



CORNELL VEGETABLE PROGRAM HIGHLIGHTS

JULY – SEPTEMBER 2013

Evaluation of Inter-Row Cover Crops to Reduce Herbicide Use and Promote Soil Health

Three cooperating farms, in Yates, Seneca, and Dutchess Counties, assisted with trial implementation, fertilization, weed control and harvest data in the Cornell Vegetable Program’s Challenge Grant project, “*Inter-Row Cover Crops for Plasticulture Vegetables.*” The project’s goals are to research effective inter-row cover cropping techniques. Our field technicians collected data on plant height, insect/disease pressure, pepper crop petiole nutrient levels and weed biomass; on 5 treatments per farm; each replicated 4 times.

Once refined it is expected that adopting farmers will:

- Reduce herbicide use
- Reduce cultivation labor
- Increase soil organic matter
- Reduce erosion



Field meeting showing inter-row cover crops between peppers.
 Photo: J. Reid, Cornell Vegetable Program

To share the project’s progress, field meetings were held in each of the 3 cooperating counties with over 100 farmers in attendance. To build excitement for the project, regular social media updates were posted on Twitter and LinkedIn.

Need for Better Soil and Water Management Practices Made Evident by Excessive Rains

Wet conditions during the spring and early summer caused significant delays in tillage, planting and weed management on most farms, resulting in some crop loss and late replanting. Farms that had adopted CVP recommended reduced tillage and cover crops several years ago had less ponding and fields could be worked more quickly after the first heavy rains. Muck farms that had put in recommended perimeter ditches, done extensive ditch cleaning, and had sufficient pumps/gates kept upland water off longer. However, the extremes of 7” of rain in two weeks, 12” of rain in a month, especially right after planting, overwhelmed growers’ best efforts in some areas. In spite of the difficulties and losses growers know they need to continue improving their soil and water management.

Six on-farm meetings/tours were held in the CVP area covering the basics of good soil health, the adoption and fine-tuning of reduced tillage, good choices for cover crops, and the improvement of muck soil water management. The CVP collaborated with NWNY Dairy, Livestock & Field Crops Team, Wayne SWCD, and NRCS, for some of the meetings. About 65 growers and 20 graduate students attended. CVP and other staff moderated as well as presented information on the topics. Growers inspired many of these meetings and

played a very active role in the programs, describing their practices, showing their equipment and the fields, and explaining what they would change in the future. There was much grower interaction regarding reduced till equipment adjustment, weed management, and fertilizer, which should result in an improvement in the practice. At the August potato meeting the Wayne Co. SWCD manager described new opportunities for financial support for growers wanting to reduce nutrients, pesticides and sediment entering streams, using perimeter ditches, gates, etc. which will also keep upland water off muck fields, the major concern of growers.



Above right: Carol MacNeil, CVP, describes how reduced tillage and increased use of cover crops improves crop productivity and soil health at the July 11, 2013 Soil Health Field Day in Clyde. Photo: M. Stanyard, NWNY Dairy, Livestock & Field Crops Team



Above left: Bill Verbeten, NWNY Dairy, Livestock & Field Crops Team, and Jim LaGiois, NRCS, show the difference between watering bare soil and a cover crop at the Soil Health Field Day. Cover crops can increase the % water-stable soil aggregates, improving soil structure and preventing soil loss. Muddy water ran off (left) from the bare soil, while clear water percolated through the grass (right). Photo: C. MacNeil, CVP

Potato/Tomato Late Blight Challenges the Best Fungicides in this Wet Growing Season

The persistent rains early this season were perfect for the development of late blight (LB), *Phytophthora infestans*, on potato and tomato. In addition, growers couldn't apply timely fungicide sprays. The first LB in NY was reported in early July. By mid-late August there was infection in most CVP counties, all by the US-23 LB strain. Majority of home garden plants had already succumbed to the disease. In late August, LB supposedly un-responsive to two Ridomil fungicide applications (the best material available), was reported to the CVP on two Wayne Co. farms. Growers switched to fungicides in the next line of defense but yield and quality losses occurred. The CVP conducted extensive sampling from the area and sent the samples to Cornell for testing. All samples proved to be the US-23 strain, which is normally controlled by Ridomil. Tests for sensitivity to Ridomil take weeks and results are not yet available.



Poor late blight control despite applying the best fungicide.

Photo: C. MacNeil, CVP

Growers use different spray adjuvants to improve the effectiveness of the pesticides they use. CVP inquiries of the company that produces Ridomil indicated that while there are no statements on the pesticide label regarding adjuvants, if a grower wants to use an adjuvant with Ridomil they should not use a sticker. Stickers retain the pesticide on the leaf surface rather than allowing it to enter the leaf and move up and down the plant in the vascular system, the way a systemic fungicide like Ridomil needs to do. The grower with the poorest LB control with Ridomil had used a sticker. In addition, Cornell plant pathologist Bill Fry's research has shown that once LB is established in a field, even at a very low level, the best fungicide will only slow its development, not stop it. While late for this season, all this valuable information will be made available to potato and tomato growers over the winter at meetings and in *Veg Edge* newsletters to give them the best chance of controlling this potentially devastating disease in the future.

CVP Helping Farmers Win the Battle Against Perennial Sowthistle in Onions

Perennial sowthistle has become a very serious weed problem of onions grown in muck soil. It reproduces by specialized underground stems, called rhizomes. Rhizomes can grow 6 feet in a single growing season, producing a new shoot along every inch. Herbicides labeled in onions are harmless to this prolific weed, leaving hand-weeding as growers' only control option. Unfortunately, they are spending hundreds of dollars per acre hand-weeding only to have an even worse problem at the end the season. Hand-weeding stimulates the rhizomes to send up even more shoots and perennial sowthistle quickly takes over an entire field choking out the onions and interfering with harvest. In 2013, the Cornell Vegetable Program demonstrated that the key to managing perennial sowthistle will be with the use of a chemical burn-down strategy in the fall; after the onions are harvested, the weeds are left to re-grow and then are treated with an herbicide that will kill the rhizomes underground. The key will be that growers need to strategically plan for an early onion harvest to ensure adequate weed re-growth, before herbicides are applied to kill the sowthistle. Fortunately, our research demonstrated that applications made earlier to the rosette-stage of this weed were more effective than waiting until the typical bud-stage timing; thus, providing more opportunity for timely sprays in an already short window in the fall. We also investigated using a synthetic auxin herbicide to control perennial sowthistle in-season and identified several key elements such as most susceptible stage of weed, most tolerant stage of onion, best rate and time of year to apply herbicide, and most effective use of multiple applications. Onion growers are hopeful that the CVP will find the solution to this problem perennial weed in the very near future.



Perennial sowthistle (left) showing underground rhizomes from which new shoots are produced. Photo: C. Hoepting, CVP.

Elizabeth Buck, CVP Field Technician, (below) showing a perennial sowthistle plant during the Elba Muck Onion Twilight Meeting in August 2013. Photo: C. Hill, CVP



Processing Snap Bean Research Trials Established

In partnership with Seneca Foods, 16 processing snap bean fields in Western NY were treated with either the standard insecticide and fungicide program or a novel more sustainable program. The fields were scouted for incidence of white and gray mold disease prior to harvest. Yield and quality data were also collected during harvest and processing. Preliminary results show that the novel program is as effective as the standard for insect and disease control. This project is part of a multistate USDA Specialty Crops Research Initiative grant entitled *"Building Market Foundations for Sustainable Vegetable Production and Processing"*. NY growers and processors will test sustainable practices for weed, insect and disease control in commercial snap bean fields over the next 3 years. In 2012, there were 19,700 acres of snap beans planted in NY with a value of \$18.8 million. Western, NY beans are processed at Seneca Foods in Geneva, NY (Ontario Co.) or Bonduelle, Inc. in Oakfield, NY (Genesee Co.).



Julie Kikkert, CVP, scouts snap bean trial fields for white and gray mold.
Photo: Helene Dillard, Cornell

Monthly In-Field Discussion Groups Prove Valuable to New Farmers

Two monthly grower group meetings that were launched this April, continued throughout the growing season with a total of 104 participants despite busy work schedules. Comments about the usefulness of the meetings ranged from, "I am not the only one experiencing these problems", to, "I have really learned a lot from coming to these events", to "from what I learned I made some changes, saved some money, sold more vegetables, and made more money!". Three farmers who implemented practices they learned from the meetings have improved profits by at least 10%.

Many of the farmers in two of our regional areas have been farming less than 10 years and most come from outside of agriculture. One group was formed in the Allegany/Cattaraugus County area. The other crossed counties in and around the Finger Lakes including Ontario, Monroe, Wayne, and Yates. The idea was to form a group that would meet each month at different participant's farms where we would do crop walks to point out insects, diseases, weeds and other happenings in the field and for the farmers to network and share experiences with each other. The meetings were held in the late afternoon – early evening. One group decided to hold a pot-luck dinner as part of the social aspect of the gathering.



Robert Hadad, CVP, points out concerns on a pepper plant during a recent discussion group gathering.
Photo: E. Buck, CVP

Newly Funded Grants

Each year, the Cornell Vegetable Program is tasked with generating a certain percentage of our operating funds, or Program Generated Income (PGI), through research grants, sponsorships, and meeting registration revenue. This quarter, we are pleased to have received the following grant funds:

- NYSDAM Specialty Crops Block Grant Program: Increasing Profitability for the NY Onion Industry via Introduction of Novel Mild Hybrids Adapted to NYS. Mutschler, Hoepting and Ullrich. \$99,806. Oct. 1, 2013 to Sept. 30, 2014.
- Grower and Consultant Training and Support on the Late Blight Decision Support System for the Period Jan. 1, 2013 to Dec. 31, 2014, AFRI, PI – Bill Fry, Cornell. \$1,500. (MacNeil)
- Expanding the Use of Reduced Tillage Systems on NY Fresh Market Vegetable Farms. Sub-contract #68566-10152 for \$8,000 during the period of Mar. 31, 2013 to Dec. 31, 2014. NYFVI, PI – Anu Rangarajan, Cornell. (MacNeil)

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- **Together, almost 1,600 farm visits and phone/email consultations were made by our Vegetable Specialists**
 - **13 educational events were organized by the Cornell Vegetable Program during this quarter**
 - **Over 900 people attended meetings where presentations were made by our Vegetable Specialists**
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For more information about our program, contact Julie Kikkert at jrk2@cornell.edu or 585.394.3977 x404 or visit our website <http://cvp.cce.cornell.edu>

