United States Department of Agriculture

NRCS Big Flats Plant Materials Center
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2022 Progress Report of Activities January 2023

The Big Flats Plant Materials Center (PMC) is one of the Plant Materials Center's operated by the United States Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS). It serves the Northeastern U.S., from Maine to northern West Virginia. The PMC is located in the southern Finger Lakes region of New York State. The mission of the program is to select conservation plants and develop innovative plant technology to address customer needs and natural resource concerns through on site research and studies.

This report is a summary of some 2022 activities at the PMC. The primary areas of focus at the PMC are soil health, erosion control, water quality and wildlife habitat improvement, and forest riparian buffers. For additional information on any of these topics, or other questions you may have, please contact us at the center (contact information on final page of report).

Honeybee hive at the PMC.

Honeybee on indigo flower

Water Quality Monitoring for Pesticide Contamination in Upstate New York- Collaboration with Cornell University

Groundwater in some areas of New York State, notably Long Island, have been monitored for pesticides for decades when it was discovered that private wells had been contaminated by intensive, legal pesticide use. Even when pesticides and soil amendments are properly applied, they may still reach surface and groundwater through runoff and leaching. The sandy soils found throughout Long Island, make the area and its 3 million residents, vulnerable to contaminants in their drinking water. The findings emphasize the critical need to protect groundwater quality before it becomes impaired for use.

Soil and aquifer conditions in upstate New York are markedly different, and it has long been assumed that there is a lower likelihood of groundwater contamination than Long Island. The fate of the pesticide once applied, largely depends on its length of persistence and solubility within the soil.

The PMC is collaborating with Cornell University's Department of Biological and Environmental Engineering and installed 4 wells at the PMC. Water samples will be collected a few times a year to monitor and document the rate of pesticide leaching through the soils. Samples will also be tested for pesticides presence and other contaminants such as nitrate. Also, a portion of the sample will be scanned to measure pH, the range of pesticides or herbicides found as well as degradation by-products.

Pesticide monitoring well along railroad tracks, at the PMC.

Pesticide monitoring well along north end of railroad tracks, at the PMC.

Cereal Rye Seeding Rates for Sub-optimal Planting Dates- Collaboration with the Northeast Cover Crops Council (NECCC) and Penn State University

In the Northeast, cereal rye (*Secale cereale*) is planted later than other cover crops, especially after optimal seeding dates, due to late season harvests, weather, and labor constraints. There is also growing interest in delayed termination dates in the spring. Consequently, there is a greater willingness to allocate resources (i.e., seed costs) to optimize cover crop services at later planting dates.

This study is designed to determine if higher seeding rates improve ground cover and biomass related services when sub-optimal planting dates limit fall growing degree days (GDDs). Several factors are being measured: emergence, height, ground cover estimates at spring green up, weed presence and density, and spring biomass (DM lbs/A).

In the first year of the study, fall emergence counts showed that the 15, 25, and 50 lbs./A seeding rates showed little to no emergence at the first planting date (10/14/2022), while the 80 and 105 lbs./A seeding rates produced an average of 5.2 and 7.9 plants/sq. ft. The second and third seeding dates (10/28/2022 and 11/10/2022) produced very little emergence at any of the seeding rates. The data collected will provide valuable information for the Northeast Cover Crops Council's seeding rate calculator decision tool.

Cereal rye was no-till planted on October 14, 2022, into a harvested seed production of 'Aroostook' rye. The photo on the left shows the plot area and the photo on the right is a close-up of the thick layer of surface residue the no-till drill had to cut through to place the seed into the ground.

Plant and Seed Production

The PMC maintains production of seed from our conservation plant releases. One of the plant releases - 'Aroostook' cereal rye is an annual, cereal grain that can reach 4 feet in height. It is the most winter hardy small grain and matures very early. It can be used in many different ways such as a cover crop, green manure and a forage crop. Each year the PMC plants around 4-5 acres of this variety of rye in the fall and harvests the seed in the summer for nurseries in the area to grow and release the seed to producers. All Plant Materials Center's plant release fact sheets can all be found here: https://www.nrcs.usda.gov/plant-materials/cp/releases

'Aroostook' cereal rye seed production field. Seed was planted in the beginning of September 2022.

Big Flats PMC Plant Releases

Each year at the PMC, our conservation plant releases are harvested, cleaned, and prepared for shipment to growers and nurseries. Below is a list of released conservation plants currently available for increase to growers or use in conservation plans:

Seed:

- 'Aroostook' cereal rye
- 'Niagara' big bluestem
- 'Tioga' deertongue
- 'Copper' chinquapin
- 'Keystone' buttonbush
- 'Catskill' dwarf sand cherry

Vegetative material:

- 'Streamco' purple osier willow
- 'Greenbank' sandbar willow
- 'Ruby' red osier dogwood
- 'Catskill' dwarf sand cherry
- Kingston Germplasm prairie cordgrass
- 'Spike' hybrid poplar

Any commercial grower or nursery interested in producing any of our plant releases or in need of information on our releases or sources of supply, can visit our website or contact the PMC.

Presentations, Meetings, and Outreach

- Hosted monthly meeting and gave a tour of the PMC to the NY State Resource Conservationist, NY technical leads and NY State Conservationist.
- Presented on the Plant Materials Program and gave a tour of the PMC facilities and study plots to Chemung and Schuyler County Cornell Cooperative Extension personnel.
- Provided a 2.5-hour training on native seed collection and processing to Tribes of the Northeast as well as NRCS field office staff.

- Updated NRCS NY CPS 512 seeding mixes including a seeding calculator and technical information for pasture and hay seedings.
- Provided training to NRCS field staff on the Northeast Cover Crops Council's Cover Crop Decision Support Tools.
- Propagated and shipped over 1000 sweetgrass plugs to Native Tribes for their own use and increase.
- Provided technical assistance for a Cornell University extension cover crop fact sheet on selecting cover crops using available decision tools from the NECCC- Agronomy Fact Sheet Series Fact Sheet #116 .
- Provided technical information on establishment and materials of 'Streamco' purple osier willow and potential native willow releases to NRCS district conservationist and SWCD for the Marion Brook Stabilization Project.

Staff Updates by PMC Manager, Shawnna Clark

I would like to introduce and welcome (2) new staff to the Big Flats PMC:

Eric Antosh started in May of 2022 as the PMC's study leader and agronomist. Eric received his master's degree in agriculture from New Mexico State University. There he completed his thesis on the effects of winter cover crops on soil quality, weed management and corn yields in the Southwestern, US. Before travelling to New Mexico, Eric received his undergraduate degree in Environmental Biology from SUNY ESF with a focus in Plant Biology. Before coming to the PMC, Eric worked for USDA ARS in North Dakota and then with NRCS in Turtle Lake, ND as an Agronomist in the Lake Sakakawea Conservation District.

Tony DeNardo joined the PMC in August of 2022 as a Biological Science Technician (temp). Before coming here, Tony worked for over 30 years as a bridge repair supervisor for the NYS Department of Transportation, retiring in April 2022. He comes to the PMC with extensive knowledge of heavy machinery and equipment, as well as strong leadership, communication skills and a work ethic. He currently owns and operates a Christmas tree farm, develops and maintains deer plots, and grows vegetables year-round using hydroponics system as well as a small fruit orchard consisting of apples, pears, blueberries, raspberries and grapes.

I am excited to have them both here and believe that their knowledge, strong backgrounds, and communication skills are paramount for the PMC to continue with its mission and support not only NRCS staff, but our cooperators and partners too. Welcome Eric and Tony! Please see our contact information below.

Big Flats PMC Staff

- Manager - Shawnna Clark shawnna.clark@usda.gov
- Study Leader - Eric Antosh eric.antosh@usda.gov
- Biological Science Technician (temp) - Tony Denardo anthony.denardo@usda.gov

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