

Year 2007 Progress Report of Activities

Issued February 2008

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Elsberry Plant Materials Center

Who We Are

The Elsberry Plant Materials Center (PMC) is a program within the Natural Resources Conservation Service (NRCS), a branch of the United States Department of Agriculture. The Elsberry PMC is one of 27 plant materials centers located throughout the United States. Areas serviced by the Elsberry PMC include Missouri, Iowa, and Illinois. The Center is located approximately 60 miles north and west of St. Louis, Missouri on Highway 79.

Program Emphasis

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. Superior adapted plants are developed, tested, and released to commercial growers

along with production and management technology. Emphasis is on using native plants.

Four Major Objectives Addressed:

1. **Reduce Excessive Soil Erosion and Improve Water Quality through Biodiversity of Plant Species for Wildlife, Wetlands, and Restoration**
2. **Increase Forage Quality and Quantity through Low Input Sustainable Agriculture**
3. **Improve Water Quality by Controlling Run-Off, Utilizing Nutrients, and Stabilizing Shorelines**
4. **Meet Additional Conservation Needs of Missouri, Iowa, and Illinois including plants for Biofuels and Urban Landscaping**

New Plant Releases for 2007

The Elsberry Plant Materials Center had three new plant releases in 2007. Sun Harvest Germplasm hazelnut, *Corylus americana*, is a selected class release. Northern Iowa Germplasm and Central Iowa Germplasm wild bergamot, *Monarda fistulosa*, are two source-identified class releases. Additional information on these releases is available by visiting the NRCS Elsberry PMC website.

Seed is available to commercial growers through the Elsberry PMC by contacting the plant materials specialist.

2007 Elsberry PMC Releases

Sun Harvest Germplasm Hazelnut

Sun Harvest Germplasm hazelnut, *Corylus americana*, a selected class release, was evaluated on the basis of growth habit, canopy spread, plant height, nut production, and insect/disease resistance at the Elsberry Plant Materials Center from 1995 to 1998. The six collections that make up Sun Harvest Germplasm were selected from a collection of 14 accessions of American hazelnut originating in Illinois and Missouri.



Sun Harvest Germplasm Hazelnut

Sun Harvest Germplasm was primarily selected for its growth habit and growth potential for increased nut production. It provides excellent food and wildlife habitat, and can be used as a windbreak and for incorporation in an agroforestry system due to its nut production value.



Nuts from Sun Harvest Hazelnut Germplasm

North and Central Iowa Germplasm Wild Bergamot

In 2007 the Elsberry Plant Materials Center released both Northern and Central Iowa Germplasm Wild Bergamot, *Monarda fistulosa*, also known as Horsemint and Bee Balm. Northern and Central Iowa Germplasm horsemint were released as a source identified type of certified seed (natural track). Collections were taken from native prairie remnants within the northern (Northern Iowa Germplasm) and central (Central Iowa Germplasm) sections of three predetermined tiers of counties located in Iowa. Both releases of Iowa germplasm wild bergamot are a collection of naturally occurring germplasm that has no intentional selection.



Northern Iowa Germplasm Wild Bergamot

Potential uses of Northern and Central Iowa Germplasm wild bergamot include roadside and wildlife plantings, prairie creations and restorations, landscaping, and for increasing plant diversity in prairie communities.



Wild Bergamot in Full Bloom

New Study – In-Field Weathering Affects on Biomass Yield and Biofuel Quality of Warm Season Grasses

Selected warm season grasses will be compared in replicated plots to evaluate the affects of fall, winter and early spring harvest on dry matter production and biofuel quality. Selected plants (see list below) were planted by seed or propagules (*miscanthus*) into plots containing 7 rows, 20 feet long, with 36 inch spacing. The interior 5 rows will be clip-ped for biomass quantity and grab samples taken for fuel quality estimates. Outside rows will be border rows.



Establishing *Miscanthus* Plot

‘Cave-In-Rock’ switchgrass
‘Kanlow’ switchgrass
‘Rumsey’ Indiangrass
9083274 big bluestem (MOPMC)
‘Alamo’ switchgrass
Miscanthus (sterile)



Plot Layout with Fescue Borders

The plots were established in April, 2007 using a randomized complete block, split plot design. The *miscanthus* plot was established with rhizomes, (photo below) and the other plots were established using seed. The rhizomes were planted three feet apart and the seeded plots were at a rate of 40 pure live seed per row foot.



First Year Plots in September

All plots established well and fescue roadways were planted between plots. The interior five rows in each plot will be evaluated. The first year, 2007, is an establishment year and the first harvest will be made in September, 2008, and again every six weeks until March of 2009.



Rumsey Indiangrass after Dec. 2007 Ice Storm

This study is in cooperation with the USDA-NRCS Technical Center, Fort Worth, TX; USDA-ARS, Temple TX; Mississippi State University, Starkville, MS; and the USDA-NRCS PMC in Knoxville, TN.

New Studies Scheduled To Begin 2008

1. Inter Center Strain Trial (ICST) of Big Bluestem

This study will compare biomass production and phenology of cultivars and selections of big bluestem over a large geographical area. Four PMC's are involved.

2. Selection of herbaceous Native Plants to be used for Urban Landscaping

The interest in native plants for landscaping is continuing to increase. Plants from existing assemblies will be selected and increased to provide plant material.

3. Selection of High Biomass Yielding, Iowa Source Indiangrass for Biofuel Use

Bioenergy needs are increasing and there are several plants that have potential. Indiangrass looks very good in other studies and there is already material on the Elsberry PMC where selections can be made.

Weather Records

The PMC has been taking weather data since it opened in 1934 and is one of the oldest National Weather Service data collection sites in the United States. The following tables show extremes and how 2007 compared to the long-term average for temperature and precipitation. 2007 was the 11th driest year on record.

Lowest temperature in 2007 was -5°F on February 16. Highest temperature in 2007 was 102°F which occurred on August 15.

Significant Dry Periods in 2007

		Average
Jan. 22 – Feb 12	00.01 inch	1.46 inches
April 16 – May 1	00.21 inches	2.06 inches
July 21 - Dec 7	06.57 inches	1435 inches

2007 Weather Data Elsberry PMC Precipitation (Inches)

Month	2007	77 Yr Ave	Depart
January	3.09	1.96	1.13
February	2.03	1.95	0.08
March	2.70	3.17	-0.47
April	1.91	3.62	-1.71
May	3.45	4.11	-0.66
June	3.77	3.76	0.01
July	2.34	3.40	-1.06
August	.76	3.36	-2.6
September	1.36	3.25	-1.89
October	2.37	3.01	-0.64
November	1.70	2.92	-1.22
December	3.49	2.47	1.02
TOTAL	28.97	36.98	-8.01

Monthly Average High Temperature (F°)

Month	2007	77 Yr Ave	Depart
January	39	38	+1
February	36	43	-7
March	62	54	+8
April	64	67	-3
May	80	77	+3
June	84	85	-1
July	87	90	-3
August	92	88	+4
September	85	80	+5
October	72	69	+3
November	55	51	+4
December	41	42	-1
AVERAGE	66	65	+1

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

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

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