

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 2017

- **Consultations** - Dissemination of practical and applied information through direct consultations via email, telephone and personal contact. Email contacts are approximated using the current month's messages, adjusted by volume of orders received over the course of the year. Phone consults were counted using notes kept for these interactions. Walk-in contacts are estimated. (3980)
- **Fact Sheets** – Fact sheets accompany test results for most analyses. Additionally, a newsletter was sent to clients submitting samples for analysis during our spring rush, encouraging them to consider testing at the end of the growing season. (21156)
- **Website Visits** - Data from Google Analytics. Number of outputs complete is the total Pageviews, and Audience Number is the total Entrances. The lab's website was migrated from

<http://soiltest.umass.edu> to <http://ag.umass.edu/services/soil-plant-nutrient-testing-laboratory> on January 24, 2017. (244935)

- **Tours** – Six tours of the soil lab were given, including two large groups of high school students visiting from the Mass. Envirothon, and a Principles of Horticulture class from STCC. (6)
- **Quality Control Assessment** - Every year, we participate in the North American Proficiency Testing (NAPT) program for soils, and the Agriculture Laboratory Proficiency (ALP) program for plant tissue analysis. We submit plant tissue for analysis in the 1st and 3rd quarters of the year, and soils in the 2nd and 4th quarters. Data is compared with other labs on a national level. That information is used by labs to ensure accuracy and precision, as well as to check on quality control protocol being used. (4)
- **Regional Project Workshops/Conferences** On November 2, 2016, I attended the Managing Phosphorus in Organic Residues Applied to Soils: Compost, Biosolids, Manures and Others in Marlborough, MA. This subject is frequently a topic of conversation, and I benefitted from the views and different perspectives of participants to this event. On May 18, 2017, I travelled to Drumlin Farm in Lincoln, MA to serve as judge in the Massachusetts Envirothon. Teams from Massachusetts high schools made presentations on the topic "Agricultural Soil & Water Conservation." I enjoyed interacting with the teens for this event. (2)

Total Educational Contacts

	Youth Contacts	Adult Contacts
Direct	70	9125
Indirect		140954

Narrative Summary and Impact

FY17 marked the beginning of a push to strengthen the lab through increased visibility and the use of free or low cost marketing strategies. Weather is the primary influence on sample volume and revenue, but also economics, public opinion and awareness have an effect. (Sample volume and revenue was down by 5% from FY16, presumably due to a more traditional winter compared to FY15.) Since we cannot control weather or economics, we are focusing on increasing sample volume through newsletters, interviews, and visibility (by attending relevant workshops and meetings).

In October 2017, clients who had sent samples for analysis during our spring rush received a newsletter encouraging them to consider sampling at the end of the growing season. Turnaround time in the months of April, May and June can be several weeks long. The goal was to improve customer satisfaction by shifting some of the workload to October and November. Also in October, a streamlined invoicing system was devised to collect fees in a more timely and efficient manner. Most customers pre-pay for services. However, we agree to invoice some regular customers that order significant amounts of analysis annually. Additionally, we allow public schools, universities and municipal departments to use purchase orders. The new system enables us to reduce our accounts receivable balance, as well as the amount of time spent collecting fees.

The UMass Recharge system was also improved. Previously, clients in the UMass system received results prior to collecting the speed type number and Primary Investigator's (PI) signature. We posted new order forms that include this information in December.

In November, the Lab Supervisor attended a workshop that focused on the effects of using compost and other organic amendments containing phosphorus on crops and the environment. It was an interesting

and informative discussion. Around that time, we decided to discontinue the compost program at the end of the calendar year. Compost analysis is a very lengthy and labor-intensive process, and we lacked the proper drying ovens, space, and staff to run the analysis efficiently and effectively. Also in November, the lab hosted two large groups of high school students for the Massachusetts Envirothon. Lab tours were given that included a synopsis of services offered, basic information about equipment and methods used, and an explanation of how test results can help clients improve growing conditions while protecting the environment and their health.

In February, the Lab Supervisor met with staff members from Grow Boston! Magazine for an interview. An article appeared in the Spring 2017 issue, and covered basic information about soil testing. Distribution of this magazine is free. Printed copies are available in eastern Massachusetts, and online at <http://www.growboston.info/copy-of-fall-2016>. Also in February, we developed a new fact sheet with the help of Extension Educators Doug Cox, Tina Smith and Geoffrey Njue. The topic of the fact sheet is managing over-fertilized soils. It contains practical information that informs clients of possible negative effects and corrective measures for dealing with over-fertilization.

In March, we met with Sandy Thomas and Joe Shoenfeld to brainstorm ideas for increasing awareness of the lab. We discussed free and low-cost means of advertisement. Plans were set in place to arrange interviews at the end of the growing season (October and November 2017).

In May, the Lab Supervisor travelled to Drumlin Farm in Lincoln, MA, to act as judge to the Massachusetts Envirothon. Students participating in the November event made presentations about soil and water conservation in their towns. Judges scored various aspects of these presentations, and gave feedback to the students regarding their projects. Also in May, Technical Assistant Christina Bacon left the lab because of personal reasons. We hired her replacement, Richard Donnelly, on July 2, 2017.

In July, the Lab Supervisor attended the UMass Turf Field Day in South Deerfield. In attendance were green industry professionals. The Field Day was an opportunity to make connections with potential clients. Following the event, we emailed landscaping companies and other clients who send large numbers of samples to the lab for analysis. The purpose of the email was to be sure they were aware that the lab sells Prepaid Kits for Routine Soil Analysis in bundles of 50 at a discounted rate. The hope is that the sale of Prepaid Kits will help increase sample volume through the convenience and affordability of these kits.

There were no major equipment issues in FY17; however, future equipment replacement is a concern. We must continue to find ways to reduce expenditures and increase revenue in order to build the lab's trust fund and meet those needs as they arise.

Collaborating Organizations

- **North American Proficiency Testing**
- **Agricultural Laboratory Program**
- **Northeast Coordinating Committee**
- **Massachusetts 4-H**
- **Springfield Technical Community College**