

Project Title: Soil Fertility and Nutrient Management

Project Leader: Tracy Allen

Project Overview

Vigorously growing plants require adequate, but not excessive, essential nutrients. Nutrients must be provided in the right form, at the right time, and at the right place. Management of all nutrients sources (i.e., soil, commercial fertilizer, compost, and animal and green manure) within the constraints of the production system is fundamental to both economic viability and environmental quality. Poor management of plant nutrients can lead to economic losses and environmental degradation of soil, air, and water quality.

The overall objective of the Soil Fertility and Nutrient Management project is to develop and promote practical, innovative, and affordable solutions to existing and emergent issues related to soil fertility and nutrient management in the Commonwealth and beyond. This is accomplished through applied laboratory and field research used to support ongoing extension and outreach activities. The primary outreach vehicle for the project is the University of Massachusetts Soil and Plant Nutrient Testing Laboratory.

The University of Massachusetts Soil and Plant Nutrient Testing Laboratory offers accurate and affordable analytical testing of nutrients in soils, plant tissue, and soilless greenhouse media. We also offer analysis of heavy metals in soil and other planting media. The lab promotes sustainable management practices by providing research-based interpretation of analytical results, and fertilizer and lime recommendations. These services help clients manage soil and soil amendments more profitably while protecting environmental quality. Lab clientele include backyard gardeners, green industry professionals and commercial growers, as well as engineers, crop consultants, and research scientists.

Activity Summary 2018

- **Analyses** - Order forms and information are obtained on our website: <http://ag.umass.edu/services/soil-plant-nutrient-testing-laboratory>. The vast majority of orders received come to the lab via USPS, UPS and FedEx. Only a small percentage of clientele come to the lab to drop off samples. Test results are returned via email and/or mail. There is no way for us to quantify demographics. (4915)
- Disseminate practical and applied information through direct consultations – via email, telephone and in person (4000)
- **Fact Sheets** – Relevant fact sheets are included with test results, as well as being available on our website to the general public. In addition, two newsletters were sent via email during this period. One was sent on 1/8/18, and another on 9/18/18. The January newsletter was sent to over 5,000 lab customers, and the September issue was emailed to nearly 10,000 lab customers. The purpose of the newsletters was to share lab information and to raise awareness of available lab services. (20000)

- **Web Services** -This data comes from Google Data Analytics. Pageviews were reported as the Number of outputs completed, and Entrances were reported as Audience Numbers. It isn't known how many individuals visited the website (<http://ag.umass.edu/services/soil-plant-nutrient-testing-laboratory>). There were 74,817 Unique Pageviews according to this report. (40787)
- **Tours** – We gave tours of the lab to several class groups. Five class groups were from UMass, one from Greenfield Community College, and one was a small group of home-schooled middle school students. (93)
- **Presentations** - In February, I travelled to Hudson, MA to give a presentation to the New England Vegetable and Berry Grower's Association annual meeting. At that meeting, I presented information regarding lab equipment vital to that group that needs to be replaced. The purpose was to gain support for that effort. (97)
- **Proficiency Testing** - We participate in two lab proficiency programs. We submit soil data to the North American Proficiency Testing (NAPT) program twice a year, and plant tissue data to the Agricultural Laboratory Program (ALP) three times a year. Test results are compared to lab data collected from all over the country. These programs help us assess the proficiency of our methods and procedures. (2)
- **Regional Projects** - Last December I met with Katie Campbell-Nelson and Genevieve Higgins to discuss a gap in services provided by the lab. Over the past several years, the use of High Tunnels by local farms has been increasing. Katie initiated a collaborative research project with UVM, UNH, UMaine, URI and UMass. Soil and Plant Tissue samples were collected throughout the growing season from the region, and analyzed by the UMass and UMaine labs. To date, we have analyzed 20 soils and 15 plant tissue samples from Massachusetts farms, and 8 soils and 5 plant tissue samples from Rhode Island farms. The goal is to define optimum conditions for growing tomatoes and other crops in high tunnel environments, as well as recommendations for maintaining those levels. Lab analysis for the project is almost complete. The next step is to compile and analyze the data so that a High Tunnel Analysis can be offered to area farmers. (18)

Total Educational Contacts

	Youth Contacts	Adult Contacts
Direct	70	9125
Indirect		140954

Narrative Summary and Impact

Strategies were discussed throughout FY18 aimed at ensuring the lab's future success. Discussions were held with Extension staff regarding low-cost and no-cost methods of promoting the lab. Following that discussion, interviews were given to UMass Media, the Greenfield Recorder, and the Daily Hampshire Gazette. Articles appeared spotlighting benefits of soil testing, and raising awareness of lab services available.

There was an ongoing discussion regarding the lab's inability to accept credit cards as payment for services. There is no resolution yet, but work is in process that may lead to that outcome in FY19.

Newsletters were sent to lab customers in January and October that made customers aware of our "Make a Gift" campaign, aimed at replacing aging lab equipment. In February, I travelled to the annual meeting of the New England Berry and Vegetable Growers Association, making them aware of funds needed to

replace our Nitrogen Analyzer, which provides critical data for the Plant Nutrient Analysis used by many of their members.

A cost analysis of services provided by the lab was generated in FY18, and a new fee schedule was adapted early in FY19. Replacement cost of capital equipment was included in the calculation of those fees.

We participated in a collaborative research project aimed at determining optimum conditions for High Tunnel growers, as well as recommendations for maintaining those conditions. Lab analysis is almost complete at this time. Collaborators are UMass, UVM, UNH, URI, and UMaine soil labs.

Collaborating Organizations

- **North American Proficiency Testing**
- **Agricultural Laboratory Program**
- **Northeast Coordinating Committee**
- **Greenfield Community College**
- **University of Vermont**
- **University of Rhode Island**
- **University of New Hampshire**
- **University of Maine**