Cornell Cooperative Extension | Eastern NY Commercial Horticulture Program

2017 ANNUAL REPORT

Serving the Educational and Research Needs of the Commercial Small Fruit, Vegetable and Tree Fruit Industries in Albany, Clinton, Columbia, Dutchess, Essex, Fulton, Greene, Montgomery, Orange, Putnam, Rensselaer, Saratoga, Schoharie, Schenectady, Ulster, Warren and Washington Counties

A MESSAGE FROM THE ENYCHP TEAM...

Growing and marketing fresh fruits and vegetables is a challenging venture, but the skill and professionalism of farmers in eastern NY is testimony to their dedication to provide high quality, nutritious food to local consumers. It's been a privilege to work with the wide variety of operations in the 17 counties that we serve – we are looking forward to 2018!

Laura McDermott, Co-team Leader, Berry Crop Specialist
Charles Bornt, Co-team Leader, Vegetable Specialist
Dan Donahue, Tree Fruit Specialist
Mike Basedow, Tree Fruit Specialist
Anna Wallis, Tree Fruit Specialist
Jim Meyers, Viticulture Specialist
Elizabeth Higgins, Business Management Specialist
Amy Ivy, Vegetable Specialist
Teresa Rusinek, Vegetable Specialist
Crystal Stewart, Vegetable Specialist
Maire Ullrich, Vegetable Specialist
Ethan Grundberg, Vegetable Specialist
Sarah Elone, Program Technician
Annie Mills, Program Technician
Emelie Morton, Program Technician
Abby Henderson, Program Administrative Assistant

WELCOME TO THE TEAM:

MIKE BASEDOW, *Tree Fruit Specialist*

Mike earned his B.S. in Plant Sciences/Horticulture from Cornell and his M.S. in Horticulture from Penn State University, studying brittle apple graft unions for his thesis project. Most recently, he served as a tree fruit extension educator for PSU Extension where he developed and delivered fruit extension programs, including specialized programs for beginning and young farmer audiences. Michael also has extensive tree fruit field and applied research experience with apple growers, including a stint at the Hudson Valley Lab when he was an undergraduate at Cornell. Mike covers the Lake Champlain and Upper Hudson Valley, and is housed in the CCE Clinton office.

JIM MEYERS, *Viticulture Specialist*

Jim has been working with wine grapes for 10 years, first as a Viticulture Ph.D. student at Cornell then as a Research Associate. Prior to coming to Cornell, Jim studied Chemistry and Biology (B.S. West Chester University of Pennsylvania), Computer Science (M.S. Brown University), and had a successful career as software technology entrepreneur. This background is reflected in his viticultural research which has focused on computational tools for mapping canopy and vineyard variability, quantifying relationships between variability and fruit chemistry, and optimizing efficiency of vineyard operations. As an Extension Associate, Jim will continue some of these research activities while also looking for new projects that provide targeted benefits to appellations in Eastern New York.

"Since working with Cornell Cooperative Extension (ENYCHP) I have learned more about managing fertility based on soil and foliar testing"
-Phil Mommsen,
Maple Ridge Farm

"We loved the program this year, we found all of the information applicable to multiple crops, pests, problems and a look into what other growers were experiencing"
-Fledging Crow Farm

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MECHANICAL CULTIVATION EQUIPMENT HIGHLIGHTS LATEST IN WEEDING TECHNOLOGY

On October 3, 2017, over 50 growers from the region attended a three hour long Mechanical Cultivation Equipment Demonstration held at S&SO Produce Farms on the muck soils of Orange County. Ethan Grundberg coordinated with two equipment dealers, Michael Smith of KULT-Kress in Pennsylvania and Keith Campbell of Willsie Equipment in Ontario, Canada, to bring the state of the art weeding technology to Eastern New York. Dr. Bryan Brown, the new Integrated Weed Management Specialist with the New York State Integrated Pest Management Program (NYS IPM), was also involved in planning and presenting the event.

Interwoven with presentations on weed management strategies from both Grundberg and Brown, Michael Smith demonstrated weeding tools such as parallel linkages, finger weeders, and European cultivating "tool carriers" on the trial plot of transplanted broccoli that Mark Rogowski of S&SO generously provided for the event. The most impressive demonstration came from Willsie Equipment, who a brought robotic "Garford Robocrop" weeder that uses advanced cameras and imaging software to move cultivating sweeps in between plants in a row.

Both Keith Campbell and Michael Smith concluded the program by alerting growers to the next generation of cameras and crop recognition software that will be available in coming years to continue to both improve the efficacy of precision weeding equipment and also lower the price of the technology.

Of the 17 respondents to the program evaluation, 14 stated that their weed management will improve as a result of the event. Thanks to the editing and filming work of colleagues at NYS IPM, a video of highlights from the day is available to the public at:

https://www.youtube.com/watch?v=hYyToq4qrZ0.

As of January 3rd 2018, the video has already been viewed 157 times.

11,229 GROWERS ATTENEDED
169 FIELD MEETINGS
IN THE 2017 SEASON

FINE TUNING HIGH TUNNEL NUTRITION

High tunnel tomato growers need to carefully monitor their irrigation water, soil amendments and fertility practices to maintain optimum levels for crop production. After a few years of production, it is common to find high tunnel soils with excessively high levels of calcium, magnesium and phosphorus and soil pH. Potassium and manganese deficiencies in plant tissue can follow. These excessive levels, both high and low, impede the uptake of nutrients and build up in the soil. Irrigation water often has elevated alkalinity levels which affects nutrient uptake and availability as well.

We have worked closely with 9 growers over the past 4 years, training them how to sample and monitor their soil and plant tissue fertility levels. We held 4 grower field meetings July through September so growers could see successful operations first hand and compare practices through discussions with other growers and Extension specialists at these meetings. The 9 cooperating growers now understand how to take samples and interpret the results, and are committed to continue this testing on their own. All of the growers we worked with are now more aware of how nutrients can build up without testing and monitoring, and that at high levels some of the essential nutrients can compete with and tie up each other.

2017 RESEARCH WITH IMPACT

- Orchard Management Systems for Improved Yield and Fruit Quality
- Statewide Survey of Apple Tree Decline
- Multiple Strategies to Control Bitter Pit in Honeycrisp
- Monitoring and Management Tactics for Control of Ambrosia Beetles in NY Apple Orchards
- Surveying of Viruses in Apple Orchards Throughout NYS
- Nitrogen Dynamics and Yield Response to Minimal Supplemental Heating in High Tunnel Winter Production
- Field Treatments for Mitigating Onion Rot
- Educating Producers about Crop Insurance Cooperative Agreement
- Improving Labor Management on Fruit and Vegetable Farms in New York State
- Development of Effective Spray Programs for Post-Infection Fire Blight Management in Apples and Cost-Benefit Analysis of its Key Components
- Labor Readiness: Pathways for Farm Workers to Start Up and Advanced Beginners to Scale Up New Farm Businesses
- Optimizing Protected Culture Environments for Berry Crops
- Managing Root Weevil Populations for Improved Profitability and Sustainability on Eastern NY Berry Farms
- Using Low Tunnels for Extending Local Strawberry Production
- Climate Change Communication, Climate Smart Farming
- Monitoring and Controlling Spotted Wing Drosophila in Berry Crops
- Unifying Resistance Management Education
- Spotted Wing Drosophila Integrated Pest Mgmt
- Using NDVI Images to Guide Selective Harvest in Wine Grape Vineyards
- Best Management Practices for Long Term Profitability High Tunnel Soil Fertility and Health
- Improving Garlic Production
- Assessing Barriers to Wholesaling for Small-scale Vegetable Growers: Case Study
- Invasive Pest Trapping
- Improving Profitability of Garlic Production Through Understanding and Management of Fusarium Diseases
- Innovations to Maximize Energy Efficiency
- Increasing Yield by Controlling Leaf Mold in Tomato High Tunnel Production
- Identification and Grower Education of Key Pests in Apple Orchards in Northern New York
- Precision Crop Load and Irrigation to Optimize Fruit Size and Quality of NNY Apples
- Apple Harvest Maturity
- Orchard Management Research
- Evaluation of Novel Cold-Hardy Grape Varieties for Production in Northern NY
- Wireworm Management in Sweet Potatoes Using Entomopathogenic Nematodes
- Increasing the Use of Cover Crops with On-Farm Demonstrations
- Scouting and Monitoring for Allium Leafminer in Eastern NY





Wireworms and Root Crops Don't Mix

Wireworms are an increasing problem in root crop production especially in fields with sod or grass cover crops in preceding years. Wireworm damage levels have reached as high as 60% in sweet potato and 40% damage in Irish potatoes. At that level of damage, root crops are not worth harvesting, and storing crops with even moderate wireworm damage will lead to further losses. Chemical and cultural management options for controlling wireworms are limited and efficacy is often poor. Studies have demonstrated some suppression of wireworms using entomopathogenic nematodes (ENPs) and a complex of NY native ENPs isolated and studied by Cornell researchers have successfully established in agricultural fields and controlled several other soil dwelling pests found in NY.

The Eastern NY Commercial Horticulture Program has partnered with the Hudson Valley Farm Hub in Ulster County, NY to trial the NY native EPNs to reduce or eliminate wireworms in potatoes on this farm. This applied research project began in May of 2017 at the Farm Hub, where we established research plots where wireworms were found in large numbers in 2016. We are determining which complex of EPNs are best adapted to establish in the sandy/loam soils at this site, as well as which combination of nematodes is most effective at suppressing wireworm damage in sweet potatoes.

Garlic Project Yields Promise for Improving Industry

Garlic work this year has focused on Fusarium management through cultural practices and organic controls. Fusarium diseases are the most common problem garlic growers across the country face, with nearly every grower experiencing issues at one point. Through the support of NE Sustainalble Agriculture Research and Education and the Specialty Crop Block Grant funds, a research project examining ways to manage this disease started in the fall of 2016. This season ENYCHP specialist, Crystal Stewart, managed trial sites in the Hudson Valley, Long Island, and Western New York.

Each of the trial sites hosted meetings in June of 2017 so that growers could see first-hand how garlic responds to the various treatments that were applied in the Fall of 2016. The meeting in the Hudson Valley attracted over 30 growers. The meetings are now being followed by harvest and data collection. When the data is analyzed, results will be shared with growers throughout the Northeast in newsletters and at conferences.


"With a modern high-density apple orchard requiring an investment of $15,000 per acre or more, and tree purchases comprising 60% of that cost, loss of young trees is of major economic concern to apple producers."
-Dan Donahue, CCE ENYCHP

EASTERN NY APPLES

ENYCHP TREE FRUIT SPECIALISTS ARE WORKING TO UNDERSTAND NEW ISSUES ARISING IN OUR REGION'S ORCHARDS

Three Years Studying the Black Stem Borer in the Hudson Valley:

The Black Stem Borer (BSB), (*Xylosandrus germanus*) is a tiny beetle that has emerged from relative obscurity in recent years to take center stage as an emerging pest species in New York State apple orchards. The beetle is generally a forest-dweller, with 200+ species of trees capable of serving as host to this wood-boring insect. The beetle was observed infesting declining and "apparently healthy" trees in western New York during the 2013 growing season, leading directly to tree loss.

The infestation of "apparently healthy" trees was a new finding, and raised serious concerns that the beetle may become a serious pest in other regions of the State. CCE-ENYCHP specialists launched an effort in 2015, funded by a grant from the NYS Apple Research and Development Program, to study the incidence and life cycle of the Black Stem Borer in Hudson Valley Apple Orchards. The project closed at the end of the 2017 season. CCE-ENYCHP specialists have determined that the beetle is a secondary, not primary, pest in Hudson Valley orchards. While the beetle's distribution is widespread, incidence is low and only weak, otherwise declining trees appear to be at risk of infestation. There are two flights of adult females during the growing season, and direct chemical control measures are generally not warranted at this time.

WHY ARE THERE YOUNG APPLE TREES DYING IN THE HUDSON VALLEY?

Cornell Extension Specialists are being asked with increasing frequency by apple growers to investigate the chronic decline and/or rapid collapse of apple trees in young, high-density plantings in all regions of New York State. CCE-ENYCHP Tree Fruit Specialist Dan Donahue and Western New York CCE-LOF Fruit IPM Specialist Dr. Tessa Grasswitz are currently collaborating on a New York State apple producer funded project with the goal of defining the problem and identifying the cause(s). Symptoms of chronic decline can include poor growth, off-color foliage, and a generally "unthrifty" appearance that worsens over several years. The death of a previously healthy tree over the course of just a few weeks has been termed Sudden Apple Decline (SAD) or Rapid Apple Decline (RAD). In some of these cases, tree death can be ascribed to Fire Blight (*Erwinia amylovora*) or Crown/Root Rot (*Phytophthora sp.*), but in many cases the causation is much less clear. Over the last year, the decline and demise of apple trees in orchards up to the 8th leaf has become a hotly discussed topic among producers, researchers, extension specialists and industry consultants in several states across the mid-Atlantic and New England regions, as well as parts of Canada.

A long list of potential causes of decline has now been compiled by fruit workers throughout the eastern U.S., including winter injury, herbicide injury, Ambrosia beetles and Dogwood Borer. In addition, we have learned since December 2015 that many of our high-density apple orchards are infected with one or more latent viruses. Hence we cannot discount the possibility that the observed declines are due to interactions between multiple stressors, or that we are facing the possibility of a previously unrecognized problem.

After numerous orchard visits by specialists in different states, a working group of regional apple professionals coordinated by Dr. Kari Peter of Penn State University has developed a comprehensive list of symptoms to identify declining orchards. From this list, extension professionals in Pennsylvania and New York developed an on-line survey of apple tree decline in order to facilitate consistency in the collection of orchard data, and the identification of commonalities. Apple producers throughout New York State have been encouraged through Cornell Cooperative Extension email blasts and newsletters to complete the online survey. As of October, valuable information has been collected on 46 declining apple orchards in eastern New York State, with a similar effort ongoing in western New York.

Apple Orchard Decline has recently been identified as a national issue, demanding attention from researchers across the United States. In an effort to widen our research and extension efforts, data collected from the NYS Apple Decline Project has been used to support two USDA multi-state research and extension grant proposals this fall. Key states and organizations involved in these proposals are New York, Pennsylvania, Oregon, Washington State, and USDA-Beltsville, Maryland. If funded, these projects will greatly enhance our research and extension efforts to solve the decline problem.

On-Farm Demonstrations

Encourage More Cover Cropping & Improve Soil Health

In early October 2017 over 100 growers from a variety of commodities and other agricultural affiliated industries convened for a field meeting at Schoharie Valley Farms to learn and see first-hand 7 different inter-seeding treatments and 20 different cover crops that were planted in a 4-acre field in July of 2017.

For this meeting, we divided the group into 6 smaller groups where they rotated every 20 minutes between 6 different "field stations" located throughout the field. Each station had an expert speaker from various organizations including Cornell, SUNY Cobleskill and USDA Natural Resources on a specific topic such as understanding soil heath, evaluating soil health first hand with an exposed soil pit, a discussion of beneficial soil-dwelling invertebrates, cover crop selection and management and firsthand experience at seeing inter-seeding in field corn.

95% of attendees said the information learned at this meeting would impact their farming operation

97% of the attendees were going to try a new cover crop or cover crop mix seen in these demonstration plots.

100% would attend another meeting like this one.

TACKLING EMERGING INVASIVE PESTS

Comprehensive Response to the Allium Leafminer

This year CCE ENYCHP responded to an emergent threat to the allium industry called the Allium leafminer (*Phytomyza gymnostoma*), a fly native to Poland. The pest damages crops in the onion family, including garlic, scallions, leeks, shallots, chives, and dry bulb onions and threatens the estimated $40 million allium industry in the lower Hudson Valley alone. ENYCHP vegetable specialists developed a scouting protocol that was implemented on several farms. Once detected, growers in the region were alerted within 48 hours of confirmed Allium Leafminer activity through a series of e-alerts and postings to local agricultural list-serves. Nearly 70 allium growers across Eastern New York and Long Island received in-person farm visits to scout for signs of Allium Leafminer activity and discuss management options.

Another 2,500 growers across the Northeast United States received information detailing the lifecycle, damage, and current best management recommendations generated by Grundberg and Rusinek via electronic extension publications, specifically the Eastern New York Weekly Vegetable News and the UMass Vegetable Notes. Over 100,000 members of the general public were reached with local newspaper and television coverage, including articles in the Times Herald Record and coverage on Spectrum News. The data and observations gathered during the spring flight of A llium Leafminer were used as a foundation for successful research funding proposals to both the New York Farm Viability Institute and the USDA FFAR program in collaboration with Dr. Brian Nault that will allow us to continue to develop science- based management recommendations in 2018.

USING PROTECTED CULTURE

TO MANAGE PESTS & INCREASE PRODUCTIVITY

Growing berry crops holds the promise of significant profit in the competitive fresh retail market that exists in eastern NY – but it isn't a sure thing. There are several barriers to success and the ENYCHP team is working to remedy those problems.

The team has participated in statewide monitoring for Spotted Wing Drosophila (SWD), an invasive pest of soft fruit. This year traps revealed a very early infestation in late June. An e-Alert reminded growers to protect fruit just as it began to color. This made all the difference for many growers, but it still requires an intensive spray program that many growers resist. Ongoing research on SWD has focused on the use of exclusion netting on both blueberries and high tunnel raspberries.

ENYCH team members have collaborated with Dr. Greg Loeb at Cornell on investigations into exclusion netting and the efficacy of attract and kill approach in the protected system.

This work was highlighted at a field meeting with attendance of more than 50 growers. In addition, the protected culture advantage that includes low tunnel strawberry production systems were discussed.

The other major challenge to growing berry crops is soil borne disease, particularly in strawberries. While working with Dr. Elson Shields on a soil insect project, the ENYCHP team surveyed 50 farms in the 17 county region to determine the profile of soil pests that exist. This information revealed that disease pathogens and nematodes are a more significant problem than thought. We will be doing additional work to help manage these issues in the years to come.

THE BUSINESS OF FARMING

AG. BUSINESS TUESDAYS

For several weeks this spring, Business Management Specialist Liz Higgins visited counties within our region to offer open business management hours to our growers. Her 2017 stops included:

Essex County CCE
Clinton County CCE
Warren County CCE
Dutchess County CCE
Schoharie County CCE

CSA Data Projecct in Eastern NY: CSA Data Project in Eastern NY: CSAs (Community Supported Agriculture) are a significant source of income for vegetable and fruit farms in Eastern New York. However, there is increasing concern by CSA farmers that they are losing customers to other local food marketing systems and that the market for CSAs is becoming saturated. There isn't a good database of CSA prices, markets and demographics in the region. In addition, most of the research on CSAs dates to the early 2000s. This makes it difficult to know whether CSA price trends and markets have changed and whether or not CSAs are actually increasing or decreasing in the region.

To help respond to these concerns and to provide price and market information to CSA farmers, CCE ENYCH Business Management Specialist Elizabeth Higgins collected preliminary data on CSA prices in 2016, modeled on a project by the University of Connecticut. In 2017 we developed a consistent data set of prices, markets, location, and demographics for CSAs in 19 counties and NYC. We are also collecting enrollment forms and member agreements for the CSA farms. We plan to collect this data annually going forward which will provide a data set and contact list of CSA farms for analysis. We will be able to use Cornell interns and interns from local universities to help collect this data and to develop research projects. This project will allow us to provide accurate and timely information to CSA farmers in the region, and will be of interest to other CSA farms in the larger region as conditions and prices seem to be similar in New York and other Northeastern states.

IN THE NEWS

ENYCHP Specialist Partners with Growers to Make a Differance!

Read the full story here:
http://cce.cornell.edu/newsarticles/20915

Like many Americans, Hudson Valley apple farmer Steve Pennings watched the devastation of hurricanes Irma, Harvey and Maria this September and wanted to do something to help.

For over a quarter century, Cornell Cooperative Extension vegetable specialist Maire Ullrich has worked with Orange County growers like Pennings on various agricultural issues. “When she heard my idea, Maire sprang into action and took it from there,” he said. “She knew just what to do.”

About a week later, the Feeding America truck departed the Hudson Valley for central Florida with 20 pallets of fresh fruits and vegetables – more than 15 tons of food. “The truck left on a Friday, and the following Monday I heard from Feeding America that the load was already distributed,” said Ullrich.

COLLABORATING PARTNERS

ENYCHP PROUDLY COLLABORATES WITH MANY OF AGRICULTURAL INDUSTIES BEST

39 GRANTS
TOTALING OVER $311,000
HELPED FUND ENYCHP RESEARCH IN 2017

Grant and Research Partners Included:

Apple Research and Development Program

NE Sustainable Agriculture Research & Education

NY and NE Integrated Pest Management

University of Vermont

New York Farm Viability Institute

US Dept of Agriculture

Michigan State University

University of Massachusetts

NYS Dept of Agriculture

Natural and Organic Farming Association

Agricultrual Marketing Service

National Institute of Food & Agriculture

NYS Dept of Environmental Conservation

New York Apple Association

Northern NY Ag Development Program

NY Center for Agricultural Medicine &

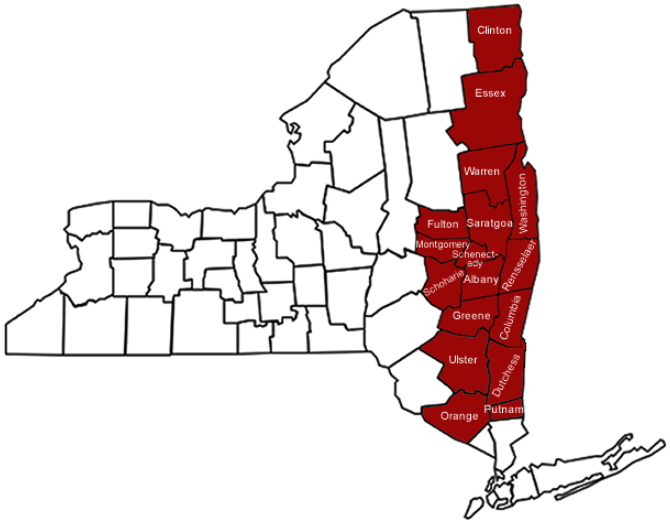
Health Agricultural Stewardship Association

Local Economies Project

Cornell Farmworker Program

Hudson Valley Farm Hub

NYS Berry Growers Association



As a regional Cornell Cooperative Extension program, ENYCHP serves 17 counties of fruit and vegetable growers, and relies on funding and collaboration with each of these county CCE offices:

Albany County

Clinton County

Columbia County

Dutchess County

Essex County

Fulton County

Greene County

Orange County

Montgomery County

Putnam County

Rensselaer County

Saratoga County

Schenectady County

Schoharie County

Ulster County

Warren County

Washington County

2017 ENYCHP STATISTICS

2,264 FARM VISITS

2,735 CLIENT E-MAILS

2,567 PHONE CONSULTS

114 NEWSLETTERS/ E-ALERTS RECEIVED BY

28,193 TOTAL PRODUCERS

169 FIELD MEETINGS/ TRAININGS & WORKSHOPS

11,229 PRODUCERS IN ATTENDENCE

161 WEBINARS WITH **2,059** PARTICIPANTS

CCE ENYCHP Sponsored Meetings and Workshops:

- Annual Hudson Valley and Capital District Commercial Vegetable Growers' Schools and Trade Show
- ENYCHP Northeastern NY and Hudson Valley Commercial Tree Fruit Schools
- Onion School
- Northeast NY & Vermont Winter Grape School
- Produce Safety Alliance Grower Training Course (multiple times and sites throughout the year)
- What is my job? Hiring, training and evaluating employees effectively (multiple sessions & locations)
- Grape Growers' Potluck (multiple locations through the season)
- Farm Business Succession Retreat: Part One and Two
- Growing Table Grapes for Profit Webinar Series
- ENYCHP Organic Grower Farmer-to-Farmer Conference
- Winter Storage of Vegetable Crops
- ENYCHP Organic Grower Farmer-to-Farmer Conference
- Effective Orchard & Vineyard Spraying (multiple locations)
- Blueberry and Bramble Pruning Demonstrations (multiple locations/dates)
- 2017 Garlic School
- Hands-on Tomato Pruning Workshop
- Tree Fruit Thinning Meetings (multiple locations)
- Ag Business Tuesdays (multiple locations/dates)
- In-season Commodity Twilight/Field Meetings
- Mechanical Cultivation Equipment Demo Day
- Cover Crop and Soil Health Field Day
- Allium Leafminer Management Meeting
- Soil Health Listening Session
- Growing Better Brassicas
- Marketing Your Farm as a Great Place to Work

Publications from the CCE Eastern NY Commercial Horticulture Program

The Produce Pages – monthly multi-commodity newsletter that is published October – May

Vegetable News – seasonal newsletter for vegetable growers that is published weekly April – October

Berry News – seasonal newsletter for small fruit growers published bi-weekly March – October

Tree Fruit News – seasonal newsletter for tree fruit growers published monthly March – October

Grape News – seasonal newsletter for grape growers and vineyards published monthly April – October

Tree Fruit E-Alerts – short notes and articles sent by tree fruit specialists as needed throughout the year