

Project: Vegetable – Integrated Crop Management

Project Leader: Katie Campbell-Nelson

Project Overview:

Vegetable farming in Massachusetts and New England has remained vital in recent decades through constant and creative change: new approaches to direct marketing, increased diversification, establishment of new farms, adaption of existing farms, and adoption of new technologies. The 18,000 acres in Massachusetts used to produce vegetables worth over \$80 million in market value, are a resource for food, open space, environmental quality, economic vitality, and quality of life in the Commonwealth. Census of Agriculture data indicate 400 more vegetable farms, and 2,000 more acres growing vegetables in 2012 compared to 2007. Vegetable farmers are key players in the state's 300 farmers markets, 150 farmstands, Community Supported Agriculture farms, as well as in the growing wholesale food distribution system within the state and the region. Producers of other commodities including dairy, livestock, ornamentals, and fruit are diversifying by growing more vegetable crops. Season extension and long-term storage have expanded to meet growing demand for local food through the winter months, bringing a need for new production and storage technologies and new markets.

Sustainable vegetable production requires new solutions to problems of cropping systems and rotations, crop nutrition, soil health, water use and conservation, energy sources and needs, and pest management. As Massachusetts undergoes cultural, economic and climactic changes, both new and established growers must learn to use practices that are economically, environmentally and socially sustainable, and to adapt cropping systems to new market opportunities in Massachusetts. The Sustainable Vegetable Management project will undertake research and extension to address key problems and opportunities facing the industry and the public.

Our team of Extension Educators includes: Katie Campbell-Nelson (nutrient management and team leader), Lisa McKeag (food safety and *New England Vegetable Management Guide* co-editor) and Susan Scheufele (plant pathology and applied researcher). Massachusetts' vegetable farmers experienced a severe drought this season, and our team of educators responded by conducting a drought survey with over 560 respondents to inform relief programs in the state. In addition, we maintained regular programming as highlighted in the narrative below.

Activity Summary – 2016

- Arthropod and Disease Management Reports (2)
- Grants awarded and submitted - \$729,009.76 (10)
- Crop and pest management trials (7)
- Educational Presentations: IPM, Vegetable Diseases, Pesticide Safety, Hot Water Seed Treatment, Nutrient Management, Biological Control of Pests and Diseases, Flood Protection (Single day workshop, presentation or event) (36)
- On farm consultations (40)
- On-farm trials for biological control of vegetable diseases and pests (2)
- Maintain Regional Scouting & Monitoring Network for vegetable diseases and pests (1)
- Vegetable Notes – Newsletter (25)
- Hot Water Seed Treatment Service (16)

Total Educational contacts

| | Youth Contacts | Adult Contacts |
|--|-------------------|-------------------|
| Direct Contacts | | 5788 |
| Indirect Contacts (Print, Web, etc...) | | 87606 |

Narrative Summary and Impact

Educational Programs: We hosted 12 educational programs and collaborated with other groups to present at an additional 23 programs in MA and regionally. We reached an audience of over 1,100 people through our programming.

Individual Consultations: We made farm visits to over 30 farms this year representing over 1,000 acres. We developed 106 integrated crop and pest management strategies with these farmers, and gave 297 recommendations to address the strategies through biweekly farm visits, scouting and technical assistance.

Research Trials:

Project Director Susan Scheufele:

- *Insectary Pilot Study for Cabbage Aphid Management in Brussels sprouts* Location: UMass Crop and Animal Research and Education Center, South Deerfield, MA.
- *Alternative Insecticides for Cabbage Aphid Management in Cabbage* Location: UMass Crop and Animal Research and Education Center, South Deerfield, MA.
- *Alternative Insecticides for Cabbage Root Maggot Management in Turnip* Location: UMass Crop and Animal Research and Education Center, South Deerfield, MA.
- *Evaluating Varieties for Cucurbit Downy Mildew Resistance and Yield* Location: UMass Crop and Animal Research and Education Center, South Deerfield, MA.
- *Economic Analysis of Integrated Management Strategies for Cucurbit Downy Mildew Management* Location: UMass Crop and Animal Research and Education Center, South Deerfield, MA.

Project Director Katie Campbell-Nelson:

- *Growing Mustard as a Biofumigant for Parasitic Nematode Management in Carrots and Strawberries*. Locations: Red Fire Farm, Montague, MA and Spring Rain Farm, Taunton, MA.
- *Nitrogen contribution from cover crops for vegetable crop uptake*. Locations: UMass Crop and Animal Research and Education Center, South Deerfield, MA, Tangerini Farm, Millis, MA, Langwater Farm, Easton, MA, Twin Oaks Farm, Hadley, MA, Lysonsville Farm, Colrain, MA, and Many Hands Farm Corps, Amherst, MA

Grants Awarded:

Principle Investigator Katie Campbell-Nelson

- Prime Sponsor: Nat'l Institute of Food and Agriculture (NIFA) (NESARE), Title: *2016 NESARE MA Professional Development Outreach Program*, Total Award: \$18,921.00, Expiration: 09/30/2017
- Prime Sponsor: Nat'l Institute of Food and Agriculture (NIFA) (NESARE), Title: *Nitrogen contribution from cover crops for vegetable crop uptake*, Total Award: \$11,069.00, Expiration: 12/31/2018

Principle Investigator Lisa McKeag

- Prime Sponsor: US Dept of Agriculture (USDA) Risk Management Agency (RMA), Title: *UMass Extension Comprehensive Crop Insurance/Risk Management Education Program*, Total Award: \$217,998.00, Expiration: 09/29/2017
- Prime Sponsor: Nat'l Institute of Food and Agriculture (NIFA), Title: *Expanding Food Safety Education in Massachusetts and Shifting from Voluntary to Regulatory Compliance*, Total Award: \$144,617.00, Expiration: 09/30/2018

Principle Investigator Susan Scheufele:

- Prime Sponsor: US Dept of Agriculture (USDA) Specialty Crops Block Grant, Title: *Increasing Sales, Fruit Quality, and Profitability of Cucurbit Production Through Integrated Disease Management*, Total Award: \$50,003.00 Expiration: 09/30/2018
- Prime Sponsor: Agricultural Research Service (USDA - ARS), Title: *Cucurbit IPM for reducing pollinator exposure to key fungicides*, Total Award: \$23,537.00 Expiration: 12/31/2019
- Prime Sponsor: Nat'l Institute of Food and Agriculture (NIFA), Title: *Conducting Farmer to Farmer Mentoring to Beginning, Immigrant, & Refugee Farmers in Crop Production & Marketing while Employing the Existing Thirty Year Old Flats Mentoring Model*, Total Award: \$53,883.00 Expiration: 8/31/2018
- Prime Sponsor: Nat'l Institute of Food and Agriculture (NIFA) (Northeast SARE), Title: *Evaluation of biological fungicides to control diseases of spinach in winter high tunnels*, Total Award: \$14,981.76 Expiration: 4/15/2017

Principle Investigator Hilary Sandler

- Prime Sponsor: Nat'l Institute of Food and Agriculture (NIFA) *Multi-level Extension Delivery to Support IPM for Massachusetts Vegetable and Fruit Growers* Total Award: \$194,000 Expiration: 8/31/2017

Collaborating Organizations:

- **New York State IPM Program**
- **New Hampshire Extension**
- **Eastern Ma. Collaborative Regional Alliance for Farmer Training CRAFT**
- **South Eastern Massachusetts Agricultural Partnerships SEMAP**
- **New England Vegetable and Berry Growers Association NEVBGA**
- **Massachusetts Department of Agricultural Resources MDAR**
- **Master Gardener Association**
- **Northeast Organic Farmers Alliance NOFA**
- **Sustainable Agriculture Research and Education SARE**
- **Farm Service Agency FSA**
- **Natural Resources Conservation Service NRCS**

