Title: Soil Fertility and Nutrient Management

Project Leader: Masoud Hashemi

Project Overview

The crops, dairy, livestock, and equine industries are important economic contributors to the Massachusetts economy, both directly, and indirectly through the services and industries they support. Together the dairy and livestock farmers in Massachusetts manage more than 130,000 acres of hay, pasture and corn, contributing to open space that is important to both non-farm residents and tourism. Massachusetts also has a sizable equine industry with a horse population of more than 45,000, with more than 10,000 horse owners. The UMass Extension Sustainable Food and Feed Production Project conducts applied research and provides educational opportunities and technical assistance to dairy farmers, livestock producers and horse owners to increase their knowledge of environmental issues and their ability to reduce the threat of pathogens and nutrient loss from barns, stables, fields and pasture.

Activity Summary - 2014

- Agronomy Research Reports(1)
- Applied research on cover crops for improving soil health and recovery of nutrients (4)
- Applied research on silage corn for feed(2)
- Applied research on Switchgrass for biodiesel (3)
- Consultation and technical assistance for Dairy, Livestock Farms and Equine operations (150)
- Crops, Dairy, Livestock and Equine Newsletter(4)
- On-farm research demonstrations: Best Management Practices for the equine industry(6)
- Presentation at American Society of Agronomy annual meeting (6)
- Publications: the Agronomy Journal and the International Journal of Plant Production (4)
- Serve as Graduate Advisor for Stockbridge School students(7)
- UMass Crops, Dairy, Livestock, Equine website(1)
- Workshop presenting results of on-farm demonstrations and applied research on equine management practices (3)

Total educational contacts

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Narrative Summary and Impact

The focus of this project has been on protecting environment including soil, water and air through implementations of various on-farm demonstration, graduate students research, as well as educational workshops throughout the state. Various cover crops, including some new to the region, were used to recover unused nutrients, add nitrogen to the soil by nitrogen fixation, suppress weeds and therefore eliminate or minimize herbicide application, nutrient recycling in the soil, increasing organic matter to improve soil health.

In order to persuade growers to vastly grow cover crops, this project offered dual purpose cover crops which improve soil health but also provide some incentives for growers. Harvesting cover crops as high quality forage for dairy producers and harvesting fresh pods of fava beans for fresh market while residue serves as a significant source of nitrogen were two outcomes of this project.

The local foods movement continues to create new markets for farmers and there is growing interest in grain production for malting, bakery and feed. Through this project we are also developing various best management practices for growing barley suitable for malt in the Northeast.

Small acreage horse facilities are potentially a threat to the environment. This project provides several on-farm demonstrations and educational workshops to highlight some important best management practices for equine facilities to reduce the risk of non-point source pollution.

Collaborating Organizations

- Blue Star Farm in Palmer, MA.
- Central Massachusetts Dairy Producers Association
- Natural Resources and Conservation Services
- New England Green Pasture
- University of Vermont
- University of Maine
- USDA – Northeast Sustainable Agriculture Research and Education
- Manchaug Pond Association