIES	LOWER*	MIDDLE
Rough-leaf dogwood, <i>Cornus drummondii</i>	6.7	6.7
Silky dogwood, <i>Cornus amomum</i>	100	86.7
Black willow, <i>Salix nigra</i>	86.7	86.7
Sandbar willow, <i>Salix exigua</i>	100	100
'Streamco' willow, <i>Salix purpurea</i>	100	100
Cottonwood, <i>Populus deltoides</i>	93.3	93.3
False indigo, <i>Amorpha fruticosa</i>	26.7	13.3
Buttonbush, <i>Cephalanthus occidentalis</i>	86.7	53.3

\*Refers to slope position

## Assembly Update

Two major assemblies were conducted in 1999. Seed collections of buttonbush, *Cephalanthus occidentalis*, and false indigo, *Amorpha fruticosa*, were successful. Both species were identified as a need in riparian areas. The buttonbush was planted to cone-tainers in the spring of 2000. They germinated successfully and were maintained in the PMC lathhouse all of last year and this spring. They were planted out in a spaced plant nursery 14 x 14 feet apart in May of this year.

The false indigo collections were planted in the greenhouse this spring. They will be maintained in the lathhouse for one growing season before transplanting them to a spaced plant selection nursery next spring.

The buttonbush germinated readily and was so successful that all 36 collections that were received

are being utilized in the study. It is unusual to have this level of success. However, not all accessions produced vigorous seedlings. Now the real test comes in the field. We have had very good success with the false indigo and a similar rate of success is anticipated here as well. There is a potential to have 82 accessions in the false indigo nursery.

Our field office staffs and our partners in Kansas, Nebraska, and Oklahoma, are responsible for the success of these two assemblies. We could not have acquired the broad representation of these two species without your help. A hearty thank you goes out to all of our collectors. We appreciate the investment in time and effort that was put in to these collections. Please refer to Assembly of Plant Materials, in the 1999 PMC Annual Report for a complete list of contributors.

### **America Selects Its National Tree!**

The voting is over and no recounts are necessary. The National Arbor Day Foundation sponsored a nation-wide vote on its web site. The American people who voted (339,187) selected the oak (101,146) as their choice for a national tree. From day one the oak stood out as the most popular choice of the American public. The giant redwood, another magnificent native American tree, was the second favorite vote getter. This historic vote marked the first time that the entire American public had the opportunity to voice their collective opinion for a national emblem. The oak really is an excellent choice for America's national tree since there are about 70 native oak species and its distribution is virtually nationwide. It is a tree that most people think of as being strong, dependable, and permanent in an ever changing world. A sign of strength and timeless natural beauty in a not so stable world. Yes! The mighty oak is a good choice for our national tree!

### **Arbor Links**

At first thought it seems like a radical idea. An environmentally friendly golf course! Granted, golf courses are covered by plants and offer open spaces with trees and a certain amount of wildlife. However, most environmentally aware people understand that golf courses are typically intensely managed. Greens and fairways are often intensely managed with regard to mowing, fertility, pesticides, and moisture management. Not exactly an environmentalist's idea of a natural setting.

However, Bill Kubly, the president of Landscapes Unlimited in Lincoln, NE, had envisioned a golf course capable of showing both the golf industry and environmentalists that quality, affordable golf, and environmental stewardship could coexist in the same facility. The dream of bringing golf and the environmental world together to make a positive statement, is taking shape in the form of an 18-hole golf course at the Lied Conference Center in Nebraska City, NE.

The hope of the Arbor Day Center is to highlight each of the 18 holes with different conservation practices. This would serve as an educational tool that would provide golfers and others a first hand look at conservation practices and an explanation of the purpose and intent of the practice. This should provide a conservation viewpoint in a relaxed informal setting. The Arbor Day Center has approached the plant materials program requesting that the program provide technical advice, propagation assistance, and certain plant materials for the project. Hopefully, the plant materials program will be able to provide technical assistance and actual plants in this effort to educate the public.

### **Native American Outreach Activities**

The Plant Materials Center and Specialist provided several information and outreach efforts during the last fiscal year with regard to Native American groups. An overview of the Plant Materials Program was presented to representatives from 46 tribes from Nebraska, Kansas, Oklahoma and Texas at an information meeting in Oklahoma City. The Plant Materials Specialist presented an overview of the PM Program to the Tribal Chiefs of the Muscogee (Creek) Nation of Oklahoma. The presentation was made in the spring and emphasized what services were available from the program with regard to culturally significant plants. Representatives of the Prairie Band of the Potawatomi Tribe of Kansas received an overview of the PM Program from the specialist and then followed up with a tour of the Plant Center in August. Special emphasis was given to the services available from the program, including the opportunities for assistance with the collection, propagation, and nursery establishment of culturally significant plants. The Ponca and Santee Tribes of Nebraska were provided with culturally significant plants propagated by the Plant Center and established as a nursery on tribal property.

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