

2012 Progress Report of Activities



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Appalachian Plant Materials Center

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2012 Summary of Projects

Soil Quality Improvement Project

In October of this year, the NRCS kicked off its' soil health campaign and began spreading the word about soil health and its benefits far and wide – to producers, partners and the public. Initially, NRCS's attention is focused on cropland, with plans to rapidly expand this soil health effort to range, pasture, and forest lands. In support of this soil health campaign, the Appalachian Plant Materials Center in Alderson has developed and initiated a ten year duration Soil Quality Improvement Project. This project is designed to verify and/or compare plant productivity (yield), harvested feed value and/or seed quality, commercial fertilizer and pesticide usage, and changes in soil quality when cations are balanced on the base saturation of the soil cation exchange capacity (CEC) and when soil quality practices are implemented on fields.

All plots will use the same crop rotation and soil quality practices. A total of five soil treatments will be used and each treatment will be replicated four times for statistical purposes. Plots will be evaluated annually using a broad diversity of parameters, including: cation

base saturation, infiltration, soil respiration, active organic matter, available nitrogen, crop yield and feed harvest values and seed quality. These and other measurements will be used to develop a comprehensive soil health picture in response to the soil treatments imposed on each plot. With time, it is anticipated that commercial fertilizer and pesticide requirements will decrease and that overall soil health will improve with these treatment regimens. Such information will no doubt be invaluable to field offices, farmers and the general public as costs of commercial fertilizers and pesticides continue to increase. Look for more on this exciting endeavor in future editions of Appalachian Plant Notes and the Annual Progress Report of Activities!

Cover Crop Rolldown Date Study

A project to determine optimum dates for roll down efficacy of cover crops was established in the fall of 2012. Traditional cover crop management within much of the PMC service area have been to control the crop either through herbicide applications or harvest of the crop as hay or haylage prior to establishment of the succeeding crop. Mechanical management (roller crimping) of cover crops is a relatively

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new management technique in the PMC's service area, and timing roller crimping to achieve optimum control (kill) of the cover crop is not well understood. The PMC established strips of four cover crop mixtures commonly used in the region in September 2012. These plots will be sequentially roller crimped in the spring of 2013 and evaluated for control efficacy in relation to crop maturity versus time (date) of mechanical control. Data from this study will be used to develop roll down recommendations for inclusion in NRCS's Residue Management (329) Standard. This project is planned to be repeated annually for a least three years.

Re seeding Annual Cover Crop Study

Crimson clover is an annual legume that is used extensively as a winter cover crop in the Southern United States. It not only provides valuable winter soil protection, but can also be a source of nitrogen for the succeeding crop. However, crimson clover has not been recommended as a cover crop in most of the PMC's service area, because conventional wisdom dictated it would not reliably survive the Appalachian winters.

However, crimson clover has been a component of the Transition to Organic Production Study at the PMC for the past 3-4 years, both as a single species and in mixtures with small grains. Crimson clover exhibited excellent survival throughout this study and consistently completed its' life cycle by early to mid-May each year. Further, it consistently produced viable seed which appeared to readily germinate and establish a new stand each year.

Thus, the PMC chose to evaluate crimson clover's potential as a re seeding cover crop for the Appalachian Region. A 0.5 acre plot of crimson clover was established in September 2012. This plot will be planted to a succeeding crop of corn in spring 2013. Timing of seedling emergence and stand density will be evaluated periodically throughout the summer and fall. This project is anticipated to continue for at least three years.

USFS Mower Tract Ecological Restoration Cooperative Study

Revegetation of portions of the Mower Tract with indigenous species of trees and shrubs continued in 2012. The Mower Tract is a large land area within the Monongahela National Forest at roughly 4,000 feet in elevation. The objective of the project is to restore native flora on previously strip mined benches that are currently dominated by a thick, non-native sod layer. This restoration work will greatly benefit high-interest species including the cheat mountain salamander, northern flying squirrel, snowshoe hare, white-tailed deer, black bear, golden eagles, woodcock, ruffed grouse, saw whet owl, and a number of pollinating animals by providing a variety of food sources and niches. Additionally, reintroduction of bigtooth aspen will help further the goals of programs and organizations for priority game species, such as the Woodcock Management Initiative and Ruffed Grouse Society.

In 2012, the Appalachian PMC delivered several thousand containerized plants comprising about 20 native species to the USFS in Bartow, WV. The species

delivered included: *Populus grandidentata*, big tooth aspen; *Populus tremuloides*, quaking aspen; *Amelanchier laevis*, Allegheny serviceberry; *Viburnum cassinoides*, wild raisin; *Sambucus racemosa*, red elderberry; *Veronia noveboracensis*, New York ironweed; and *Sisyrinchium angustifolium*, blue-eyed grass. Plant Guides and Fact Sheets and Propagation Protocols are being developed for several of these species.

Cover Crop Evaluation for Transition to Organic Crop Production Project

The NRCS in West Virginia assists farmers to reduce erosion, improve nutrient management, protect soil quality, and encourages the use of integrated pest management on cropland. NRCS has committed technical and financial assistance for vegetable producers to meet these goals through development of voluntary conservation plans and accelerated application using Farm Bill programs. A critical element of these plans is to insure correct timing and accepted methods of cover crops to achieve the land nutrient balance, minimize the loss of nutrients to ground or surface water, improve irrigation water management, and to improve soil quality. As a research and teaching institute, the West Virginia University Cooperative Extension Service (WVU CES) has a long term commitment with NRCS, Conservation Districts and farmers to bring research and technology to the agriculture community.



Cover crop plots just before rolling and crimping
During 2011, the Appalachian PMC, in conjunction with the West Virginia NRCS and Cooperative Extension Service, continued an evaluation project for various winter cover crops on cropland. A total of 160 plots, representing 4 replicates of ten cover crop seed mixes and 4 separate planting dates were established in the fall of 2010. These plots were evaluated for ground cover efficacy and biomass production in the spring of 2011, rolled with a Rodale Institute style cover crop roller-crimper and planted to no-till *Zea mays*, corn. This trial was repeated in 2012 with four replications of five treatments instead of 10 treatments.



Rolling and Crimping Cover Crop Plots at PMC

The final products of this project will be seasonal field trials of NRCS released cultivars and commercially available cover crops, publication of technical reports and recommendations for cover

crops used in vegetable production, and seasonal in-field training of NRCS and WVU CES staff based on results of the demonstrations.

Presentations, Training and Publications

The PMC hosted six tours and provided plant identification training materials for four training sessions during 2012. In addition, the PMC published two Plant Guides, seven Propagation Protocols and one Technical Report and Progress Report in 2012.

Who We Are

The Appalachian Plant Materials Center, located in Alderson, West Virginia, serves 10 states in the Appalachian Region from Pennsylvania to Georgia. The Center is operated by the USDA-NRCS in cooperation with the USDA-Agriculture Research Service, U.S. Forest Service and the Agriculture Experiment Stations of West Virginia University, Virginia Polytechnic Institute and State University and the University of Kentucky. Alderson is located in the heart of Appalachia, and the Center is situated on County Route 3/29, also known as Old Prison Farm Road, approximately 20 miles Southeast of Lewisburg, West Virginia. This center is new with regard to land resource and physical plant, but is the product of the transfer of programs and equipment from Quicksand, Kentucky to Alderson, West Virginia. The transfer of center functions began in 1996 and was completed in 2000.

What We Do

The Plant Materials Center serves Appalachia by evaluating plants for their ability to solve specific conservation problems related to climate, the rugged topography, soil limitations, various land uses, fish and wildlife needs and desires of the landowners. The center provides a place for conducting systematic observations and evaluations of plants needed to protect our natural resources. New techniques are developed for the propagation, establishment, management and use for new or improved species of grasses, legumes, shrubs and trees.

The Center's program emphasizes improving forage production on hillside pastures, address problems associated with concentrated livestock, reclamation of mined lands, streambank stabilization, agro-forestry, wildlife habitat improvement, and utilization of economic and culturally valuable plants. The center assembles plants from the entire service area with similar soils and climate, evaluates the plants, develops management techniques, and provides seed and plants for planting to test performance throughout the area. Most of the plant materials produced at the center are used in West Virginia, Kentucky, Tennessee, Pennsylvania, Ohio, Virginia, and North Carolina.