

FY 2006 Progress Report
Production of Riparian Plant Materials for Watershed and
Ecosystem Restoration Projects on the Cibola National Forest

David R. Dreesen
Plant Materials Center
Natural Resources Conservation Service
US Department of Agriculture
Los Lunas, NM

The purpose of this project is to establish a source of plant materials at the NRCS Plant Materials Center (PMC) at Los Lunas, New Mexico for the Cibola National Forest. These plant materials will consist of native riparian trees and shrubs as well as wetland plants that are ecotypes indigenous to areas undergoing watershed and ecosystem restoration within the Cibola National Forest including the Canadian River Salt Cedar Eradication Project and the Tajique Watershed Restoration Project. The types of containerized plant materials being produced at the PMC are tree, shrub, and wetland species from seed collected by US Forest Service personnel at these locations. Some of the seedlings produced have been installed in pole production blocks at the PMC to provide a long-term source of dormant pole cuttings.

Seedling Production

Seed was collected by US Forest Service personnel from the Canadian River watershed (Perico Creek, Seneca Creek, and Mills Canyon) and shipped to the PMC in late June of 2005. These seed included cottonwood, peachleaf willow, and coyote willow. By the end of the summer of 2005, 1750 cottonwood (see Figure 1), 1800 peachleaf willow (see Figure 2), and 300 coyote willow had been propagated in 10 cubic inch Super Cells. These materials were over-wintered (November 2005 through March 2006) in the cold-frame at the PMC.



Figure 1: Mills Canyon cottonwood seedlings growing in Super Cells, summer 2005



Figure 2: Mills Canyon peachleaf willow seedlings growing in Super Cells, summer 2005

In late July 2005, the seed from wetland plants species was collected within the Kiowa National Grasslands along the Canadian River and delivered to the PMC:

- 3 *Scirpus* (*pallidus*, *pungens*, and *validus*)
- 2 *Juncus* (*torreyi* and *interior*)
- *Eleocharis palustris*
- *Rumex altissimus*
- Chokecherry (*Prunus virginiana*)
- Western five-leaved ivy (*Parthenocissus inserta*)

The chokecherry (*Prunus virginiana*) seed was cold stratified for four months and brought into the greenhouse for germination; a total of about 900 seedlings were propagated in the spring of 2006 in 16-cubic-inch Deepots (see Figure 3).

In late August 2005, the *Parthenocissus inserta* seed was wet-tumbled to remove dried fruit pulp and then warm stratified in anticipation of a following cold stratification treatment. The seed germinated immediately and was transplanted into Deepot 16's. Because of the late germination period, the seedlings were very small going into winter storage in the cold-frame and did not survive the winter.

Additional cottonwood and willow seed was collected around June 1, 2006. This seed was received at the PMC on June 28, 2006. By this time all of the willow seed had lost its viability, and most of the cottonwood seed was non-viable. Sufficient seed was obtained of Mills Canyon cottonwood (including a collection labeled "short raceme variety") to propagate approximately 500 seedlings in Super Cells.

Seed of waxflower (*Jamesia americana*) was collected from Red Canyon in the Manzano Mountains in the fall of 2005. The seed was cleaned and cold stratified. Approximately 200 Super Cells were propagated in the spring of 2006.

Germination tests of the wetland species investigated 6- and 12-week cold stratification periods; the *Rumex* did not require cold treatment for germination. Very poor germination was noted for all the wetland species except *Juncus* species which germinated fairly well in the 6 week cold treatment and

Scirpus pallidus which germinated well after 12 weeks of cold treatment. This poor germination prompted scarification trials of the seed prior to stratification. The seed was wet tumbled with grit and pea gravel for six days prior to sowing; the scarified seed was subjected to 12 weeks of cold. Reasonable germination of *Scirpus pallidus* and *pungens* was observed with meager germination of *Scirpus validus* and *Eleocharis*. Based on the total seed availability, it should be possible to produce large numbers of *Scirpus pallidus* and *pungens*, but only small quantities of *Scirpus validus*, both species of *Juncus*, and *Eleocharis*.



Figure 3: Mills Canyon chokecherry seedlings growing in Deepot 16 containers, late August 2006

Transplant Production

During the early spring of 2006, the peachleaf willow seedlings were infested with wooly root aphids which caused considerable loss of vigor for several hundred peachleaf willow seedlings. An effective insecticide drench (Orthene) was eventually found, but many of the most damaged plants succumbed. Enough seedlings remained with reasonable vigor to plant six rows of pole production (900 seedlings) as well as 160 one-gallon treepot transplants.

In the summer of 2006, Super Cell and Deepot 16 seedlings were transplanted into one-gallon treepots (4" x 4" x 14"). A total of 450 chokecherry (see Figure 4), 400 cottonwood, 160 peachleaf willow, 200 coyote willow (see Figure 5), and 160 waxflower seedlings were transplanted. These transplants were fertilized with 15 g of 17-6-12 controlled release fertilizer having a release period of three to four months. These transplants will require daily watering until their root systems become established; thereafter, every other day irrigation will be sufficient.

Most of these species will be ready for outplanting based on root ball integrity by the spring of 2008. Production of long-stem stock (4 – 7 feet) for deep planting into the capillary fringe above the water table might require one additional growing season.



Figure 4: Mills Canyon chokecherry transplanted into one-gallon treepots, late August 2006.



Figure 5: Mills Canyon cottonwood (left front row), peachleaf willow, and coyote willow (right front row) transplanted into one-gallon treepots, late August 2006.

Installation of Pole Production Blocks

In mid-July, Super Cell seedlings were transplanted into flood irrigated production blocks for eventual production of dormant pole cuttings. A total of 14 rows were planted. Each row was 300 feet long with approximately 150 plants per row. The pole production blocks were prepared by:

- Discing
- Laser-leveling
- Ripping with a single shank ripper to breakup any hardpan in the planting row
- Installing 3-foot wide ground cover fabric to serve as a weed barrier
- Irrigating one day before planting
- Auguring planting holes at least 12" deep
- Applying 5 g of 17-6-12 controlled release fertilizer in each hole
- Inserting the seedling
- Backfilling with sufficient soil to fill all voids
- Irrigating a second time

These production blocks (see Figures 6 and 7) will be flood irrigated weekly as well as cultivated and hand weeded throughout the 2006 growing season.



Figure 6: Pole production block of Mills Canyon cottonwood planted in July of 2006.



Figure 7: Pole production block of Mills Canyon peachleaf willow planted in July of 2006.

These plants should approach 5- to 7-feet in height by late summer 2007, and small poles (~12 to 14 feet) of cottonwood and peachleaf willow should be available by the winter of 2008-2009. Coyote willow dormant whip cuttings (~6 to 9 feet) could be available by winter 2007-2008.

Billing Details for FY 2006

FS Agency Location Code	12-40-1100
FS Agreement No.	05-IA-11030300-030
NRCS Agreement No.	68-8030-05-033
Agreement Date	8/12/05

1. Propagated seedlings in 10-in³ Super Cells of waxflower (*Jamesia americana* [Tajique watershed]), chokecherry (*Prunus virginiana*), and cottonwood (*Populus deltoides* [Canadian River]) from seed provided by Cibola National Forest:
 - a. Waxflower – 200
 - b. Chokecherry – 900
 - c. Cottonwood – 500

A total of 1600 seedlings at \$1.50 each = \$2,400

2. Transplanted seedlings into one-gallon treepots:
 - a. Chokecherry – 450
 - b. Cottonwood – 400
 - c. Peachleaf willow – 160
 - d. Coyote willow – 200
 - e. Waxflower – 160

A total of 1,370 treepots at \$5.00 each - \$6,850

3. Produced trial quantities of wetland species (*Juncus*, *Scirpus*...) in 4-in³ Pine Cells:
 - a. Scarified and stratified seed for 1000 cells at \$0.50 each = \$500
 - b. Maintained actual production of 400 cells at \$0.50 each = \$200

Total = \$700

4. Planted pole production blocks of approximately 1.1 acres of Canadian River seedlings propagated in 2005:
 - a. Peachleaf willow (Seneca Creek seed source) 2 rows of 150 plants each
 - b. Peachleaf willow (Perico Creek seed source) 4 rows of 150 plants each
 - c. Cottonwood (Perico Creek seed source) 7 rows of 150 plants each
 - d. Coyote willow (Perico Creek seed source) 1 row of 100 plants

A total of 2050 plants installed on 1.1 acres

Field preparation cost – \$2000/acre = \$2,200

Seedling installation cost – \$1600/acre = \$1,760

Field maintenance cost – 1750/acre = \$1,925

Total = \$5,885

5. Developed progress report for FY 2006 accomplishments
Professional time 8 hrs @ \$40/hr = \$320

Total Direct Costs of \$16,155 + 17.8% overhead = \$19,031
Total NRCS Costs = \$19,031