

## New Hampshire Vegetable & Fruit Newsletter

April 10, 2013

Volume 9:1

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### MEET THE TEAM

As many of you know, UNH Cooperative Extension reorganized last year, and we now have teams focused on particular areas of expertise. Our vegetable and fruit production team consists of several folks you know already, plus at least one that you probably don't. Going forward, this newsletter will feature articles written by different members of the team.

**Olivia Saunders** – Olivia just joined UNH Cooperative Extension as Field Specialist in Carroll County (located in Ossipee). A New Hampshire native and UNH graduate, she has her M.S. degree in soil science, and comes to us most recently from High Mowing Organic Seeds.

**Heather Bryant** – Heather joined UNHCE in 2009, and is our Field Specialist in Grafton County (located in North Haverhill). Her agricultural background is in fruit and vegetable production and her interests include local food systems, the concerns of diversified farms and sustainable agricultural development.

**George Hamilton** – George is a field specialist in Hillsborough County (located in Goffstown). George has extensive experience with vegetable, berry and tree fruit crops. George is involved with several IPM projects in Southern and central NH, and has just completed some excellent sprayer calibration videos in collaboration with Penn State University.

**Cheryl Smith** – Cheryl is our Plant Health specialist on campus in Durham, where she runs the UNH Cooperative Extension Plant Diagnostic Lab and also teaches an undergraduate course in Plant Pathology.

**Alan Eaton** – Alan is our 'bug guy', Integrated Pest Management specialist and professor on campus in Durham. Alan's interests include not only vegetable and fruit pests; but also management of ticks and vertebrate pests, and biological controls.

**Becky Sideman** – Becky is our Sustainable Horticulture specialist and professor on campus in Durham, where she conducts research on vegetable cropping systems and season extension. Her interests include vegetable and berry crops, and organic production.

**Bill Lord** – Bill is our Fruit Specialist Emeritus, who still fields questions on all sorts of fruit-related topics, and who entertains hundreds each year at lively pruning demonstrations.

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## A NEW WEBSITE

Here at UNHCE, we have recently revamped our website. It's still under construction, but we think it's already easier to navigate and find the information you're looking for! Please [check it out](#) and come back to visit often to see new updates.

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## SMALL FRUIT MANAGEMENT GUIDE ONLINE

Many of you have been waiting patiently for the new updated edition of the New England Small Fruit Pest Management Guide, and it's on its way! While the printed copies aren't quite ready yet, the good news is that the current updated 2013-2014 version is [now available online](#). There are some significant changes, including a name change – it is now the Small Fruit Management Guide, because it contains more than just pest management information. We'll let you know as soon as the printed version is available.

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## HERBICIDE RESIDUES IN MANURES & COMPOSTS: WHAT VEGETABLE GROWERS SHOULD KNOW

In the past couple of years, we in NH and in neighboring states have seen cases of herbicide damage on vegetable crops that came from applying manure that contained herbicide residues. Because the effects can be devastating to valuable vegetable and fruit crops, it's important to know what causes this risk and how to prevent it.

The herbicides of concern all belong to a single class: the pyridine carboxylic acids. This includes the following active ingredients: aminopyralid, clopyralid, picloram and triclopyr. These are broadleaf herbicides that are approved for use in controlling difficult weeds in grass pastures and grass hayfields, as well as lawns. Livestock can safely graze pastures and consume hay that was treated with these herbicides. On broadleaf crops, these herbicides can cause poor germination and kill seedlings, and will cause new leaves to become twisted and malformed (see figure). Sensitive crops include a wide array of crops including tomato and other solanaceous crops, lettuce, beans and other legumes, strawberries, grapes, and most other vegetable crops.



*Distorted tomato leaves showing typical symptoms caused by growth-hormone herbicides like aminopyralid.*

The concern stems from the fact that these materials retain herbicidal activity for a long time, even after passing through an animal's digestive system, and even after the resulting manure is composted. The herbicides do eventually break down and lose activity over time, particularly as they are exposed to microbes, heat and moisture. This can take place relatively quickly, or can take up to several years, depending on the situation.

Several aminopyralid and clopyralid herbicides are registered in the state of New Hampshire. These include turf and lawn herbicides like Lontrel (clopyralid), Millennium Ultra and Millennium Ultra (2,4-D, clopyralid and dicamba), pasture and hayfield herbicides like Forefront (aminopyralid plus 2,4-D), Milestone (aminopyralid), and the corn and grain herbicide Stinger (clopyralid). The labels for these materials specify plantback restrictions, so that growers that use them do not plant sensitive crops following herbicide application. For those treating hayfields and pasture, the labels specify that hay, and manure from animals that have consumed feed from treated fields, should not be used directly, or after composting, as amendments on vegetable fields.

This poses some challenges and requires more communication when growers are purchasing animal feed or manures from others. In at least once case that I'm aware of, a vegetable grower used manure from an alpaca farm that had purchased hay from another farm that had used an aminopyralid herbicide. This means that it is very important to know the source of manure, compost, hay, and straw that you use on vegetable fields, so you can determine whether herbicides have been used that have the potential to remain active.

The simplest and least expensive way to determine whether soil, compost or manure contains herbicide residues is to conduct a bioassay. This means planting sensitive crops (tomatoes, beans, peas are all good choices) into a few different samples, and watching to see whether symptoms appear as the plants grow. At the same time, make sure to plant the same crop into soil that you know is NOT contaminated, so you can see what "normal" looks like.

**Two excellent resources for more information:**

[NC State Cooperative Extension Bulletin](#)  
[Oregon State University Small Farms Program](#)

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## **FOCUS ON ON-FARM RESEARCH: A PLANNING TOOL TO PREDICT CROP MATURITY**

This issue's Focus on Research discusses a project done by grower Steve Fulton of Blue Ox Farm in Enfield. This project was funded by Northeast SARE as a farmer/grower grant. **(Side note: consider applying for one of these!** They are an excellent way to help you learn something you've always wanted to know, and share it with other growers!). **The full report is available at the SARE website, by [clicking here](#).**

**The situation:** Diversified farms grow many crops. Grocery store, farm stand, and restaurant customers want a steady supply of "every" crop. Scheduling plantings for constant supply of crops through the year is a major planning question for growers. Planning a constant supply of many crops is a challenge because time to maturity varies throughout the season, and there are no planning tools to help growers predict time to harvest.

Planning constant production of crops that are planted in succession requires experience, plus a bit of guessing what the weather might be during the season. This report presents a methodology to eliminate some of the guessing that is based on historical weather information.

Plants need time, light, and heat to grow. Growing Degree Days (GDD) are a relatively well-known method to understand biological processes such as when an insect pest will appear, or when a crop will be mature. Data for crop maturity shows that the GDD for a crop to mature is not constant, but varies through the season, which means that at least some of the variation is due to day length variation. One way to combine the effects of time, light, and heat is to use Growing Degree Day \* Hours Daylight (GDD\*HD). Steve defined GDD\*HD as GDD for a day, times the day length (in hours). Day length is defined by the length of time between actual dawn, to actual twilight. The challenge is that many growers find tracking temperature and calculating GDD to be cumbersome, and for most crops, we don't have data to tell you how many GDD or GDD\*HD it takes for a crop to mature.

Steve's goal was to create a planning tool that would help him (and other growers!) predict maturity of three crops for which he needs a steady supply: lettuce, broccoli, and sweet corn.

### What was done?

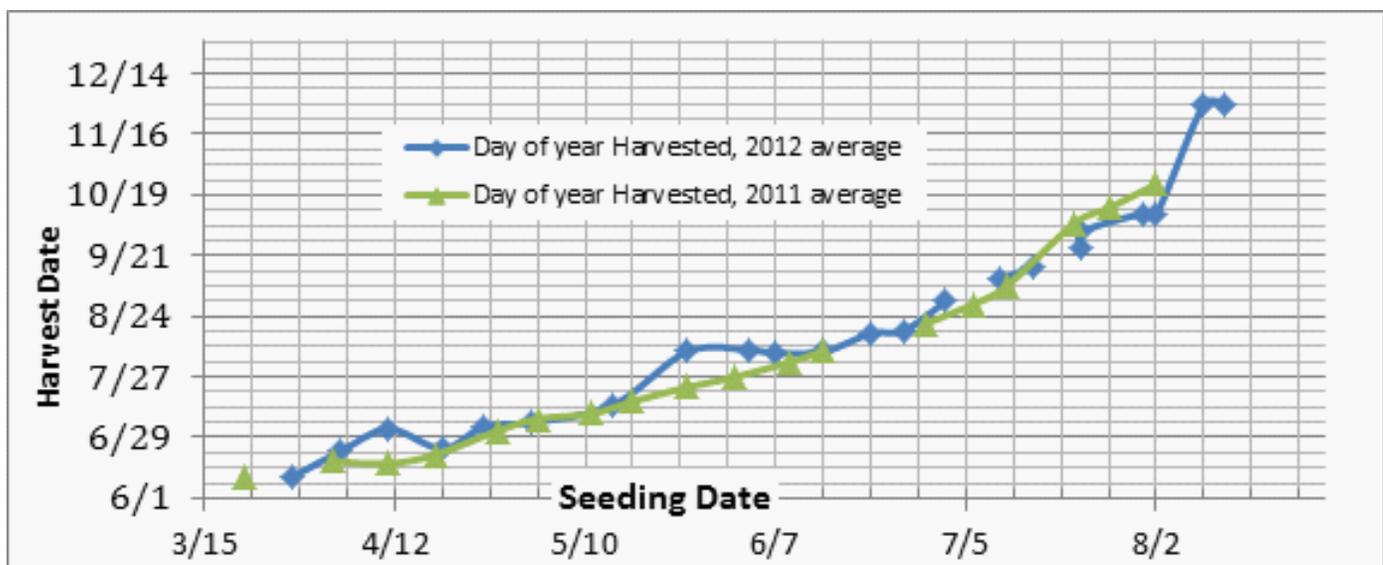
In this project, Steve measured the time to harvest for several plantings of 2 varieties of lettuce, one variety of broccoli and one variety of corn. The sequence plantings were done over the entire summer, and for each planting, Steve recorded days to maturity, the harvest window, and the latest possible date that the planting could have been harvested. Throughout the season, temperature monitors were deployed in each crop so that GDD and GDD\*HD could be calculated for each planting.

Steve received his first farmer/grower grant in 2011, and applied to continue the project for a second year in 2012. He now has data from both years, and has created a calculator/tool for predicting crop maturity.

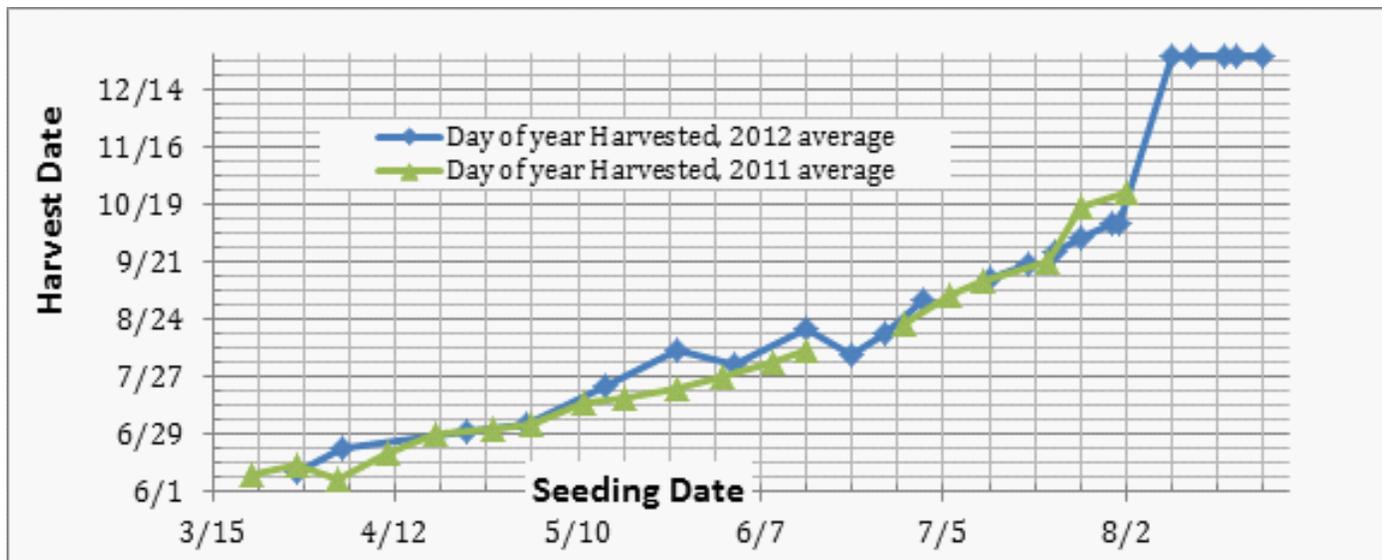
### What was the outcome?

Steve found that days to maturity varied widely throughout the growing season, as expected. For example, early spring plantings of 'Greenstar' lettuce (see below) matured in about 75 days, whereas summer plantings matured in less than 50 days, and late summer plantings took over twice as long (over 100 days for early August plantings). Results were very consistent from year to year, as you can see from the following charts for 'Greenstar' and 'Vulcan' lettuce, and 'Everest' broccoli.

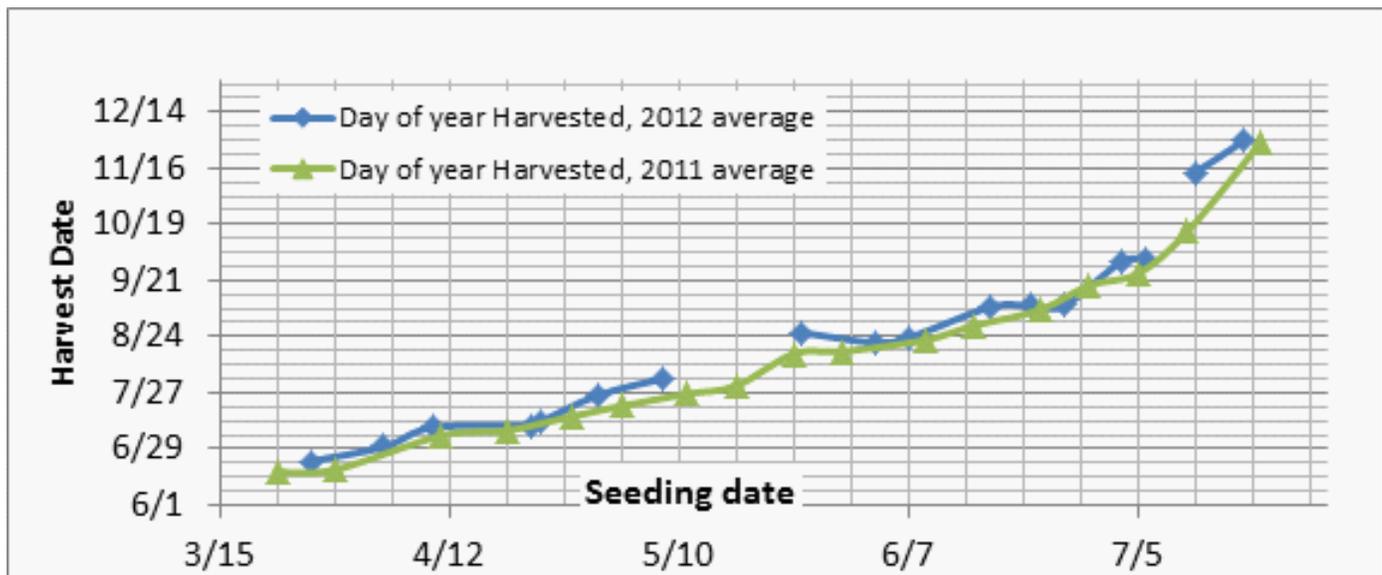
#### Harvest vs. Seeding Date for 'Greenstar' lettuce, in 2011 and 2012.



Harvest vs. Seeding Dates for 'Vulcan' lettuce, in 2011 and 2012.

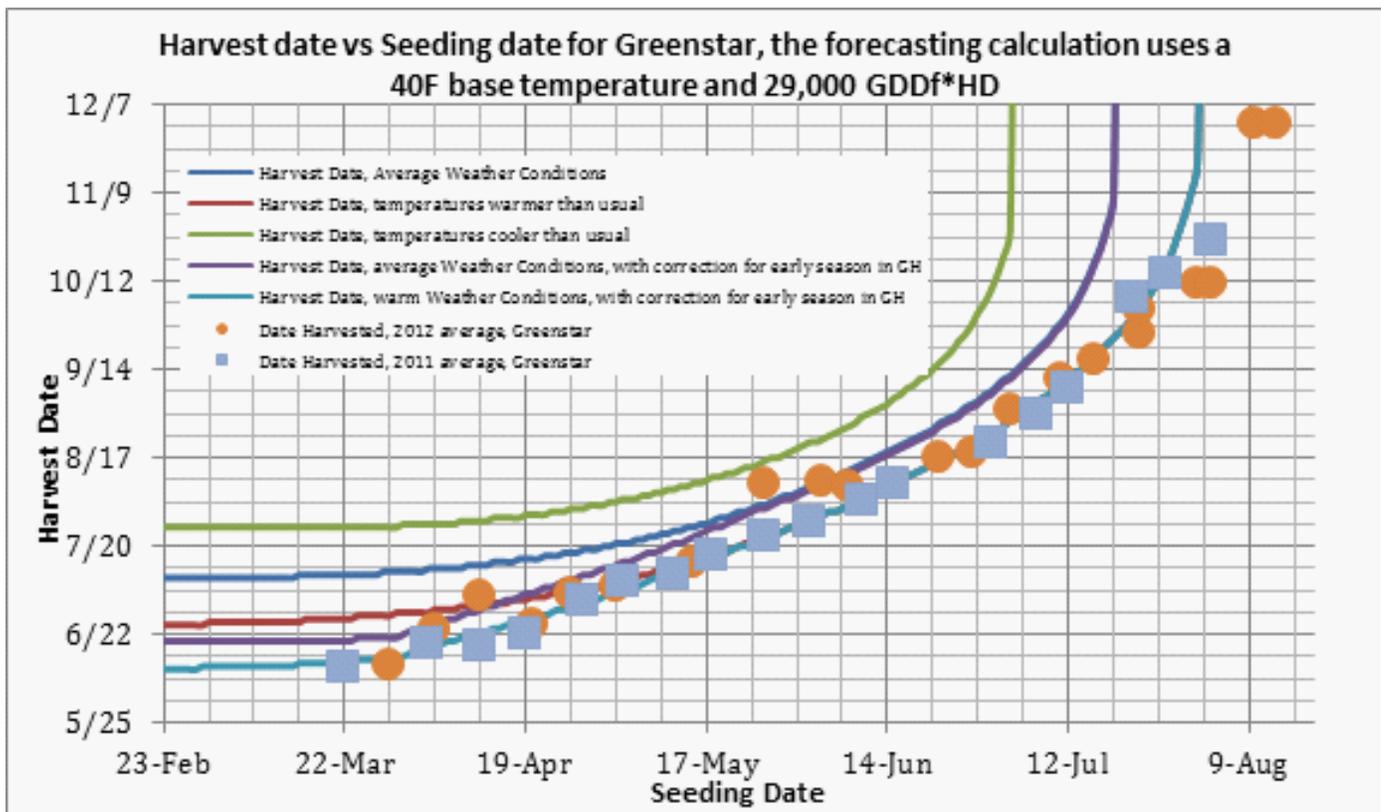


Harvest vs. Seeding Dates for 'Everest' Broccoli, in 2011 and 2012.



Steve also calculated how well GDD and GDD\*HD were able to predict days to maturity, and found that GDD\*HD was roughly consistent throughout the growing season, especially for broccoli.

Lastly, Steve put all of this together into a **Plant Maturity Calculator**, which is in an Excel spreadsheet. Currently the calculator contains temperature and daylength data based on Enfield, NH – but you can update it with data from your own location if temperatures or daylengths are different.



Steve learned a lot more information than is described here; you can check out the full report at the SARE website, by [clicking here](#).

### TRADE ASSOCIATIONS FOR NEW HAMPSHIRE GROWERS

Many NH growers belong to one or more trade associations. These include the New Hampshire Vegetable and Berry Growers (NHVBGA) and New Hampshire Fruit Growers Association (NHFGA), the NH Farm Bureau, the NH chapter of the Northeast Organic Farming Association (NOFA-NH), and the New England Vegetable and Berry Growers' Association and New England Farmers' Union. These groups support local agriculture in several ways. One of these ways is by sponsoring many of the educational workshops, meetings and events that are held throughout the state.

How could trade associations help you? Associations host meetings that provide an opportunity to network and share information, knowledge and experience with other growers. Association benefits can include reduced registration rates at meetings, scholarships for members (or their children), discounted products or free publications. The NHVBGA, for example, provides members with a free copy of either the New England Vegetable or Small Fruit Management Guide. Some associations are politically active by supporting state legislation relating to agricultural issues, and have representation on regional advisory boards. Associations can also voice the need for educational programs for their members, and provide guidance to groups such as UNHCE. Associations often raise funds to support specific endeavors such as meetings, conferences, or research that benefit their members.

**Some of the groups that NH growers may find useful include the following:**

- [NH Vegetable & Berry Growers' Association](#) – Chip Hardy, 603-465-2241.
- [NH Fruit Growers' Association](#)
- [NH Northeast Organic Farming Association \(NOFA-NH\)](#) - 603-224-5022.

NH Farm Bureau – 603-224-1934.

New England Farmers' Union

New England Vegetable and Berry Growers' Association – John Howell, 413-665-3501, [howell@umext.umass.edu](mailto:howell@umext.umass.edu)

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## UPCOMING MEETINGS & EVENTS

*Thurs April 11.* **Spotted Wing Drosophila Management Meeting.** 5-7PM. Hill Library Center, Strafford, NH. For more information, see the flier. There is limited space at this venue; please pre-register with Suzanne Hebert ([suzanne.hebert@unh.edu](mailto:suzanne.hebert@unh.edu), 603-862-3200).

*Mon April 15.* 5-7PM. **Spotted Wing Drosophila Management Meeting.** Meeting Room A, Meredith Community Center, Meredith, NH. For more info, see the flier or contact Suzanne Hebert ([suzanne.hebert@unh.edu](mailto:suzanne.hebert@unh.edu), 603-862-3200).

*Wed April 17.* **Tree Fruit Growers Twilight Meeting.** DeMeritt Hill Farm, Lee NH. For info, see the flier or contact George Hamilton ([george.hamilton@unh.edu](mailto:george.hamilton@unh.edu), 603-641-6060). **TF, PAT.**

*Fri April 19.* 5-7PM. **Spotted Wing Drosophila Management Meeting.** Claremont Savings Bank, Claremont NH. For more info, see the flier or contact Suzanne Hebert ([suzanne.hebert@unh.edu](mailto:suzanne.hebert@unh.edu), 603-862-3200).

*Monday April 22.* 6-9PM. **Spotted Wing Drosophila Management Meeting.** Hillsborough County Cooperative Extension, Goffstown NH. This meeting will include additional IPM topics, focusing on the monitoring programs planned for Southern NH this season. For more info, see the flier or contact George Hamilton ([george.hamilton@unh.edu](mailto:george.hamilton@unh.edu), 603-641-6060). **SF, V, PAT.**

*Wed, May 8.* **Joint MA/NH Tree Fruit Twilight Meeting.** Brookdale Fruit Farm, Hollis NH. 5:30-7:30pm. Focus will be on pollination and thinning. For info, contact George Hamilton ([george.hamilton@unh.edu](mailto:george.hamilton@unh.edu), 603-641-6060). **TF, PAT.**

*Wed. May 22.* **The Whys and Hows of Using Drip Irrigation for Vegetable and Fruit Growers.** Sherman Farm, Conway NH. Time TBD. This meeting will focus on drip irrigation options and strategies for vegetable and fruit production. For info, contact Olivia Saunders ([olivia.saunders@unh.edu](mailto:olivia.saunders@unh.edu), 603-447-3834) or George Hamilton ([george.hamilton@unh.edu](mailto:george.hamilton@unh.edu), 603-641-6060). **V, SF, TF, PAT.**

*Wed, June 12.* **Tree Fruit Twilight Meeting.** Riverview Farm, Plainfield NH. 5:30-7:30pm. For info, contact George Hamilton ([george.hamilton@unh.edu](mailto:george.hamilton@unh.edu), 603-641-6060). **TF, PAT.**

We have many more meetings coming up – stay tuned for the next events listing, and [visit our web page](#) to see our events calendar!

**Meeting topics:** F = flower, G = grains, O = certified organic, SF = small fruit, TF = tree fruit, V = vegetable, AC = all crops. PAT = pesticide applicator recertification credits available, CCA = certified crop advisor credits available

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**AT A GLANCE**  
**UNH COOPERATIVE EXTENSION**  
**VEGETABLE & FRUIT RESOURCES**



<p align="center"><b>SOIL TESTING</b>        862- 3200  <a href="mailto:soil.testing@unh.edu">soil.testing@unh.edu</a></p>	<p align="center"><b>PLANT DIAGNOSTIC LAB</b>        862-3841</p>
<p align="center"><b>ARTHROPOD IDENTIFICATION</b>        862-3200</p>	<p align="center"><b>FRUIT PEST PHONE UPDATE        (seasonal)</b>        862-3763</p>

### **Annual Appeal for UNH Cooperative Extension**

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All gifts to the University of New Hampshire Foundation, Inc. are tax deductible as provided by law. For more information on how you can support UNH Cooperative Extension, contact Charlene Baxter, Development Coordinator, [charlene.baxter@unh.edu](mailto:charlene.baxter@unh.edu) or Wendy Brock, Executive Director, 4-H Foundation of NH, [wendy.brock@unh.edu](mailto:wendy.brock@unh.edu).

#### **SUBSCRIPTIONS –**

This newsletter is **free online**.

**Sign up here** to receive an email notification when a newsletter is posted to the web page.

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 Extension Specialist – Sustainable Horticulture  
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