Biopesticides are generally less toxic than conventional pesticides and target the pest with relatively small quantities with little residual.

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A survey of some CVP growers showed that a wide range of grasses, legumes, crucifers and other cover crops were planted in 2015.

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The only way to control bacterial blackleg in potato is planting blackleg-free, certified seed in a field that did not have the disease last year.

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To help you determine what product(s) might best manage the potato pests in your field, a list of 36+ products labeled in NY has been summarized into a chart.

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VEGEdge

YOUR TRUSTED SOURCE FOR RESEARCH-BASED KNOWLEDGE

Volume 12 | Issue 04 | April 1, 2016

Cornell University
Cooperative Extension
Cornell Vegetable Program

Sweet corn under plastic, March 24, 2016.
Photo: Darcy Telenko

Biopesticides. What are they? Why use them? How do they work?

Darcy Telenko, CCE Cornell Vegetable Program

What are they? Biopesticides are defined by the EPA to "... include naturally occurring substances that control pests (biochemical pesticides), microorganism that control pests (microbial pesticides), and pesticidal substances produced by plants containing added genetic material (plant-incorporated protectants) or PIPs."

- **Biochemical Pesticides:** naturally occurring substances that control pests by non-toxic mechanisms
  - Plant extracts such as Neem oil, citrus oil, seaweed/kelp extracts, giant knotweed
  - Hydrogen peroxide
  - Salts of phosphorus acid
  - Insect sex pheromones
- **Microbial Pesticides:** consist of a microorganism (bacterium, fungus, virus or protozoan) as active ingredient
  - *Bacillus spp. (Bt producing strains of B.thuringensis), Pseudomonas spp.*
  - *Streptomyces spp., Trichoderma spp.*

Tomato hornworm parasitized by Brachonid wasps.
Photo: Judson Reid, Cornell Vegetable Program

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VegEdge newsletter is exclusively for enrollees in the Cornell Vegetable Program, a Cornell Cooperative Extension regional agriculture team, serving 12 counties in Western New York.

The newsletter is a service to our enrollees and is intended for educational purposes, strengthening the relationship between our enrollees, the Cornell Vegetable Program team, and Cornell University.

We're interested in your comments. Contact us at:
CCE Cornell Vegetable Program
480 North Main Street, Canandaigua, NY 14224
Email: cce-cvp@cornell.edu

Web address: cvp.cce.cornell.edu

Editor
Carol MacNeil

Contributing Writers
Robert Hadad
Christy Hoepting
Julie Kikkert
Carol MacNeil
Judson Reid
Darcy Telenko

Publishing Specialist/Distribution/Sponsors
Angela Parr

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Help us serve you better by telling us what you think. Email us at *cce-cvp@cornell.edu* or write to us at Cornell Vegetable Program, 480 North Main Street, Canandaigua, NY 14424.

Cornell University
Cooperative Extension
Cornell Vegetable Program

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The next issue of VegEdge will be published on May 4, 2016.

Cornell Focus Group Meeting with Field Crops or Vegetable Farmers

April 21, 2016 | 11:45 AM - 1:30 PM (starting promptly with lunch at noon)
USDA Big Flats Material Science Center, 3266 State Rt 352, Big Flats, NY 14814

Are you a field crops or vegetable producer who has recently experienced the impacts of extreme weather or other changes in climate on your farm? Would you like to participate in cutting-edge social science research to better understand farmer views and actions around these issues? Please join Cornell University researchers, in partnership with Penn State and the USDA NE Climate Hub, on Thursday, April 21, 2016 for a luncheon Focus Group Meeting at the Big Flats Plant Materials Center (before the USDA NRCS 2016 Cover Crop Plot Tour) to share your thoughts and experiences with other farmers and researchers. This focus group discussion will enable farmers to learn more about how their peers are responding to climate impacts, and will help universities and the USDA develop new information and tools to support farmers to adapt and thrive in a changing climate, and become more energy efficient. **To register: http://goo.gl/forms/8jybQLLqEo**

All responses are confidential - the information you provide will not be identifiable with your name or farm. **Space is limited to 10 field crops or vegetable farmers.** We will be holding additional focus group sessions later this spring and summer with dairy and tree fruit producers and farm consultants, so please stay tuned. For further information on this project, please contact Allison Chatrchyan at 607-254-8808, or amc256@cornell.edu.

Share your thoughts! Get a FREE lunch! Enter a raffle to win a Tractor Supply gift card!

continued from cover – Biopesticides. What are they? Why use them? How do they work?

  - *Coniothyrium minitans* (Contans WG), and *bacteriophages*

- **Plant-Incorporated Protectants** (PIPs): Pesticidal substances that plant produce from genetic material that has been added to the plant.
  - BT gene from *Bacillius thuringensis*, BT Cotton/ BT Corn

Why use them? Biopesticides are generally less toxic than conventional pesticides, affect only the target pest and closely related organisms, effective in 'relatively' small quantities with little residual, and generally have a short or no REI or PHI.

How do they work?

Antibiosis –microbial pesticides, where growth of one organism is detrimental to another through the production of antibiotics and other growth inhibitors. Examples include *Bacillus* spp., *Pseudomonas* spp., *Trichoderma* spp., *Gliocladium* spp., *Streptomyces* spp.

Parasitism/Predation – the microorganisms feed on the pest or pathogen of interested. Examples include *Coniothryium minitans* (Contans WG) a parasite of *Sclerotinia spp.*, *Trichoderma* spp. parasite of numerous soilborne fungal pathogens, bacteriophages, viruses that infect and lyse bacteria, *Paecilomyces fumosoroseus* -parasitic to whiteflies, thrips, aphids and spidermites (greenhouse), and *Paecilomyces lilaciunus* - parasitic to nematodes in field crops, vegetables, fruit and turf.

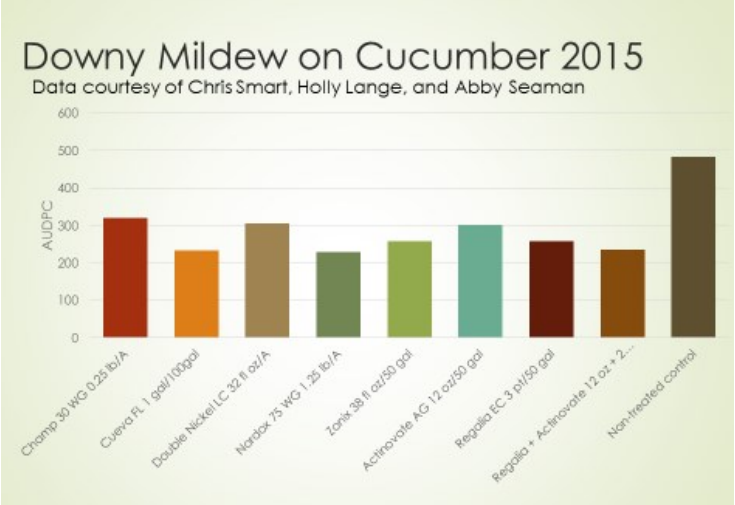
Competition with pests for nutrients, colonization sites on leaf or root tissues and possibly disguise roots from pest that rely on specific root signals to initiate germination or to guide movement/growth towards the host crop.

Contact inhibition by biochemical pesticides that inhibit germination or growth of pest, disrupt cells and can help dry out active lesions and prevent or slow secondary spread.

Induced resistance they turn on plant defenses to inhibit further infection by pathogens

Will they work? Effectiveness of the products vary and are dependent on:

- Target pathogen – may only work well against some pathogens, but not others and products are not curative!!!
- Environment - Efficacy is limited, especially under conditions that are highly conducive to sever disease
- Crop/Cultivar there is some evidence that this may have an effect on efficacy but this has not been looked at in detail.
- Timing is extremely important. In general biopesticides are not curative, they need to be put out in preventative manner that integrates with other pest control strategies (cultural and chemical)
- May not be economical; depends on the specific operation



A Few Examples: Actinovate®AG, Agree®WG, PFR-97™, Sluggo®, Double Nickel®, Zonix®, Serenade®, Regalia®, Venerate®, RootShield®, T-22 HC to name just a sampling of a few examples that are available from a continually expanding market.

A number of these products have been evaluated by Dr. Chris Smart, Ms. Holly Lang, and Abby Seaman such as the downy mildew trial on cucurbits in 2015 (see table).

Additional Cornell efficacy information can be found at the following sites:

Reports from NYS IPM trials: http://nysipm.cornell.edu/vegetables/org_prod_efficacy.asp

In the Organic Guides: http://nysipm.cornell.edu/organic_guide/

IR-4 Biopesticide Project reports: http://ir4app.rutgers.edu/biopestPub/grantFundedProj.aspx

Plant Disease Management Reports: https://www.plantmanagementnetwork.org/pub/trial/pdmr/

Arthropod Management Tests: http://amt.oxfordjournals.org

2015 Cover Crop Survey Results and Cover Crop Resources

Carol MacNeil, CCE Cornell Vegetable Program

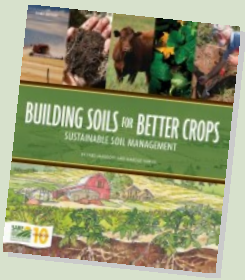
Thirteen growers in the CVP area who participated in the Cornell Soil Health Assessment project replied to a survey on cover crop use in 2015. They reported planting a total of 6,519 acres of cover crops, beginning with frost-seedings, to summer plantings, through fall plantings. One grower had no cover crops but had hay crops. Another with no cover crops includes small grains in his rotation. A wide range of grasses, legumes, crucifers and other cover crops were planted. Cereal rye and red clover, alone or in a mix, were the most common cover crops. Other grasses included: annual ryegrass, oats, sorghum sudan, triticale, wheat and winter barley. Other legumes included: Austrian winter pea, Balsana clover, crimson clover, soybeans, sunnhemp, sweet clover and vetch. Crucifers included tillage radish and mustard. Buckwheat and sunflowers were also grown.

Tillage radish, wheat and red clover are good cover crops. They are even better in combination. *Photo: C. MacNeil, CVP*

There were 733 acres of 2, 3, and even 9-way cover crop mixes planted on several farms. This is relatively new, but it has benefits. Some cover crops establish rapidly and prevent weed growth while a companion cover crop is taking time to get established (oats and a legume). Some cover crops over-winter so their nutrients aren't released until cash crops need them (rye, wheat, winter barley, many legumes). Grasses soak up nitrogen from the soil, inducing legumes planted with them to produce even more nitrogen. Legumes produce the nitrogen that crucifer cover crops need to make maximum growth. Over-wintering grasses soak up the nitrogen that crucifers release when they die in mid-winter. When cover crop mixes are used it's important to cut the seeding rate of grasses and tillage radish! *Note: Most of these growers have legume and/or crucifer cash crops, so the acreage of legume and/or crucifer cash crops is less than it might be due to disease concerns.*

The **Cornell Cover Crops for Vegetable Growers** website at: http://covercrops.cals.cornell.edu/index.php describes 19 of the most common grass, legume, crucifer and other cover crops, including recommended seeding dates and rates, varieties, maintenance and killing. There is also a *Cover Crop Decision Tool*, to help you find a cover crop to fit into the open niches in your crop rotation, and to help you solve common soil problems, such as compaction, low organic matter, or high weed pressure.

An excellent resource for growers on improving soil health is **Building Soils for Better Crops**, a book by Fred Magdoff, University of Vermont plant/soil science professor emeritus, and Harold van Es, Cornell soil science professor. Produced by the Sustainable Agriculture Research and Education (SARE) and downloadable for free, or for print copy for sale ($20.95), at: http://www.sare.org/Learning-Center/Books/Building-Soils-for-Better-Crops-3rd-Edition



Survey Responses Requested to Identify Water Use in New York

Darcy Telenko, CCE Cornell Vegetable Program and CICCA Climate Smart Farming Team

Please assist us in collecting information how you use irrigation on your farm. This information will help guide research in examining the relationship between precipitation, irrigation and crop yield. This data will further help identify ways to improve crop yields in New York when impacted by water.

Sherry Martin, a graduate student at SUNY-ESF, is conducting the study through project funded by the USDA titled "Evaluating the Influence of Climate Variability and Irrigation on Historical Crop Yield and Hydrologic Flow Regimes in Different Growing Regions in New York.

Your participation in this online survey is completely voluntary and should take approximately 10-15 minutes to answer questions. You may choose to exit the online questionnaire at any point. The responses from this survey will be used to provide insight into how farmers utilize irrigation, what crops are irrigated and the benefits and costs associated with irrigation. If you are willing to participate, please fill in the survey using the link provided to the right.

https://www.surveymonkey.com/r/KZDYHCL

We appreciate your participation.

Bacterial Blackleg – An Increasing Problem for Potato Growers

Carol MacNeil, CCE Cornell Vegetable Program

(Keith Perry, Plant Pathology, Cornell, and in charge of the Foundation seed potato program in NYS, spoke at the 2016 Empire State Producers Expo Potato Session on the increasing blackleg problem. This article is primarily taken from his presentation. To see his presentation, go to http://rvpadmin.cce.cornell.edu/uploads/doc_413.pdf)

Bacterial blackleg (BB), caused by *Pectobacterium* or *Dickeya sp.* (formerly called *Erwinia*) is not a new potato disease. It has caused occasional problems of seed decay, sprout decay, mid-season vine wilt and death, and tuber rot, for many years. A distinguishing characteristic of the disease is the inky-black color of the softening sprout or vine beginning below the soil line and spreading upward. No treatment can control the development of the disease in an infected potato plant, and there are no resistant varieties. The only control for this disease is planting blackleg-free, certified seed in a field that did not have the disease last year. *(BB was observed to cause significant vine wilt and death at flowering in a field of certified Rebas from Maine in the CVP area last year. CRM, CVP)*

According to Sandy Menasha, CCE Suffolk County, potato growers on Long Island observed increasing BB in 2014, and significant BB in 2015 causing up to 35% loss. Most of the Long Island fields affected were planted with certified Reba, Norwis or Superior seed, primarily from Maine. Maine, Wisconsin and other states' potato production fields have also been affected. In the past *Pectobacterium atroseptica* was the predominant cause of potato BB all over the world. *Dickeya dianthicola*, the cause of most of this new potato BB, has also been globally distributed for many years. *D. dianthicola* also infects many other crops, however. (This is not the new, aggressive *Dickeya solani*, limited to Europe since 2005.)

The National Potato Council held a conference call last fall with state potato specialists and seed certification personnel to discuss this national concern – the 2015 North American Outbreak of Potato Blackleg. A strategy for addressing this serious issue through seed certification is being developed. Unfortunately *D. dianthicola* can exist in potato tubers and plants without showing symptoms under cool conditions. This may have masked the presence of the disease in seed fields in 2013 and 2014 in some seed producing areas, allowing infected seed to slip through. Research is needed to determine how to more reliably detect *D. dianthicola* in potato seed lots. Revisions to seed certification protocols are expected.

Potato blackleg. *Photo: Amy Charkowski, University of Wisconsin - Madison*

What should growers do?

- Use only certified seed
- Ask your seed grower to supply the Field Inspection Report, or the North American Certified Seed Potato Health Certificate, for all seed lots (blackleg incidence is reported)
- Inspect seed carefully on delivery
- Clean seed cutting knives, handling equipment and the planter between seed lots (BB will spread within a seed lot during cutting)
- Practice crop rotation so potatoes don't follow potatoes
- Plant seed warmed to 50°F into well drained soil that's at least 50°F
- Avoid excess irrigation

If you wish to confirm the pathogen, Keith Perry has made arrangements to do testing in NY, through the Plant Diagnostic Clinic in Ithaca. If you think you may have blackleg contact Carol MacNeil at crm6@cornell.edu or 585-313-8796.

Cover Crop Survey Seeking Grower Input, and Recent Results

From the Conservation Technology Information Center, http://www.ctic.org

A survey on cover crop use is seeking input from growers around the country. The survey asks why farmers do or do not plant cover crops, what they expect to gain from the practice, and what their concerns are. Results from the survey help guide policy, research and education on cover crops. This quick survey will be at http://tinyurl.com/ccsurvey2016 until May 1, 2016. All responses are anonymous. Participants can enter a drawing for a $100 gift card. The cover crop survey is conducted by the Conservation Technology Information Center (CTIC), in conjunction with USDA's Sustainable Agriculture Research and Education (SARE) program, and the American Seed Trade Association.

Results from recent surveys, and other information are available at: http://www.conservationinformation.org/Cover%20Crops/.

Seasonal Outlook from NOAA Climate Prediction Center

Darcy Telenko, CCE Cornell Vegetable Program

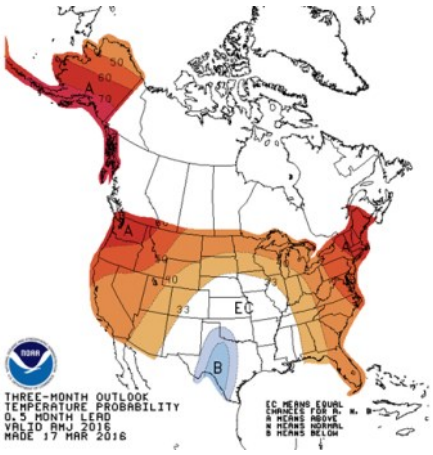
The Climate Prediction Center (CPC), under the National Oceanic and Atmospheric Administration (NOAA) gives a three-month outlook on the temperature and precipitation based on real-time data and information that predict and describe climate variations, thereby promoting effective management of climate risk. The products cover time scales from a week to seasons, and are available for use by the public or private sector where outlook forecasts are important, such as in agriculture.

To read the temperature outlook map created 3/17/16:

White – EC equal chances of above or below normal temperature for the next three months

Red regions – A greater chance of above normal temperature for the next three month.

Blue regions – B greater change of below than normal temperatures for the next three months.



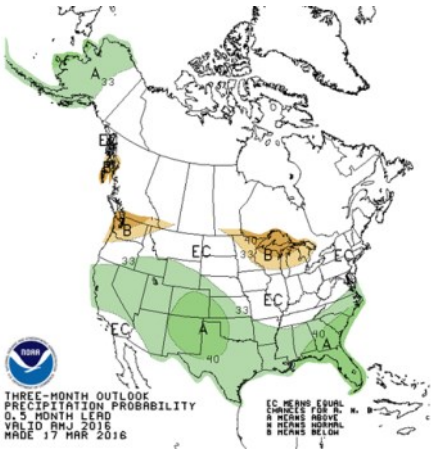
The prediction for NY shows a three-month outlook of between a 50-60% chance of greater than normal temperatures till June 17.

To read the precipitation outlook map created March 17, 2016:

White – EC equal chances of above or below normal precipitation for the next three months

Green regions – A greater chance of above normal precipitation for the next three months.

Orange regions – B greater change of below than normal precipitation for the next three months



The prediction for NY shows a three-month outlook of equal chance of above or below normal precipitation till June 17.

For more info and updated maps see: http://www.cpc.ncep.noaa.gov/products/predictions/long_range/seasonal.php?lead=1

Pesticide Options for Pests of Potato in New York

Brian Nault and Dan Olmstead, Department of Entomology, Cornell, NYSAES (prepared 3/24/16)

The many pesticide options available for managing potato pests will make your head spin! There are products that will control Colorado potato beetle, aphids, leafhoppers, flea beetles, cutworms, European corn borer, wireworms, symphylans, spider mites and slugs. Of course, there is no single product that will control all of these pests. Therefore, it is important to know what pests you anticipate needing to manage before planting as well as those that infest your fields during the season. To assist you in determining what product or products might best manage the complex of pests in your potato fields, a list of over three dozen products labeled on potato in New York have been summarized in the accompanying chart (also available on the CVP website Potato page at: http://rvpadmin.cce.cornell.edu/uploads/doc_422.pdf). If you would like an enlarged copy of the chart, please contact Angela Parr at aep63@cornell.edu or 585-394-3977 x426.

Information in this chart is organized into two major groups: pesticides registered in NYS for use at planting and those as foliar treatments. Within each of these sections, the pesticide active ingredient is listed, followed by the trade name(s), rates, Insecticide Resistance Action Committee (IRAC) mode of action group number, the type of application, whether it can be used on Long Island, if it is safe for bees, and whether it is OMRI approved. This information is followed by the pests listed on the product label. If there's a "Y" in the white boxes it signifies "YES" that the product may be applied in a certain manner in New York State, it can be used on Long Island, it is toxic to bees, it is OMRI approved, and it is labeled for a certain pest.

This chart does not provide information on which products are most effective for managing certain pests or pest complexes (or whether a product is most effective on small CPB larvae). Additionally, this chart does not provide information on which products may no longer be effective due to insecticide resistance. For example, there are neonicotinoid and pyrethroid insecticides labeled for Colorado potato beetle control, but these classes of insecticides may not work on certain farms due to insecticide resistance. There are other resources available to help you determine which insecticides should be used and the manner in which to use them to avoid insecticide resistance. Go to: http://nault.entomology.cornell.edu/extension/colorado-potato-beetle-in-potatoes/ - click on [PDF], and refer to the *2016 Cornell Integrated Crop and Pest Management Guidelines for Commercial Vegetable Production.* To order a copy, go to: http://store.cornell.edu/c-875-pmep-guidelines.aspx

continued on next page

Pesticides available in New York for managing pests of potato

Y - denotes "YES"; application use is labeled in New York State, Long Island, toxic to bees, OMRI approved and the pest is listed on the product label.

Insecticide component	Trade name	Rate	IRAC class	APPLICATION							PESTS										
											CPB										
				Seed piece	Soil	Long Island use	Bee toxiticy	OMRI approved	REI (h)	PHI (d)	larvae	adults	Aphids	Potato leafhopper	Flea beetles	Variegated cutworm	European corn borer	Wireworms	Symphalans	Spider mites	Slugs and snails
AT PLANTING																					
bifenthrin	Sniper	9.6 - 19.2 fl oz/acre	3a		Y	Y	Y		12	-								Y			
cyantraniliprole	Verimark	0.46 - 0.75 fl oz/100 lb seed	28	Y			Y		4	-		Y	Y		Y		Y				
		6.75 - 13.5 fl oz/acre	28		Y		Y		4	-		Y									
		10 - 13.5 fl oz/acre	28		Y		Y		4	-		Y			Y		Y				
		13.5 fl oz/acre	28		Y		Y		4	-		Y	Y		Y		Y				
ethoprop	Mocap EC	4.4 fl oz/1000 row ft	1b		Y		Y		48	-								Y	Y		
imidacloprid	Admiro Pro	0.17 - 0.35 fl oz/100 lb seed	4a	Y		Y	Y		12	-		Y	Y	Y	Y						
		5.7 - 8.7 fl oz/acre	4a		Y		Y		12	-		Y	Y	Y	Y						
	Advise Four	0.2 - 0.4 fl oz/acre	4a	Y		Y	Y		12	-		Y	Y	Y	Y						
		0.45 -0.65 fl oz/1000 row ft	4a		Y	Y	Y		12	-		Y	Y	Y	Y						
	Alias, Widow	0.4 - 0.8 fl oz/100 lb seed	4a	Y		Y	Y		12	-		Y	Y	Y	Y						
	Alias, Macho 2.0 FL, Widow	0.9 - 1.3 fl oz/1000 row ft	4a		Y	Y	Y		12	-		Y	Y	Y	Y						
	Topz-MZ-Gaucho	0.5 - 0.75 lb/100 lb seed	4a	Y		Y	Y		24	-		Y	Y	Y	Y						
thiamethoxam	Cruiser 5FS	0.11 - 0.16 fl oz/100 lb seed	4a	Y			Y		12	-		Y	Y	Y	Y						
	CruiserMaxx Potato	0.19 - 0.27 fl oz/100 lb seed	4a	Y			Y		12	-		Y	Y	Y	Y						
	Platinum 75SG	1.66 - 2.67 oz/acre	4a		Y		Y		12	-			Y	Y	Y						
FOLIAR																					
abamectin	Abba 0.15 EC	8.0 - 16.0 fl oz/acre	6			Y	Y		12	14	Y									Y	
	Agri-Mek SC	1.75 - 3.5 fl oz/acre	6			Y	Y		12	14	Y									Y	
acetamiprid	Assail 30 SG	1.5 - 2.5 fl oz/acre	4a			Y	Y		12	7					Y						
		1.5 - 4.0 fl oz/acre	4a			Y	Y		12	7		Y		Y							
		2.5 - 4.0 fl oz/acre	4a			Y	Y		12	7			Y				Y				
azadirachtin	Neemix 4.5	2.0 - 16.0 fl oz/acre	UN			Y	Y	Y	4	0	Y		Y	Y	Y		Y				
	Ecozin Plus 1.2 ME	15.0 - 30.0 fl oz/acre	UN			Y	Y	Y	4	0	Y		Y	Y	Y						
azadirachtin/pyrethrin	Azera	1.0 - 3.5 pt/acre	3a,UN			Y	Y	Y	12	0		Y		Y	Y						
beta-cyfluthrin or cyfluthrin	Baythroid XL	1.6 - 2.8 fl oz/acre	3a			Y	Y		12	0		Y			Y		Y				
		2.8 fl oz.acre	3a			Y	Y		12	0			Y								
	Tombstone	1.6 - 2.8 fl oz/acre	3a			Y	Y		12	0		Y			Y		Y				
		2.8 fl oz.acre	3a			Y	Y		12	0			Y								
bifenazate	Acramite 4 SC	16.0 - 24.0 fl oz/acre	UN			Y	Y		12	14										Y	
bifenthrin	Sniper	2.1 - 6.4 fl oz/acre	3a			Y	Y		12	0					Y						
carbaryl	Sevin XLR Plus	1 - 2 qt/acre	1b			Y	Y		12	7		Y		Y	Y		Y				
chlorantraniliprole	Coragen	3.5 - 5.0 fl oz/acre	28						4	14		Y					Y				
cryolite	Prokil Cryolite 96	10.0 - 12.0 lb/acre	UN			Y			12	0	Y										
cyromazine	Trigard	2.7 - 5.3 fl oz/acre	17						12	7	Y										
dimethoate	Dimethoate 400 or OLP	1.0 pt/acre	1b			Y	Y		48	0			Y	Y							
esfenvalerate	Asana XL	5.8 - 9.6 fl oz/acre	3a			Y	Y		12	7		Y	Y	Y	Y	Y	Y				
flonicamid	Beleaf 50SG	2.0 - 2.8 fl oz/acre	9c			Y			12	7			Y								
indoxacarb	Avaunt	3.5 - 6.0 fl oz/acre	22			Y	Y		12	7		Y					Y				
imidacloprid	Provado 1.6F, Nuprid 1.6F	3.75 fl oz/acre	4a			Y	Y		12	7		Y	Y	Y	Y						
	Couraze 2F	3.0 fl oz/acre	4a			Y	Y		12	7		Y	Y	Y	Y						
	Montana 2F	3.0 fl oz/acre	4a			Y	Y		12	7		Y	Y	Y	Y						
imidacloprid + cyfluthrin	Leverage 360	2.8 fl oz/acre	3a,4a			Y	Y		24	12		Y	Y	Y	Y	Y	Y				
iron phosphate	Sluggo Ag	20.0 - 44.0 lb/acre				Y		Y	-	-											Y
lambda-cyhalothrin	Warrior II w/ Zeon Tech	0.96 - 1.6 fl oz/acre	3a			Y			24	7				Y		Y					
		1.3 - 1.9 fl oz/acre	3a			Y			24	7		Y	Y		Y		Y				
metaldehyde	Deadline M-Ps	20.0 - 40.0 lb/acre				Y			-	-											Y
methomyl	Lannate LV	1.5 pt/acre	1b			Y	Y		48	6					Y	Y					
		1.5 - 3.0 pt/acre	1b			Y	Y		48	6			Y	Y							
novaluron	Rimon 0.83EC	6.0 - 12.0 fl oz/acre	15			Y			12	14	Y						Y				
permethrin	Ambush 25W	3.2 - 12.8 fl oz/acre	3a			Y	Y		12	14		Y	Y	Y	Y						
	Pounce 25 WP	6.4 - 12.8 fl oz/acre	3a			Y	Y		12	14		Y	Y	Y	Y		Y				
pymetrozine	Fulfill	2.75 - 5.5 oz/acre	9b			Y			12	14			Y								
spinetoram	Radiant SC	6.0 - 8.0 fl oz/acre	5			Y	Y		4	7		Y			Y		Y				
spinosad	Blackhawk	1.7 - 3.3 fl oz /acre	5			Y	Y		4	7		Y					Y				
	Entrust SC	3.0 - 10 fl oz/acre	5			Y	Y	Y	4	7		Y					Y				
spirotetramat	Movento	4.0 - 5.0 fl oz/acre	23			Y			24	7			Y								
thiamethoxam	Actara	1.5 - 3.0 oz/acre	4a				Y		12	14		Y		Y	Y						
		3.0 oz/acre	4a				Y		12	14			Y								
sulfur	Microthiol Disperss	5.0 lb/acre	-			Y		Y	24	0										Y	
thiamethoxam + lambda-cyhalothrin	Endigo ZC	3.5 - 4.5 fl oz/acre	3a,4a				Y		24	14		Y		Y	Y	Y					
		4.0 - 4.5 fl oz/acre	3a,4a				Y		24	14							Y				
		4.5 fl oz/acre	3a,4a				Y		24	14			Y								
zeta-cypermethrin + abamectin	Gladiator insecticide	8.0 - 19.0 fl oz/acre	3a,6				Y		12	14		Y	Y	Y	Y		Y			Y	

UPCOMING EVENTS *view all Cornell Vegetable Program upcoming events at cvp.cce.cornell.edu*

Precision Agriculture Day - 1st Annual

April 4, 2016 | 8:30 AM - 2:30 PM
Genesee Community College, The BEST Center, 1 College Rd, Batavia, NY 14020

Have you mastered Precision Agriculture technology and want to take it to the next level? Are you mystified by this advanced technology but are ready to start learning? Join an international consultant and local experts from WNY as we discuss Precision Ag technology and how it impacts you! Featuring keynote speaker Marc Vanacht, Principal, AG Business Consultants, St. Louis, MO with a session titled, "After 20 Years, is Precision Agriculture Finally Coming Together?" There will also be a special session, "Using Aerial Drones to Enhance Field Production" by Brian Pitre, CEO, SkyOp, LLC.

Cost: $65 per participant, includes lunch. For more information, including the full agenda and information on the speakers at this event, visit http://www.genesee.edu/best/development/career-and-personal-enrichment-courses/precision-agriculture-day/ or contact Reid Smalley in GCC's BEST Center at rjsmalley@genesee.edu or 585-343-0055 x6527.

Worker Protection Standard Training & DEC Special Permit Training

April 5, 2016 | 8:30 AM - 12:00 PM English session; 12:30 PM - 4:30 PM Spanish session
CCE Wayne County, 1581 St Rte 88 (intersection of Hydesville Rd), Newark, NY 14513

or

April 6, 2016 | 8:00 AM - 12:00 PM English and Spanish sessions
Orleans County Cooperative Extension Fairgrounds Bldg, 12690 Rte 31, Albion, NY 14411

Special Permit training program has been revised to address issues raised by the DEC. **Note: special permits (SP) will only be issued for 11 specific pesticide labels and SP trainees will have to pass a test.** This will relieve the certified pesticide applicator from "on-site within voice contact" supervision of non-certified pesticide applicators when they are handling federally-restricted-use pesticides for which they hold a Special Permit. **The labels that will be covered by this Special Permit include Lorsban Advanced, Endigo ZC, Warrior II with Zeon Technology, Agri-Mek SC, Voliam Xpress, Gramoxone SL 2.0, Leverage 360, Danitol 2.4EC, Mustang Maxx, Asana XL, and Lannate LV.**

Certified Supervisors are required to attend the first 30 minutes of the training. Workers in need of special permits vs general pesticide training will need to be identified. Workers requiring general pesticide training who do not need special permits will not be tested, but will still receive a course participation certificate and Agricultural Worker Protection Standard Handler card.

Pre-registration is required ASAP. To register, contact Kim Hazel at 585-798-4265 x26 or krh5@cornell.edu.

Field and Produce Pest Meeting

April 6, 2016 | 1:00 PM - 3:30 PM
Andy D. Miller farm shop, 12106 Leon New Albion Rd, Conewango Valley, NY 14726

This course will educate growers on weed, disease and pest management in field crops and vegetables. Disease resistant varieties, pests and diseases, cultural management and appropriate herbicide options will be presented by Judson Reid, Darcy Telenko, and Cordelia Hall of the Cornell Vegetable Program.

FREE! DEC recertification credits will be available. Contact Judson Reid at 585-313-8912 for more information.

Understanding and Managing Soils for Top Vegetable Production

April 15, 2016 | 1:00 PM - 3:00 PM
Roy and Sylvia Stutzman Farm, 10501 Rogers Rd, Fillmore, NY 14735

This workshop will cover the biology, physical condition, and chemistry of a healthy, productive soil. The Cornell Soil Health Test will be described, and examples of test results for area farms will be shown. Ways to improve the health and productivity of your soil will be discussed. How to sample soil for accurate nutrient analysis will be demonstrated. The Cornell pH Test Kit (do-it-yourself) will be shown, and participants will have the opportunity to test their own soils. **Be sure to bring a soil sample!** Part of this workshop will be in the field or high tunnel.

Preregister or walk-in. Preregistration is helpful for determining the number of handouts needed, as well as the number of chairs. Contact Lynn Bliven, CCE Allegany County, lao3@cornell.edu or 585-268-7644 x18.

Cover Crop Plots Tour (fall seedings)

April 21, 2016 | 1:30 PM
USDA NRCS Plant Materials Center, 3266 State Rte 352, Big Flats, NY 14814 (off I-86, x48)

There will be a brief introduction, then open discussion and a self-guided tour of the plots. Maps of the plots will be provided. The main studies include 25 cover crop species/mixes, plus seeding rate and date comparisons, 'Aroostook' and 'Hazlet' cereal rye seeded at 4 dates and 6 rates, and National Cover Crop Adaptation Trial, comparing varieties. Email with # attending to: shawnna.clark@ny.usda.gov
Questions? Or for special accommodations, contact: 607-562-8404, shawnna.clark@ny.usda.gov or paul.salon@ny.usda.gov

Grants for Dry Bean Research Awarded

Julie Kikkert, CCE Cornell Vegetable Program

The New York Dry Bean Association awarded a total of $33,857 for 6 research projects. The funds for these grants come from the Dry Bean Endowment. The following projects were awarded for 2016:

Researchers	Title	TOTAL
Ballerstein	Comparison of New and Standard Dry Bean Varieties at the NYSAES Research Farm	$4,000
Griffiths	Breeding, Evaluation and Development of Dry Bean Varieties that are Highly Adapted to NYS Growing Environments and Markets	$12,857
Hamlin	Cool School Food: Encouraging the Use of Dry Beans in School Lunches, and Promoting the Health Aspects of Dry Bean Consumption	$2,000
MacNeil	The Magnitude and Distribution of Western Bean Cutworm and the Risk to Dry Bean 2016	$3,000
Pethybridge	Towards a Durable Management Strategy for White Mold in Dry Beans in New York	$9,000
Telenko	Weed Management Research in Dry Bean	$3,000
	TOTAL AWARDS	**$33,857**

Grants for Processing Crops Research Awarded

Julie Kikkert, CCE Cornell Vegetable Program

The New York Vegetable Research Association and Council awarded a total of $132,918 for 9 research projects. The funds for these grants are contributed by the growers and processors through the processing contracts. The following projects were awarded for 2016:

Researchers	Title	TOTAL
Telenko	Weed Management Research for Sweet Corn, Peas, Snap and Lima Beans, Beets, and Carrots	$42,000
Nault	Evaluating Novel Approaches for European Corn Borer and Corn Earworm Management in Sweet Corn and Snap Bean	$10,500
Pethybridge	Efficacy of Fungicides for the Management of Foliar Diseases of Table Beets in New York	$5,000
Pethybridge	Epidemiology and Management of Diseases Affecting Lima Beans in New York	$11,000
Pethybridge	Efficacy of Fungicides for the Management of White Mold in Snap Beans in New York	$26,956
Reiners, Ballerstein	Processing Pea Variety Trials	$7,696
Reiners, Ballerstein	Processing Snap Bean Variety Trials	$14,424
Reiners, Ballerstein	Processing Sweet Corn Variety Trials	$12,842
Reiners, Ballerstein	Processing Lima Bean Trials	$2,500
	TOTAL AWARDS	**$132,918**

Cornell University
Cooperative Extension
Cornell Vegetable Program

480 North Main Street
Canandaigua, NY 14424

VEGEdge

YOUR TRUSTED SOURCE FOR RESEARCH-BASED KNOWLEDGE

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VegEdge is the award-winning newsletter produced by the Cornell Vegetable Program in Western New York. It provides readers with information on upcoming meetings, pesticide updates, pest management strategies, cultural practices, marketing ideas and research results from Cornell and Cornell Cooperative Extension. VegEdge is produced every few weeks, with frequency increasing leading up to and during the growing season.

VEGETABLE SPECIALISTS

Robert Hadad | 585-739-4065 cell | rgh26@cornell.edu
food safety & quality, organic, business & marketing, and fresh market vegetables

Christy Hoepting | 585-721-6953 cell | 585-798-4265 x38 office | cah59@cornell.edu
onions, cabbage and pesticide management

Julie Kikkert | 585-313-8160 cell | 585-394-3977 x404 office | jrk2@cornell.edu
processing crops (sweet corn, snap beans, lima beans, peas, beets, and carrots)

Carol MacNeil | 585-313-8796 cell | 585-394-3977 x406 office | crm6@cornell.edu
potatoes, dry beans, and soil health

Judson Reid | 585-313-8912 cell | 315-536-5123 office | jer11@cornell.edu
greenhouse production, small farming operations, and fresh market vegetables

Darcy Telenko | 716-697-4965 cell | 716-652-5400 x178 office | dep10@cornell.edu
soil health, weed management, plant pathology

PROGRAM ASSISTANTS

John Gibbons | 716-474-5238 cell | jpg10@cornell.edu

Cordelia Hall | ch776@cornell.edu

Nelson Hoover

ADMINISTRATION

Peter Landre | ptl2@cornell.edu

Angela Parr | 585-394-3977 x426 office | aep63@cornell.edu

Steve Reiners | sr43@cornell.edu

For more information about our program, email cce-cvp@cornell.edu or visit us at CVP.CCE.CORNELL.EDU

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