



Year 2003



Progress Report of Activities

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Alderson, WV Plant Materials Center

P. O. Box 390, Alderson, WV 24910 Web site: Plant-Materials.nrcs.usda.gov



Appalachian Winter at the Alderson Plant Materials Center

Who We Are

The Alderson Plant Materials Center serves 11 states in the Appalachian Region from Pennsylvania to Georgia and Alabama. The Center is operated by the USDA-NRCS in cooperation with the USDA-Agriculture Research Service, U.S. Forest Service and the Agriculture Experiment Stations of West Virginia University, Virginia Polytechnic Institute and State University and the University of Kentucky. Alderson is located in the heart of Appalachia, and the Center is situated on County Route 3/29, also known as Old Prison Farm Road, approximately 20 miles Southeast of Lewisburg, West Virginia. This center is new with regard to land resource and physical plant, but is the product of the transfer of programs and equipment from Quicksand, Kentucky to Alderson, West Virginia. The transfer of center functions began in 1996 and was completed in 2000.

What We Do

The Plant Materials Center serves Appalachia by evaluating plants for their ability to solve specific conservation problems related to climate, the rugged topography, soil limitations, various land uses, fish and wildlife needs and desires of the landowners. The center provides a place for conducting systematic observations and evaluations of plants needed to protect our natural resources. New techniques are developed for the propagation, establishment, management and use for new or improved species of grasses, legumes, shrubs and trees.

The Center's program emphasizes improving forage production on hillside pastures, address problems associated with concentrated livestock, reclamation of mined lands, streambank stabilization, agro-forestry, wildlife habitat improvement, and utilization of economic and culturally valuable plants. The center assembles plants from the entire service area with similar soils and climate, evaluates the plants, develops management techniques, and provides seed and plants for planting to test performance throughout the area. Most of the plant materials produced at the center are used in West Virginia, Kentucky, Tennessee, Pennsylvania, Ohio, Virginia, and North Carolina.

A brief summary of year 2003 accomplishments follows. For a complete account of all activities, request the 2003 Technical Report at the above address.

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2003 Summary of Projects

. These projects involve one or more species of native plants and have diversified our partnerships with Native Americans, federal agencies and private conservation groups. A brief description of each project follows.

Ramp, *Allium tricoccum*, Propagation & Cultivation Techniques for the Eastern Band of the Cherokee Nation

The Eastern Band of the Cherokee Nation requested plant materials assistance with development of cultivation techniques for *Allium tricoccum*, or ramps, in 2002. Ramps are one of many native plants that are culturally significant to the Cherokee.

Allium tricoccum is a perennial spring ephemeral that is widely distributed in eastern North America. The southern Appalachians represent the southern edge of its range. Colonies of *A. tricoccum* can be found in cove forests and northern hardwood associations throughout Great Smokey Mountains National Park and adjoining Cherokee Reservation lands.

. The Cherokee have traditionally harvested ramps from wild colonies on reservation and park land by digging and removing the entire plant in early spring. The harvesting of ramps has been allowed in Great Smokey Mountains National Park since the establishment of the park. National Park Service policy states that the Park Superintendent may

designate certain fruits, berries, nuts, etc. that may be gathered by hand for personal use or consumption provided a written determination indicates that gathering or will not adversely affect the reproductive potential of the plant. However, the National Park Service has become concerned that ramps are being over harvested in the Park. This concern has been heightened with the increasing popularity of ramp festivals, which require large quantities of ramps. Recent Park Service field reports indicate that accessible ramp populations are smaller and less dense than those found in more remote areas of the Park.

In an effort to be proactive, the Cherokee have opted to move from traditional spring ramp gathering from wild populations to establishment and management of "backyard" ramp gardens for their people. The Alderson Plant Materials Center will assist the Cherokee to bring this culturally significant wild plant into cultivation. The goal is to develop a dependable supply of ramps for the Cherokee, while limiting further depletion of the wild population within the Great Smokey Mountains National Park.

In November of 2002, staff from the Plant Materials Center harvested a quantity of dormant ramp bulbs from Cherokee reservation lands in North Carolina. These bulbs were transplanted into a forested area at the Plant Materials Center and monitored throughout 2003 for survival, growth and seed production. Survival and growth of the transplants was excellent. However, there was minimal seed production in 2003. Seed production is expected to increase in future years, as these plants recover from the shock of transplanting and mature in their new location at the Plant Materials Center. This project will be continued in 2004.

U. S. Department of the Interior-National Park Service Stones River National Battlefield Native Plant Restoration

Stones River National Battlefield, located in Middle Tennessee on the northwestern edge of Murfreesboro is the site of one of the significant battles of the War Between the States. The Battle of Stones River, fought between December 31, 1862 and January 2, 1863 marked the beginning of the Union Army's "March to the Sea" which resulted in



Allium tricoccum seedhead at the PMC

Union control of agricultural land and supply networks and prevented further attempts by the Confederate Army to push northward. Stones River National Battlefield was established in 1927 to preserve this significant historic site. The original property consisted of 344 of the 4,000 acres over which the battle was fought. The park currently encompasses approximately 700 acres.

Vegetation and terrain played an important role in the outcome of the Battle of Stones River. Because of the incidence of limestone outcroppings, cedar brakes and cedar woods dominated the majority of the original park property at the time of the battle. It is suspected that these areas were used as hog lots circa 1862. The cedar glades in the area, which were and are characterized by shallow soil and exposed limestone bedrock, lacked sufficient vegetation for forage or cover for livestock and likely, were considered wastelands.

During the battle, the rock outcrops and thick cedar woods significantly slowed troop progress and impeded rapid movement of artillery pieces. However, the significance of the battlefield's vegetation lies not only in its historical significance but also in its botanical and ecological value. The site is host to a number of rare and endemic plant species and unique plant communities.

Today, introduced and exotic plant species have encroached onto many areas of the battlefield. Park managers have identified restoration of native plant communities as a high priority for maintenance of the parks circa 1862 authenticity. National Park Service personnel have completed a thorough assessment of the vascular flora inhabiting the battlefield property and have targeted approximately twenty native plant species having high priority for use in restoration of plant communities.

The Alderson Plant Materials Center has agreed to work with the National Park Service at Stones River National Battlefield to collect seed, develop propagation techniques, and produce seedling plants and/or seed of the targeted species for plant community restoration within the park. This project is expected to have at least a five year duration.

Calendar year 2003 was the initiation year for this agreement. During 2003, NRCS personnel traveled



Symphyotrichum drummondii at Stones River National Battlefield

to Stones River National Battlefield to become familiar with the park's ecological communities, identify prime seed collection locations for the nineteen species of interest, and to assess appropriate seed collection techniques and optimum harvest times. Several late summer seed collection trips netted small (less than 0.5 pounds) quantities of seeds from thirteen species. All seed was collected by hand stripping methods. The thirteen species represented in the 2003 seed harvest are: *Andropogon virginicus*, *Andropogon ternarius*, *Andropogon gyrans*, *Chasmanthium latifolium*, *Dichanthelium* spp., *Eragrostis spectabilis*, *Leersia virginica*, *Schizachyrium scoparium*, *Asclepias tuberosa*, *Symphyotrichum drummondii*, *Lespedeza violacea*, *Lespedeza hirta*, and *Rudbeckia triloba*. All seed harvested was transported to the Alderson, West Virginia Plant Materials Center, where it was conditioned and placed in appropriate seed storage until planting in fiscal year 2004.

US Army Corps. of Engineers – Marmet Native Plant Mitigation

The Alderson Plant Materials Center is assisting the US Army Corps. of Engineers - Huntington District with restoration of native plants at the Marmet Locks and Dam Project. This project is located on the Kanawha River in West Virginia upstream of Charleston. The project includes building a new lock chamber and approach channels at River Mile 67.7. All vegetation and habitats within the approximately 150 acre site will be destroyed during the course of construction.

Six native woody species were harvested from the site prior to the start of construction. These species are: *Acer saccharinum*, silver maple; *Lindera benzoin*, spicebush; *Sambucus canadensis*, elderberry; *Asimina triloba*, pawpaw; *Sassafras albidum*, sassafras; and *Aesculus octandra*, yellow buckeye. These plants are being maintained as container grown stock at the Plant Materials Center until completion of construction, when they will be re-introduced to the Marmet site to assist with re-establishment of genetic diversity at the lock and dam location.

Saving West Virginia's Balsam Fir

Abies balsamea, balsam fir is native to high elevation areas in West Virginia. However, balsam fir numbers are declining due to a serious infestation of the balsam wooly adelgid. The adelgid is an exotic, sap-sucking insect that causes mortality within 2-3 years of initial contact. Several conservation groups have recognized the rapid decline of the fir in West Virginia and have formed a partnership with the US Department of the Interior and the Plant Materials Center to restore balsam fir to four natural areas in the West Virginia Highlands. Volunteers from the West Virginia Highlands Conservancy, The Mountain Institute, The Nature Conservancy, and others harvested balsam fir seed from four locations in the West Virginia Highlands in the fall of 2000. The harvested seed was processed by the volunteers and shipped to Alderson PMC for seed banking. The PMC is also responsible for producing seedlings for reintroduction to the natural areas where the seed was harvested.



Abies balsamea seedling production at Alderson Plant Materials Center

During 2003, staff at the Alderson Plant Materials Center germinated a small lot of seed from each of the four collection locations. While actual germination percentages were low, 20-35 percent, for all lots, several hundred seedlings were produced. These seedlings will be maintained at the Plant Materials Center until they are large enough to be re-introduced into their native habitat.

Giant Cane Rapid Propagation Study

Arundinaria gigantea, giant cane or bamboo is our largest native grass. Giant cane covered extensive areas of the southeastern United States at the time of European settlement. These areas were known as canebrakes and they disappeared rapidly following settlement due to a combination of factors. Today, giant cane persists largely as an understory plant in other vegetative cover types.

The shoots or canes arise from underground stems known as rhizomes. Only rarely does *Arundinaria* flower and set seed. Historical accounts of cane brakes clearly indicate that when *Arundinaria* flowers and produces seed, the plant then dies. Thus the principal method of reproduction is vegetative.

The NRCS has developed an interest in rapidly propagating giant cane for use as a streambank erosion control plant and other conservation uses. Collection of plants from Illinois, Indiana and Ohio were initiated in 2001. The Alderson PMC received plants from 9 different locations. These plants will be evaluated with regard to survival, rate of spread, and ability to produce new plants from division of rhizomes.



Arundinaria gigantea stand near Malden, WV

The Eastern Band of the Cherokee Nation also has an interest in Giant cane. However, their interest is in those cane plants that produce large diameter canes. Cherokee crafters use the large diameter canes to make traditional basketry. Suitable canes have become very difficult to harvest from wild cane populations, and the Cherokee are interested in propagating plants that are suitable for their basketry. The Alderson PMC will assist the Cherokee with development of propagation and management techniques to ensure their crafters have a dependable supply of large diameter cane plants.

In 2003, the Alderson Plant Materials Center continued to maintain and observe the 9 collections from Illinois, Indiana and Ohio. Collections of giant cane from the remainder of the Center service area continue to be sought, especially from stands that are producing larger diameter canes.

‘Quickstand’ Bermudagrass Forage Production Demonstration Project

‘Quickstand’ bermudagrass is a commercially available bermudagrass that was selected by the Plant Materials Center for use as forage and turf. Coastal type bermudagrasses are routinely used in the Southern states as a warm season summer forages. However, Coastal bermudagrasses are not adapted to the colder, continental climate found in the Appalachian region.

‘Quickstand’ bermudagrass was discovered at the former location of the Plant Materials Center in Quicksand, Kentucky and found to be well adapted to the Appalachian region. In fact, this cultivar has proven to be incredibly cold hardy. It not only survives, but thrives at 3000 feet in elevation in West Virginia! However, like most bermudagrasses, ‘Quickstand’ does not produce viable seed. Thus, new stands must be established by transplanting live plants through a process called “sprigging”.

Interest in use of bermudagrass as forage to alleviate the “mid-summer slump” has increased dramatically within the Center’s service area recently. This increase may be attributed to articles that have been published in popular trade magazines, such as the Stockman Grass Farmer, and also through programs such as the Grazing Land Conservation Initiative.

Establishment of bermudagrass through transplanting or sprigging is an intensive process that requires specialized equipment which is not readily available in the Center’s service area. Unavailability of establishment equipment was a detriment to use of bermudagrass by many forage producers.

The Plant Materials Center recognized that equipment unavailability was a problem with use bermudagrass as a forage and in late 2002 purchased a no-till sprig planter for use in establishing demonstration plantings. This planter was used to establish bermudagrass for forage in Maryland, West Virginia and Tennessee in 2003. Demonstration plantings included ‘Quickstand’ and ‘World Feeder’ cultivars. The no-till sprig planter and ‘Quickstand’ sprigs will be available for demonstration plantings for forage in 2004.



Plant Materials Center’s No-till Bermudagrass Sprig Planter

Central Appalachian White Clover Germplasm Characterization Study

The Plant Materials Center is cooperating with Dr. Paul Voigt, retired Agricultural Research Service clover breeder, to provide white clover base populations that could be used in future cultivar germplasm development projects. To obtain white clover germplasm with good adaptation to central Appalachian pastures, Dr. Voigt made collections from well managed pastures located in Kentucky, Ohio, West Virginia, and Virginia. Twelve white clover experimental populations and cultivars have been planted in an observation block at the Plant Materials Center. Data collection began in 2003, and is expected to continue through at least 2005.



Central Appalachian White Clover Observation Block

Data being collected includes leaf size, foliage height, stolon spread, stolon density, flower density, and pest damage.