



Year 2003 Progress Report of Activities

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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:

1. Biodiversity of plant species for Wildlife, Wetlands and Restoration
2. Increase Forage Quality and Quantity
3. Improve Water Quality by Filtering and Sediment Control, Utilizing Nutrients, and Stabilizing Shorelines
4. Additional Conservation Needs of Missouri, Iowa, and Illinois

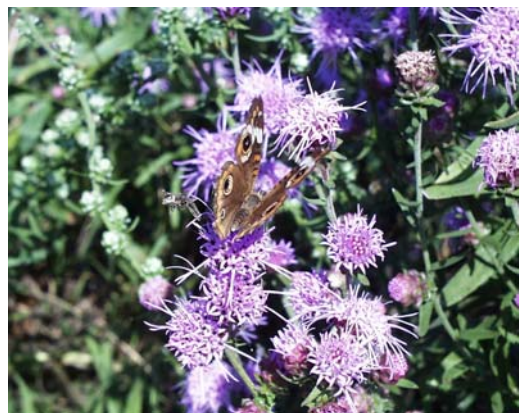
Major Objective #1:

-Increase Biodiversity of Plants. 2003 Developing Native Plants to Address Resource needs

Native species are needed for prairie and roadside plantings, prairie landscaping, plantings for wildlife food and habitat (WHIP), critical area cover and Conservation Reserve Program (CRP).

The Elsberry PMC in cooperation with the University of Northern Iowa, Native Roadside Vegetation Center, Iowa Department of Transportation and the Iowa Crop Improvement Association have released the following source identified native ecotypes in 2003 to Commercial Seed Growers in Iowa.

- **Northern, Central and Southern Iowa Rough Blazing Stars**
- **Northern and Central Iowa Prairie Junegrass**
- **Southern Iowa Horsemint**
- **Central Iowa Purple Prairie Clover**
- **Central Iowa Switchgrass**



Liatris aspera, Rough Blazing Star Iowa Ecotype Released in 2003

Previous plant releases since 1996-2003 have resulted in a commercial market for 2003 that produced about 60,000 pounds of native source identified seed with a value approximately one million dollars.

These plant releases to commercial growers have provided increase availability of native grasses, forbs, and legumes to landowners and buyers for these products.

**Major Objective #2:
-Increase Forage Quality and Quantity. Featured Plant Release OZ-70 Germplasm Big Bluestem (*Andropogon gerardii*), Selected Class**

What does OZ-70 mean? OZ is for the Ozark region and the 70 means the big bluestem is represented by 70 collections that were selected and crossed based on their forage potential. These 70 collections were from 43 collections from Missouri, 14 collections from Arkansas, and 13 from Oklahoma.

Germplasm is the genetic material that determines the morphological and physiological characteristics of a species. A Selected Class is the germplasm showing promise of desirable traits for which it was selected as in this release for grazing and forage potential.

The OZ-70 selection has very good forage production and vigor that appears to be comparable or better than Rountree. OZ-70 is approximately two weeks later in booting than Rountree and forage quality is better when tested at Elsberry. (See below.)

Rountree exhibits considerably more rust when compared to OZ-70 in Southern Missouri. OZ-70 also has very good seed production with a 2003 yield of 280 bulk pounds of clean seed per acre.

Forage clippings of OZ-70 Germplasm were compared with Rountree. These samples were replicated and taken at different stages of growth. Forage quality of the OZ-70 selection compared favorably to Rountree as indicated by data below.

Clipping Data	Percent Crude Protein		Percent ADF		Percent NDF	
	OZ	RT	OZ	RT	OZ	RT
6/19/02	14.3	8.0	30.9	35.7	55.8	60.8
7/8/02	8.2	5.8	34.1	33.0	59.3	60.5
8/30/02 *	11.4	11.9	34.3	34.7	54.6	56.6

* Regrowth material from 7/8/02 clipping. OZ = OZ-70 Germplasm big bluestem, 'RT' = 'Rountree' big bluestem, ADF = acid detergent fiber, NDF = neutral detergent fiber

The OZ-70 big bluestem is established on several field plantings in southern Missouri and being monitored by field personnel on grazing days or forage production. In 2004 foundation seed was sold from the Elsberry PMC to the commercial market for making this selection available to the public in 2005.



**OZ-70 Big Bluestem on July 9, 2003
Elsberry PMC.**

**Major Objective # 2:
-Forage Quality Testing of Native
Warm and Cool Season Grasses
Using Fecal Samples**

True representation of forage quality of warm season grass species is questionable when determining TDN (Total Digestible Nutrients) using wet chemistry lab procedures. Taking a pure forage sample and using both methods of testing would allow a correlation between tests.

The PMC, with the help of Mark Kennedy, State Grassland Specialist, will be conducting this comparison between the two testing methods. Forage samples will be green chopped and fed to weaned calves for four days. Replicated fecal samples will be taken after the fourth day and sent for testing. Forage samples will also be sent to the lab.

Samples will be taken of three warm season grass species, Eastern gamagrass, big bluestem, and Indiangrass; and one native cool season grass, Virginia wildrye. Each species will be chopped for sampling three times. The first sample will be at the vegetative stage in May or June depending on the species. The second will be a mid summer sample (mid to late July) at late vegetative to seedhead development stage. The third will be regrowth material from the time of the first sample clipping to the time the second sample is taken. These clipping dates will be correlated with a PMC study comparing ten warm season grass species using lab analysis.

**Major Objective #3:
-Improve Water Quality by Filtering
and Sediment Control.**

A conservation need is being addressed for the use of native wetland species of cool season grasses and sedges to determine their performance for conservation practices such as filterstrips and buffers.

In 2002 and 2003 The Elsberry PMC and field offices in Missouri, Iowa and Illinois made 52 collections of 23 different species of native cool season grasses and sedges.

All collections are being evaluated for germination from seed and seedling vigor in the greenhouse.

The collections will be out planted from plugs to be observed in a block planting for rating of vegetative spread and density of stand.

These collections based on their performance could be an available seed source for use of these species to evaluate their performance in filtering and sediment deposition for wetland plantings.

Thanks to all field offices that made collections of these species.



**Major objective # 4:
-New Conservation Needs.
New Study Planned for 2004**

**Tolerance of selected woody species to the
herbicide Outrider (Sulosulfuron)**

The need is the establishment of woody species in wetland areas that have severe competition from grasses after planting, such as Johnsongrass.

The Monsanto herbicide Outrider is getting attention for several uses. Outrider has a non-crop label and is very effective in the control

of Johnsongrass. Some of the additional common annual and perennial weeds controlled include cheat, cocklebur, horseweed, downy brome, purple and yellow nutsedge, quackgrass, ragweed, sunflower and others.

Johnsongrass can be a major problem with woody establishment in some parts of the service area. Outrider effectively controls Johnsongrass even at larger plant stages when other chemicals are sometimes less effective. The PMC and Monsanto will be testing the tolerance of the woody species listed below:

Silver Maple	Roughleaf Dogwood
Sycamore	American Plum
Pin Oak	Blackhaw
Burr Oak	Hazelnut
Walnut	Chokecherry
Pecan	False Indigo Bush
Cottonwood	Buttonbush
Bald Cypress	Green Ash

The listed species will be tested for tolerance at the maximum rate during midsummer and also a split application of the maximum rate in the spring and also a fall/spring split. The split applications may control Reed's canarygrass.

Weed control is necessary for woody's planted on wetland and riparian sites, covey headquarters and field borders. If woody species show tolerance to over the top spray with no protection, this herbicide could be very useful.

Native warm season species labeled tolerant to Outrider are big and little bluestem, indiangrass, switchgrass, sideoats grama, Eastern gamagrass, and others. This gives us another option for weed control in warm season grass fields and has also been tested on seedling for use during establishment.

Plant Materials Center Annual Training/Tour

The PMC held a one-day training/tour session, June 11, 2003. Sixty-six individuals from Illinois and Missouri attended. These individuals represented NRCS employees, Missouri Department of Conservation, SWCD, and the public. The training session introduced the group to the use of plant materials for the conservation planning process.

The tour portion of this session involved viewing and discussion of many studies the PMC is conducting along with the specialized seed harvesters and seed separators.

For 2004 the tour /training session date will be June 9, 2004, from 10:00 am to 2:30 pm. We will touring many different plant species important to conservation needs, so come and enjoy a comfortable day learning more about plants.



To learn more about these and other Elsberry PMC activities visit our website:

<http://www.Plant-Materials.nrcs.usda.gov>

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