

Title: Sustainable food and feed production

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 - 2017

- Agronomy Research Reports on Sustainable soil and cropping systems (5)
- Applied research on cover crops for improving soil health and recovery of nutrients – ‘Building resilience and sustainability in dairy forage systems in New England’ (2)
- Consultation and technical assistance for Dairy, Livestock Farms and Equine operations in Massachusetts (300)
- Fact sheets on different aspects of nutrient management for dairy, livestock farms and equine operations (2)
- Publication of the Agronomy Journal and the International Journal of Plant Production (8)
- Advising graduate students as chair or committee member (4)
- Graduate Committee member for Stockbridge School students (3)
- UMass Crops, Dairy, Livestock, Equine website (1)

Total educational contacts

| | Adult Contacts |
|--|-------------------|
| In Person | 312 |
| Indirect Contacts (Print, Web, etc...) | 18,900 |

Narrative Summary and Impact

A comprehensive research project and outreach program has been planned to:

- 1) Investigate and promote integrating cover crops in various cropping systems. Through a tri-state project (ME, MA, VT) we have introduced an applied method to integrate winter grain cover crops which not only increases resiliency and sustainability of dairy operation but also by producing more quality forage, the viability of dairy farms and other livestock operations will be improved.
- 2) We were very successful in promoting transitioning from conventional tillage system to no-till systems that greatly improves soil health and natural fertility. It also helps sequestering more carbon into the soil and conserves more water so crops can tolerate more drought periods.
- 3) Our research project also introduced new crops and cover crops to the region thus farmers have more crop choices to select from that fits better with their rotation system. We continued encouraging growers to adopt an innovative method for garlic production. In this method, garlics will be planted into standing fava bean fields. Fava bean serves as a cool season cover crop which protects the soil and fixes atmospheric nitrogen and when they winterkilled their nitrogen rich residues will provide nitrogen to sprouting garlics in following spring. Also recently we have begun introducing faba bean-kohlrabi double cropping. We are aware of seven organic growers that have already begun using this innovative system.
- 4) We continued our effort to establish Northeast Cover Crop Council, which its mission is promoting cover crops, filling the research gaps in various aspects of integrating cover crops into farming system and provide technical assistance to growers all over Northeast U.S.A. though generating extension publications and hands on workshops.
- 5) Another part of the project was minimizing non-point source pollution in equine operations. The project consisted of series of on farm demonstrations about composting horse manure, pasture management, and mud management. Demonstrating sites are used as pilot farms for hands-on educational workshops.

Collaborating Organizations

- **SARE (Sustainable Agriculture Research and Education)**
- **MDAR (Massachusetts Department of Agricultural Resources)**
- **NECCC (Northeast Cover Crops Council)**

