



Year 2000 Progress Report of Activities

USDA NRCS

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Elsberry, Missouri Plant Materials Center

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Who We Are

The Elsberry Plant Materials Center (PMC) is a branch of the United States Department of Agriculture, Natural Resources Conservation Service (NRCS). It is one of 26 plant materials centers located throughout the United States. Areas served include Missouri, Iowa, and Illinois. The Center is located approximately 60 miles north and west of St. Louis, Missouri on Highway 79.

What We Do

It is our mission to develop and transfer effective state-of-the-art plant sciences technology to meet customer and resource needs. NRCS Plant Materials activities are consistent with the objectives of the U.S. Department of Agriculture and NRCS Strategic Plans, namely to provide timely and effective vegetative solutions for resource needs. Emphasis is on using native plants. Superior adapted plants are developed, tested and released to commercial growers along with production and management technology. Four major objectives are addressed:

- Reduce Excessive Soil Erosion and Improve Water Quality
- Increase Forage Quality or Improve Water Quality Through Low Input Sustainable Agriculture
- Improve Water Quality by Controlling Run-Off, Utilizing Nutrients, and Stabilizing Shorelines

- Additional Conservation Needs of Missouri, Iowa, and Illinois

A brief partial summary of 2000 accomplishments follows. Request the 2000 Technical Report for a complete account of all activities.

Warm Season Grasses for Forage, Prairie Restoration, and Wildlife Food and Habitat

Assemblies of eastern gamagrass, big bluestem, and little bluestem have been established at the PMC. The objective in initiating these studies is to find better-adapted warm season grasses for the area being served by the Elsberry PMC. These studies are in different stages of evaluation. In the little bluestem assembly, selections were made in 2000 based on a set of criteria. The eastern gamagrass and big bluestem studies are in the seed increase stages of evaluation. Cultivar releases are planned for in the next four to five years.



Little bluestem collection.
130 Accessions.



Eastern gamagrass selection.



Wild plum
flowering.



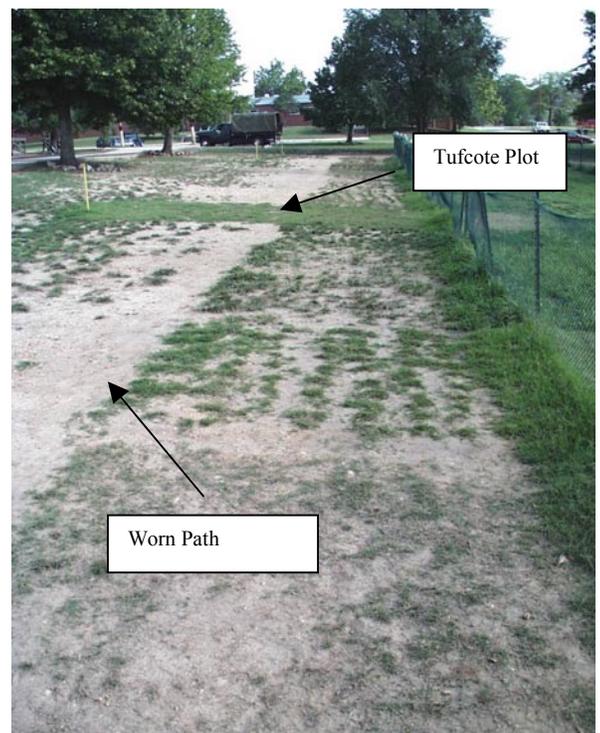
American
hazelnut
selection.

Shrubs for Use in Agro-Forestry, Windbreaks, and Wildlife Food and Habitat

Assemblies of American hazelnut, wild plum, and arrowwood were planted on the PMC in 1994. These assemblies were evaluated for fruiting, rate of growth, insect and disease resistance and form. Selections have been made out of each assembly and placed in the Plant Materials Field Planting Program. This will allow off site evaluations to be made and analyzed to better determine the areas of adaptation for each species. Plans are to release three selections each of the wild plum and American hazelnut and one selection of arrowwood as Tested Class Germplasm in 2002. The American hazelnut will not only be used for windbreaks and wildlife food and habitat; but also used in agro-forestry situations.

Search For Wear Tolerance Plants

The Elsberry Plant Materials Center entered into an agreement with the US Department of Army in 1997 for the purpose of evaluating different plants (warm/cool season grasses and legumes) for wear tolerance (foot and vehicle traffic) at Ft. Leonard Wood, Missouri. Four sites were selected for the tests: barracks, bivouac, shooting range and TA 244 severely disturbed area from tank traffic. The following is a listing of locations and the best performing plant(s) on the respective sites: Barracks, 'Tufcote' bermudagrass; Bivouac, 'Covar' sheep fescue and 'SR 3100' hard fescue; Shooting range, 'Top Gun' buffalograss; and 'TA-244', a disturbed upland site, 'Cimmaron' little bluestem. A summary of the total study with recommendations will be provided to Ft. Leonard Wood in 2001.



Foot traffic across plots at barracks evaluation site.

Low Growing/Flood Tolerant Switchgrass

In the search for a low growing highly rhizomatous switchgrass for use in waterways, the Elsberry PMC lucked upon a flood tolerant switchgrass. This was done because of the Great Flood of 1995 flooding the entire site where the low growing switchgrass assembly was planted. Once the floodwaters receded, it was discovered that three plants had actually survived eight and a half feet (8.5') of water for approximately eight weeks. These plants were vegetatively propagated and planted in a selective field on the PMC and managed for seed production. Providing these plants continue to perform in positive ways, it will be released to the commercial market in year 2002. There are many applications for a low growing flood tolerant switchgrass; three of which are waterways, flood prone areas and wildlife food and habitat.



Flood tolerant switchgrass.



New England aster.



Pale purple cone-flower.

Ecotype Releases in 2000

The Elsberry PMC in cooperation with the University of Northern Iowa, Iowa-Integrated Roadside Vegetation Management Program, Iowa Department of Transportation, and Iowa Crop Improvement Association have released the following plants in 2000: Southern Iowa Blazing Star, Northern Iowa Big Bluestem, Northern Iowa Roundhead Lespedeza, and Northern Iowa Tall Dropseed. The objective of this endeavor is to make native grasses, forbs, and legumes available at reasonable costs. These plants will be used to re-vegetate roadsides, prairie restoration, wildlife food and habitat and other critical areas. Forty-five source-identified releases have been made since 1991 when authorized representatives from agencies involved with these releases signed the agreements.

Conifer Evaluation for Windbreak Plantings

What are the best conifer species for windbreaks in Missouri? This is a question often asked since Missouri only has two native conifers. Shortleaf pine is native to southern Missouri and although eastern red cedar is native throughout the state, and makes a good windbreak, it is not the species of choice.

An assembly of twenty-five different species of conifers was planted in Field #3 on the PMC in 1993 and 1994. The purpose of this study was to evaluate growth rate and survivability of selected non-native coniferous species for possible use in windbreaks in the PMC service (Iowa, Illinois, and Missouri).

Six species of the total 25 failed to survive, probably due to drought years, competition and mechanical damage: jack pine, Canadian hemlock, noble fir, alpine fir, black spruce and western hemlock.

The best surviving species in this study were the Norway spruce followed by the Ponderosa pine, red and white pines, northern white cedar and balsam fir.

The fastest growing of these best surviving species were Norway spruce, followed by Balsam fir and Ponderosa pine.

Seed Coating / Seeding Rates Study

Many acres in the three-state service area are seeded each year to various grass and legume species. Whether it be for pasture, hay, critical area stabilization or CRP (Cropland Reserve Program); seeding rates are important. Standards can vary between agencies and other available literature.

Coated seed and how it is addressed is also

of concern. Is 1# of seed equal to 2/3# of seed plus 1/3# of coating?

The Elsberry PMC has partnered with Lincoln University at Jefferson City, Missouri to compare seeding rates of coated and uncoated seed for five consecutive planting seasons. The plots will be monitored for five years after planting.

The first two years confirm that seedling emergence and plant density vary between years as well as with rates or coatings. Weather conditions and other factors affect establishment success. Coated seed with less seed is equal to uncoated seed but not for all species, rates and years. Much variation comes from studies with only one or two year's data. Information will become more complete with additional years of data.



Alfalfa coated versus uncoated.

New Collections Made in 2000

The Elsberry PMC initiated collections for two new studies in the fall of 2000; false indigo bush and bur oak. The purpose of making these collections is to respond to a tri-state need for wetland plants having wildlife food and habitat characteristics. To date, 31 collections of false indigo bush and 24 collections of bur oak have been made from Illinois, Iowa, and Missouri. All of these collections will be planted and grown out in the greenhouse and transplanted in a selected field on the PMC in May 2001.

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