



# Rose Lake Plant Materials Center



## 2013 Activity Report



# Michigan Agricultural Environmental Assurance Program Verifies Rose Lake Plant Materials Center

## *MAEAP recognizes USDA-NRCS as 1800<sup>th</sup> verification*

The Michigan Agriculture Environmental Assurance Program (MAEAP) verified the USDA-NRCS Rose Lake Plant Materials Center as meeting the standards of environmental protection established by the MAEAP program. The Plant Materials Center has become verified in the Greenhouse and Cropping Systems for implementing appropriate pollution prevention practices. The program assists farmers, helping them comply with state and federal environmental regulations and with Right to Farm practices. By becoming verified the Plant Materials Center not only ensures responsible farming techniques but also shows that they care for their community. Technical assistance was provided by the Clinton Conservation District.



PM Staff by MAEAP verification sign. Left to Right: John Durling, Elaine Gerona, John Leif, Sergio Perez.

When asked why they became verified manager John Leif commented, “MAEAP verification helps us ensure that the Rose Lake Plant Materials Center is operating our greenhouse and field operations in a way that is environmentally responsible. It allows us to improve our knowledge of good agricultural management practices and makes our operation more efficient. The MAEAP verification process also allows the Center to showcase its commitment to environmental stewardship and demonstrate many of the conservation principles that are encouraged by the Natural Resources Conservation Service.”

During the verification process Conservation Technician Earl Krom worked through several assessment tools including Crop\*A\*Syst and Greenhouse\*A\*Syst to assess the condition of the greenhouse, fuel storage, pesticide storage, and fertilizer application practices for compliance with MAEAP Standards and Michigan’s Generally Accepted Agricultural Management Practices (GAAMPS). Recommendations for improvements to the facility were provided. Earl also helped develop an emergency response plan for the PMC. After completing the recommended improvements to the PMC Joe Kelpinski, a MAEAP verifier from the Michigan Department of Agriculture and Rural Development, completed the verification process and determined that the Rose Lake Plant Materials Center met the standards for MAEAP verification.

The Michigan Agriculture Environmental Assurance Program is an innovative, proactive program that helps farms of all sizes and all commodities voluntarily prevent or minimize agricultural pollution risks. MAEAP’s mission is to develop and implement a proactive environmental assurance program ensuring that Michigan farmers are engaging in cost-effective pollution prevention practices and working to comply with state and federal environmental regulations.

# New Vegetative Barrier Planting in Barry County, MI

Vegetative barriers are narrow strips of vegetation planted perpendicular to concentrated water flow areas in a field. NRCS Conservation Practice Standard 601 (Vegetative Barriers) describes the practice, its installation, and the criteria needed for a successful barrier. When used under appropriate conditions this practice reduces ephemeral gully erosion without taking much land out of production, as is the case with grassed waterways. Plants used in this practice need to be stiff stemmed plants that will stay upright throughout the winter. Plants used for this practice also need to withstand water flow and soil deposition.

Plant species selection and establishment methods have been researched for a number of years. Warm season grasses such as switchgrass have been established by seed. Vegetatively propagated species have been used as a model system to develop methods of establishment using pre-established sod strips. Establishing vegetative barriers by seed can be difficult as seeds or newly germinated seedlings are subject to washout in the concentrated flow areas of the barrier. The concept for using pre-established sod strips shows good promise but the method used at the Rose Lake PMC would be cost prohibitive in commercial production.



Two rows of vegetatively established barriers.

In November 2012 the Plant Materials Center, in cooperation with NRCS State Agronomist Jerry Grigar, established several vegetative barriers on a farm near Woodland, MI in Barry County. A dormant seeding of 'Shelter' switchgrass was established using straw bales to protect seeds and newly emerged seedlings from water flow. Two rows of switchgrass were planted upslope of the bales and two rows were planted downslope of the bales.



Switchgrass barriers planted on upslope and down slope side of straw bales.



Vegetable seed planter used to seed switchgrass barrier.

Several switchgrass varieties were established vegetatively using a 5 mil mesh tube (registered by Filtrexx™) filled with soil and plant material. The switchgrass varieties used in this trial are 'Northwind' and 'Thundercloud'. The technique is similar to the process evaluated by the PMC in previous research but is intended to be more cost effective in commercial production. Initial soil elevations were measured upstream and



Vegetatively propagated barrier material inserted into trench.

downstream from the established barriers in the Spring of 2013 and will be measured annually for the next 3 – 5 years. Estimates of establishment and survival in the concentrated flow areas, as well as stem counts and stem diameters will be taken.

# Warm Season Grasses to Be Evaluated as Living Snow Fences

Herbaceous wind barriers are intended to protect adjacent soil from wind erosion, protect growing crops from damage by wind borne soil particles, and help conserve soil moisture. NRCS Conservation Practice Standard 603 (Herbaceous Wind Barriers) describes the practice, its installation, and the criteria required for successful establishment. The standard does provide criteria for snow management, however the intent is for trapping snow in the crop production area next to the barrier.

Living snow fence is the use of vegetation (herbaceous or woody) to disrupt snow drifting by causing it to settle out of the air in an area adjacent to the vegetation. When appropriately placed the snow fence can reduce or prevent snow drifting onto adjacent roads. NRCS Conservation Practice Standard 380 (Windbreak and Shelterbelt Establishment) provides criteria for using woody vegetation for protection against snow drifting on roads but there currently are no criteria in either standard for the use of herbaceous material for that purpose.

NRCS State Agronomist Jerry Grigar contacted several cooperators at the Michigan State University Experiment Station near Chatham, MI (Upper Peninsula), Bay Mills Community College near Sault Ste. Marie, MI (upper peninsula) and the Antrim County NRCS field office near Bellaire, MI (lower peninsula) to find sites to evaluate warm season grasses for their effectiveness as living snow fences. The District Conservationists and Conservation District staff in the respective Counties were also involved in the planning and establishment of the project. Plant materials for the project were propagated in the PMC greenhouse in the spring of 2013 and established on those sites in June. NRCS and Conservation district staffs provided maintenance and data collection in 2013. Survival, plant heights, and snow accumulation measurements will be taken in 2014-2016.



Planting the living snow fence trial at MSU, Chatham, MI.



Living snow fence trial at MSU, Chatham, MI, two months after planting.

# PMC and Michigan State University Conduct Livestock Odor Abatement Project

The Rose Lake PMC was contacted by Mr. Jerry May, Michigan State University Extension Educator, about developing a project to use plant materials for odor abatement around confinement hog houses. In addition to MSU Extension, Dr. Wendy Powers and Dr. Jeff Li of the MSU Animal Science Department provided guidance in developing the protocol and help establishing the plantings. Jerry May found a hog producer in Centreville, MI willing to let us establish the study at his facility.

The Rose Lake PMC also received guidance from the Plant Materials Centers in Maryland and New York, as they have been doing this type of research with chicken facilities over the past few years. The Rose Lake Plant Materials Center provided a selection of switchgrass, indiangrass, tamarack, and poplar for the project. The New York PMC provided Austree willow and the Maryland PMC provided coastal panicgrass for the project.

During the summer NRCS and MSU staff cooperatively managed the plantings, including weed barrier fabric and mulch applications, data collection, and replanting as needed. Riley Collins, an intern with MSU Extension, kept the plots watered and took photographs throughout the summer.

Personnel from the MSU Animal Science Department have an instrument to evaluate odor intensity. That tool will be used in 2014 and 2015 to evaluate the effectiveness of odor abatement provided by the plants. The plantings will also be evaluated for porosity using a digital camera and ArcGIS software.



Switchgrass vegetative planting in front of hog house pit vent.



Hog house pit vent fan (prior to vegetative barrier planting).

# Rose Lake PMC Welcomes New Earth Team Volunteer

The Rose Lake PMC welcomed Tom Topham as an Earth Team Volunteer, providing assistance with greenhouse and field operations as well as equipment and facilities maintenance. Tom is a retired educator and businessman from the Kalamazoo, Michigan area. Tom served as placement coordinator and area director of Education for Employment for the last 15 years of his career.

Tom is a Michigan native, growing up in the “Thumb” of the Lower Peninsula. He earned a Bachelor of Business Administration at Eastern Michigan University and a Master of Arts in Educational Administration from Central Michigan University.

Tom and his wife recently moved to the Lansing area to be near their children and grandchildren.

Tom started work at the PMC on March 25. His first project was to help establish a wildflower herbicide screening experiment which included seed counting and planting, soil preparation, and container labeling. He has also worked on switchgrass planting, equipment maintenance, seed cleaning, and a variety of other tasks at the Center. We are very pleased to have Tom working with us at the PMC.



Earth Team volunteer Tom Topham and PMC office assistant Elaine Gerona prepare seeds for a greenhouse project.

# Wildflower Herbicide Tolerance Trial

Michigan NRCS has several Conservation Practice Standards that allow for the planting of wildflowers and forbs. The purposes of those plant species vary by Practice Standard but most species are used for improved wildlife habitat and pollinator habitat. However, weed competition is a major reason that those species do not establish well in conservation plantings. Few herbicides have labels for their use in wildflower plantings, although anecdotal evidence suggests that some wildflowers are tolerant to various herbicides.

The Rose Lake PMC conducted herbicide screening trial to evaluate the tolerance of 20 wildflower species to 10 preemergence and 10 post emergence herbicides. The wildflower species were selected based on the Michigan CRP-SAFE eligible wildflowers list. Herbicides were selected based on conversations with Dr. Christy Sprague, Michigan State University Weed Scientist. Dr. Sprague also provided small samples of many of the herbicides that were evaluated.

Ten seeds of each species were planted in separate greenhouse pots. Preemergence herbicide treatments were applied using a backpack sprayer after planting but before the pots were watered. Post emergence treatments were applied when the wildflowers were 4 – 6 inches tall. Data were taken at 14, 28, and 42 days after treatment on plant numbers, plant height, and any visual herbicide symptoms that were observed.

Results from preemergence herbicide treatments were difficult to assess due to the high degree of viability in emergence of the wildflower species. Post emergence treatments were applied to plots with a known number and height of each plant so results were easier to assess.

No one herbicide provided good selectivity to all the wildflowers evaluated. However, several wildflower species showed tolerance to Butyric (2,4-DB) and Basagran (bentazon). A complete report of results will be published in the Rose Lake PMC 2013 Technical Report.

NRCS does not make herbicide recommendations to the public. Michigan State University Weed Science may be interested in using this data in an informational bulletin that can be distributed through the MSU Extension system.



# PMC Staff Participate in Several NRCS Training Events

The Rose Lake PMC Staff has been involved in several training presentations over the course of 2013. The Shiawassee Conservation District asked for our involvement in a soil health and cover crop workshop in February. Research Agronomist John Durling presented information on cover crop research projects that the PMC is conducting in Shiawassee County. Manager John Leif presented information on considerations when selecting cover crops and Biological Sciences Technician Sergio Perez demonstrated the on-line cover crop selection tool that was developed by the Midwest Cover Crops Council. The meeting was attended by NRCS and CD staff and 25 landowners from the county.

Research Agronomist John Durling provided soil health training at the NRCS Basic Conservation Assistance training for Soil Conservationists. John also provided training on soil health and fertilizer considerations at the NRCS Nutrient Management training for District Conservationists and Soil Conservationists. Twenty five students were present at each of those trainings.



Research Agronomist, John Durling and Biological Science Technician, Sergio Perez present cover crop information.



The PMC display at the cover crop workshop.



Biological Science Technician Sergio Perez demonstrating the on-line cover crop selection tool.

# PMC Cover Crops Project Featured on Conservation District Tour

In 2012 the Shiawassee NRCS Field Office and the Shiawassee Conservation District provided contacts with Larry Lee, a cooperating farmer in southwest Shiawassee County. Larry has allowed the PMC to conduct cover crop research on the Lee Farms for the past two years. The emphasis of this research has been evaluating the effects of annual ryegrass, red clover, oilseed radish, and the combinations of the three on biomass accumulation and effect on the succeeding year's cash crop. Michigan State University also cooperated on this project.



John Leif describing cover crops to Shiawassee County Agri-Science/FFA students.

In early September of 2013 the Shiawassee Conservation District hosted a field tour to highlight conservation practices in the county. Among the stops was the cover crop project at the Lee Farms. The participants viewed the corn plots planted on the 2012 cover crop plots and also viewed the cover crop plots established in August of 2013. About 140 growers, landowners, and conservation professionals attended the field tour.

In mid-September the Conservation District hosted a tour for the agri-science/FFA programs of five schools in the county. The cover crop project was part of that tour. In addition to the concept of cover crops there was much interest in no-till agriculture. Many of the students were not familiar with no-till agriculture and were amazed that Lee Farms has been using no-till crop production practices for over 30 years. About 240 agri-science/FFA students participated in the tour.



John Durling and John Leif describing cover crop project at Shiawassee CD field day.

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