Arbon Valley Willow Trial, 2005

Derek J. Tilley, Range Conservationist (Plants)
Chris Hoag, Wetland Plant Ecologist
USDA-NRCS Plant Materials Center, Aberdeen, ID

On May 18, 2005 a trial was initiated on Stewart and Judy Adams' property located in Arbon Valley, ID. The purpose of this study was to evaluate the effectiveness of pre-soaking hardwood cuttings in water prior to planting. A total of 350 willow and cottonwood hardwood cuttings were planted along both banks of Bannock Creek. These included: 120 Peachleaf willow, 110 Coyote willow, and 120 Black cottonwoods. For the trial, we subjected cuttings to one of five pre-soaking treatments: 1) completely submerged for 7 days, 2) completely submerged for 14 days, 3) half submerged for 7 days, 4) half submerged for 14 days, and 5) no pre-treatment. Cuttings were planted using a waterjet stinger device which uses a probe shooting water at high pressures to create a hole in which to place the cutting.

The cuttings were evaluated for survival on June 15, 2005 and again on September 22, 2005. By the time of the second evaluation there were no significant differences between the treatments for each species, indicating that pre-soaking may not be as critical to the pre-treatment of the willow and cottonwood cuttings. Soaking has other benefits to the overall success of a riparian rehabilitation project. Soaking can rehydrate the cuttings after they have been stored dry for up to 4 months. Soaking willows ensures that the vascular tissue and buds are super saturated. It also results in the dissolution and leaching of an anti-root hormone located in the stems. Overall survival varied widely between species. Peachleaf willows did exceptionally well (77% survival) as compared to 8% survival of Black cottonwood and 5% survival of Coyote willow.

Cutting survival as of 9/22/05.

	Total survival	**% survival**
Peachleaf willow	92/120	77
Coyote willow	6/110	5
Black cottonwood	9/120	8

Several factors may have affected the survival of the cuttings. Coarse gravelly soil forced planters to keep the waterjet stinger in the ground for longer amounts of time than normal, which washed soil out of the holes. At the evaluations, many plants were found sitting loose in holes with no good soil contact. None of the cuttings found in this condition had survived to the second evaluation. Also, several cuttings were placed too shallow in the soil because of rocks, leaving the cutting not deep enough in the water table. Heavy competition from perennial grasses (creeping foxtail, reed canarygrass, and quackgrass) may have shaded out cuttings and/or outcompeted the cuttings for root space. However, the high survival rate of Peachleaf willow in every treatment suggests this species can survive despite these problems.

The Aberdeen PMC would like to thank the staff of the American Falls NRCS field office for their help in planting. We also express our sincere thanks to the Adams family for their hospitality and for allowing us to conduct this study on their land.