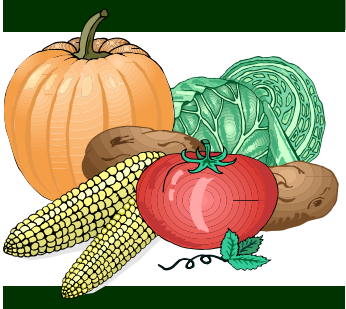

Veg Edge
Your Trusted Source for Research-Based Knowledge

Cornell University
Cooperative Extension
Regional Vegetable Programs

May 2013 **Volume 9, Issue 5**

Workplace CSA's - Get Your Veggies While You Work

Laura McDermott, Capital District Vegetable & Small Fruit Program

Getting local food to local people - convenience is key!

Despite a confirmed interest in locally grown food, consumers still purchase produce at grocery stores despite an abundance of Farmers' Markets and farm stands. Let's face it – people go to the grocery store because it's easy. So how to make purchasing locally grown produce easier? In 2012, Cornell Cooperative Extension and Adirondack Harvest worked together to attempt to answer this question. The goal of the project sponsored by The Cornell Small Farms Program, was to increase customer access through a convenient marketing plan for locally grown food.

CSA stands for Community Supported Agriculture. CSA's have existed since the 1980's and are an important market channel for many vegetable farms. CSA's are not limited to vegetables however – fruit, flowers, eggs, meat, cheese and many value added items are also part of the CSA model and many conventional farms are also making headway with consumers.

Historically, CSA's tried to include the consumer in the process and risk of farming – the pre-purchase of shares was described as more of an investment in farming than an investment in groceries. Customers were required to participate in some of the farm labor – again as a way to assist the farmer, but also to help the consumer understand what took place on a farm. A CSA consumer, or subscriber, would purchase a share that would provide a weekly mixture of produce for approximately 20 weeks. This weekly share would be picked up at the farm or another pre-determined location. Usually the subscriber would receive a mixture of produce that would be determined by the availability of the crop.

Juniper Hill Farm employee stands in Tribune Media parking lot prior to CSA share distribution.

Some CSA's still operate in this fashion, but over time the CSA model has morphed into less of a 'share the risk' model and more of a 'share the wealth' model. Farmers have worked hard to make CSA's into a convenience driven market option for consumers by offering 'free choice' shares and even customizable shares using software like Farmigo (www.farmigo.com) to help them meet the individual needs of the consumer.

The Workplace CSA project sought to inform employers that are mindful of wellness initiatives, about the feasibility of sponsoring a CSA. Ongoing health promotion efforts set the stage for increasing consumption of locally grown produce while also helping farmers develop non-traditional markets. Several informational meetings were held for farmers, businesses and consumers. Because the timing wasn't perfect – the last training was held in mid-April – we were very pleased to have one farmer able to offer CSA shares to 50 subscribers at three different businesses. Deliveries were made on the same day, and the largest employer negotiated a Farmers Market to be held in their parking lot on the same day.

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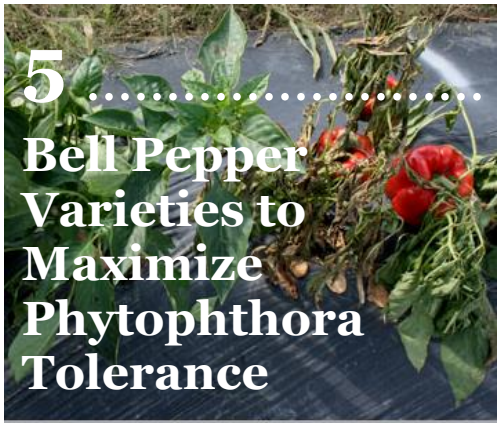

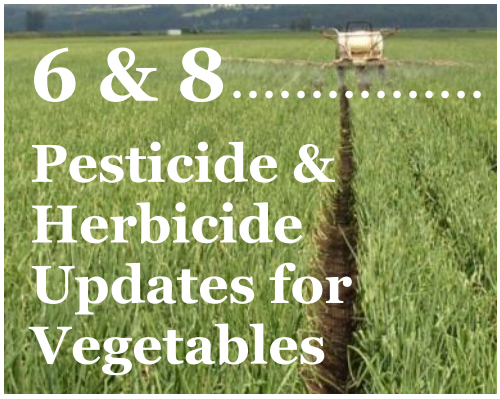

This publication contains pesticide recommendations. Changes in pesticide regulations occur constantly and human errors are possible. Some materials may no longer be available and some uses may no longer be legal. All pesticides distributed, sold or applied in NYS must be registered with the NYS Department of Environmental Conservation (DEC). Questions concerning the legality and/or registration status for pesticide usage in NYS should be directed to the appropriate Cornell Cooperative Extension (CCE) specialist or your regional DEC office.

CCE and its employees assume no liability for the effectiveness or results of any chemicals for pesticide usage. No endorsement of products or companies is made or implied. **READ THE LABEL BEFORE APPLYING ANY PESTICIDE.**

Veg Edge is a shared publication of two Cornell Cooperative Extension teams, the **Cornell Vegetable Program**, serving 11 counties in Western NY, and the **Capital District Vegetable & Small Fruit Program**, serving 11 counties in the Capital Region of NY

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"There are a lot of businesses out there, and there are a lot of farmers. It's a perfect match up," said Adam Hainer, co-owner of Juniper Hill Farm in Westport, NY who also offered a Worksite CSA in Plattsburgh in 2012. We wanted to increase the CSA component of our market, but because of our location we weren't seeing much growth," said Hainer. "We had to make it more convenient. We needed to make a decision to get more food to more people." Adam decided that for the first few years he would allow companies that had a minimum of 10 subscribers to be a drop-off location IF there were other businesses contributing to at least 50 total subscribers for a single day delivery. The other requirement is that each business had to have an on-site coordinator to act as the liaison between the farmer and the consumer or the employer. This position proved to be critical – especially during the first season. "There were some problems" said Hainer, "like what to do with a share if an employee was sick – or forgot that they were going on vacation. The coordinator really helped iron out those wrinkles."

During the fall, the subscribers were surveyed. None of the responders had ever been CSA subscribers before this project. The majority of the responses indicated that the value and the quality of the produce delivered to their worksite exceeded that of a grocery store. 100% of the respondents said that their consumption of fresh vegetables increased as a result of being a CSA member. 77.8% indicated that they would definitely join a CSA in the future. Some of the comments included, "Very convenient, drop off at work. I loved the variety and being able to choose from veggies that I wouldn't ordinarily purchase in the store" and "I was surprised at the high quality of the product and the abundance".

In 2013, Adirondack Harvest has continued to assist with promoting the Worksite CSA concept to local businesses. At an April 4th meeting in Ballston Spa, NY several more farmers were in attendance and at least one of them has a Worksite CSA in development. Cara Fraver of Quincy Farm in Easton, NY plans to offer CSA shares at a local YMCA, so that facility staff, members and general public could pick up their shares at a convenient time. Quincy Farm has also made sales pitches to other companies, but with no luck yet. "We seem to hit a block with liability and corporate rules prohibiting contracting with just one vendor" reported Fraver. "We might be able to overcome that if we had the passionate employee that could act as our coordinator and advocate".

At that same meeting Adam Hainer reported that he had finalized a contract with a firm in Plattsburgh and had sold over 100 shares through a payroll deduction format that was offered to him by the business owners. His Glens Falls locations are all participating in 2013 and subscriptions look to be up by 15%. He continues to stress the increased consumption of fresh vegetables as being the most important part of a corporate wellness plan. "If companies are offering free memberships to gyms, why not access to a Worksite CSA?" asks Hainer.

Teresa Whalen, of Adirondack Harvest, is hopeful workplace CSAs will become a popular trend. "It's all about education and awareness," Whalen said. "The employees want this, and they understand the benefits. Now we need to convince the employers."

For more information on this project, and to download free informational brochures for employer and farmer training, please visit the Cornell Small Farms website at: http://smallfarms.cornell.edu/projects/grants/. ■

MORE INFORMATION ON CSAs

Two brochures were developed for Developing a Workplace CSA

Farmer Guidelines contains information on getting started, what the business will expect from your CSA, and determining the right CSA model for your farm.

Business Managers Guide contains information on getting started, finding a farm, and things to keep in mind regarding the logistics, types of produce, shares, payment, and subscription length.

Go to:
http://smallfarms.cornell.edu/projects/grants/

Cabbage Research Grants Awarded

Julie Kikkert, CCE Cornell Vegetable Program

The Board of the New York Cabbage Research and Development Fund has awarded a total of $22,420 for 3 research projects. This is a check-off program with NYS Cabbage Growers contributing the funds. The following projects were funded for 2013:

Anthony Shelton: Research and demonstration trials for Coragen insecticide in commercial cabbage - $6,720

Christine Smart: Best strategies for control of black rot and downy mildew of cabbage - $10,200

Helene Dillard: Controlling Alternaria leaf spot and Fusarium head rot (new title) - $5,500 ■

Twitter Updates on High Tunnel, Greenhouse and Fresh Market Field Research

Are you on Twitter? For the latest updates on Cornell Vegetable Program high tunnel, greenhouse and field research follow vegetable specialist Judson Reid @Jud_Reid

@Jud_Reid

Choosing Bell Pepper Varieties to Maximize Phytophthora Tolerance and Yield

Amara Dunn, Steve Reiners and Chris Smart, Cornell

While many factors are important when selecting a bell pepper variety, tolerance to Phytophthora blight is an important consideration for many growers. Severity of Phytophthora blight can vary from year to year, largely due to weather, with warm temperatures and dry stretches interrupted by periodic heavy rain events promoting disease. In addition, some fields are more likely to experience heavy disease pressure than others, either because of poor drainage, or as a result of rotation practices and disease severity in previous years.

Since 2007, we have compared commercial bell pepper varieties for tolerance to a New York strain of *Phytophthora capsici* (the water mold that causes Phytophthora blight), and in 2011 we also looked at yield, fruit size, and silvering on eight commercially-available varieties, in the presence and absence of this disease. The most tolerant varieties ('Intruder', 'Paladin', and 'Aristotle') had the highest yields in the presence of Phytophthora blight, and yields were also competitive with less-tolerant varieties when grown in a field without Phytophthora blight. Unfortunately, fruit from these three varieties also tended to be somewhat smaller than some of the less tolerant varieties, and 'Paladin' and 'Intruder' fruit also tended to have more problems with silvering. Table 1 summarizes the levels of tolerance observed in bell pepper varieties that have been tested since 2007. Note that some varieties were planted for the first time in 2012, so we do not know if these varieties will perform consistently over multiple years and weather conditions.

Based on these results, highly tolerant varieties are a good option if bell peppers are being planted in fields with a history of severe Phytophthora blight problems. In fields where Phytophthora blight has been less severe, an intermediately tolerant variety may be sufficient, and may also provide better fruit quality. Varieties listed as "susceptible" should be avoided in fields with any history of Phytophthora blight. It should be noted that no tolerance to Phytophthora fruit rot has been reported on any of the listed varieties. An integrated management strategy that includes good rotation practices, promoting good drainage in the field, use of labeled fungicides, planting tolerant varieties, and optimizing soil fertility is the best strategy for managing Phytophthora blight while maintaining good yields. ■

Table 1. Summary of tolerance to a New York strain of Phytophthora blight in commercial bell pepper varieties from 2007 through 2012.

Most tolerant	Intermediately tolerant	Susceptible
Archimedes[1]	Declaration	Karisma
Aristotle	Revolution	Keystone Giant[1]
Intruder	Vanguard	King of the North[1]
Paladin	PS 09941819[1]	Red Knight

[1] These varieties were only tested in one year (2012).

Vydate L for Nematode Control on Bulb Onions and Garlic

Carol MacNeil, CCE Cornell Vegetable Program

The directions for using Vydate L (EPA Reg. No. 352-372) on onions at planting to control root knot, stubby root, and stem and bulb nematodes are missing from the *2013 Cornell Vegetable Guidelines*. Vydate L has been approved in NYS for this use for a number of years under a Special Local Needs 24© label. Not for use in Nassau/Suffolk Counties.

Directions for Use:

Broadcast Treatment – Apply 2 gals. of Vydate L per acre in a minimum of 20 gals. of water per acre as a broadcast treatment to the soil using ground application equipment. Apply within one week of planting. Thoroughly incorporate to a depth of 4 to 6 inches in the soil.

In-Furrow Treatment –

As an in-furrow drench, apply ¾ to 1 gal. of Vydate L per acre at planting using 100 to 150 gals of water per acre.

As an in-furrow band spray, apply 1 ½ to 2 gals. per acre using 20 – 50 gals. of water per acre. Application to soil must be incorporated by water or by mechanical means.

Note:

- Do not harvest tops of treated bulb onions.
- Do not apply within 14 days of harvest.
- Do not use on green onions.
- Do not apply more than 18 pts. (2 ¼ gals) Vydate L per acre per season.
- Do not apply this product through any irrigation system.

For a copy of the 24© label go to: http://pims.psur.cornell.edu/LabelResults.php?ProductId=34458&SearchPage=Specials.php

Click on View, in the left column, for the 4/5/2011 Acceptance Date. ■

2013 Vegetable Pesticide Updates

Christy Hoepting, CCE Cornell Vegetable Program

Changes in pesticide registrations occur constantly and human errors are possible. Read the label before applying any pesticide. No endorsement of products or companies is made or implied. Other pesticide updates that we missed are welcome. Information was last updated on April 15, 2013. Updates after this date will be posted in the Veg Edge Weekly.

Note: *W*e only included the uses that pertain to vegetables. Several labels include uses in fruit and field crops as well.

New Registrations (i.e. new EPA No.s)

BESIEGE insecticide: (EPA No. 100-1402, a.i. lambda-cyhalothrin + chlorantraniliprole, Syngenta Crop Protection). For control of insects: aphids, lepidopteron (caterpillars), beetles, leafhoppers, plant bugs, cutworms and grasshoppers in sweet corn, legume vegetables, tuberous and corm vegetables (potato, artichoke, sweet potato, etc.).

DEGREE XTRA herbicide: (EPA No. 524-511, a.i. acetochlor + atrazine, Monsanto) for broad-spectrum weed control in sweet corn.

DOUBLE NICKEL 55 biological fungicide (OMRI): (EPA no. 70051-108, a.i. *Bacillus amyloliquefaciens* strain D747, Certis). For control of selected leaf diseases such as downy mildew, powdery mildew, damping off and some bacterial diseases in Brassica vegetables (cabbage, broccoli, etc.), bulb vegetables, cucurbits, fruiting vegetables (tomato, pepper, etc.), leafy vegetables, legume vegetables, root, tuber and corm vegetables (potato, beets, carrots, etc.), sweet corn and asparagus.

GRANDEVO bioinsecticide (OMRI): (EPA No. 84059-17, a.i. *Chromobacterium subtsugae* strain PRAA4-1, Marrone Bio Innovations). For control of insect pests including lepidopteron (caterpillars), beetles, aphids and spider mites in artichoke, asparagus, Brassica leafy vegetables, bulb vegetables, sweet corn, cucurbits, fruiting vegetables, herbs and spices, leafy vegetables, leaves of root and tuber vegetables (beets and turnip greens), legume vegetables and root and tubers (potatoes, etc.).

HARNESS herbicide: (EPA No. 524-473, a.i. acetochlor, Monsanto) for control of grasses in sweet corn.

HARNESS XTRA herbicide: (EPA No. 524-480, a.i. acetochlor + atrazine, Monsanto) for broad-spectrum weed control in sweet corn.

HARNESS XTRA 5.6L herbicide: (EPA No. 524-485, a.i. acetochlor + atrazine, Monsanto) for broad-spectrum weed control in sweet corn.

KEYSTONE herbicide: (EPA No. 62719-368, a.i. acetochlor + atrazine, Dow AgroSciences) for broad-spectrum weed control in sweet corn.

STADIUM fungicide: (EPA No. 100-1453, a.i. azoxystrobin + fludioxonil + difenoconazole, Syngenta Crop Protection). A post-harvest spray for control of rots caused by silver scurf and Fusarium species on potatoes.

2 EE's (add new pest or rate to crop already existing on label)

MOVENTO insecticide: (EPA No. 264-1050, a.i. spirotetramat, Bayer Crop Science). For suppression of nematodes, two-spotted spider mites, western flower thrips, wireworms and vectored diseases in potatoes.

Label Expansions (i.e. new crops added to the label)

BELT insecticide: (EPA No. 264-1025, a.i. flubendiamide, Bayer CropScience). Added Brassica vegetables for control of Lepidoptera caterpillars.

ESTEEM 0.86 EC insect growth regulator: (EPA No. 59639-95, a.i. pyriproxyfen, Valent). Added artichoke, asparagus, dry bulb onions, leafy vegetables, legume vegetables and root and tuber vegetables (potatoes, etc.) for suppression of whitefly and onion thrips.

INSPIRE SUPER fungicide: (EPA No. 100-1317, a.i. difenoconazole + cyprodinil, Syngenta Crop Protection). Added eggplant, groundcherry, peppers to tomatoes and tomatillos in fruiting vegetable group for control of leaf diseases.

KNACK insect growth regulator: (EPA No. 59639-95, a.i. pyriproxyfen, Valent). Added artichoke, asparagus, dry bulb onions, leafy vegetables, legume vegetables and root and tuber vegetables (potatoes, etc.) for suppression of whitefly and onion thrips.

MUSTANG MAX insecticide: (EPA No. 279-3249, a.i. zeta-cypermethrin, FMC). Added root and tuber vegetables (beets, parsley, potato, etc.), cucurbit, cilantro and turnip greens for control of beetles, lepidopteron (caterpillars), whitefly, flies and weevils.

PROWL H2O herbicide: (EPA No. 241-418, a.i. pendimethalin, BASF). Added post-emergent-directed spray (with hooded sprayer) between vegetable rows for pre-emergent control of annual grasses and some broadleaf weeds in broccoli, Brussels sprouts, cabbage and cauliflower.

REFLEX herbicide: (EPA No. 100-993, a.i. sodium salt of fomesafen, Syngenta Crop Protection). Added broadcast pre-emergent application after planting but before potato emergence for pre-emergent control of annual broadleaf weeds in potatoes. *See the full label for rate on potatoes and crop rotational restrictions. The list of Weeds Controlled (pre-emergence) is for soils with 5% organic matter or less. Potato varieties may vary in their response to Reflex. (ed. C. MacNeil, CVP)*

TILT fungicide: (EPA No. 100-617, a.i. propiconazole, Syngenta Crop Protection). Added dry and succulent beans and garden beets for control of leaf diseases.

Supplemental Labels

INSPIRE SUPER fungicide: (EPA No. 100-1317, a.i. difenoconazole + cyprodinil, Syngenta Crop Protection). Reduced PHI for fruiting vegetables from 30 days to 0 days.

PROWL H2O herbicide: (EPA No. 241-418, a.i. pendimethalin, BASF). Added use for between rows in melon (cantaloupe, muskmelon, water melon) production for pre-emergent control of annual grasses and selected broadleaf weeds.

Section 18s (i.e. Emergency registrations)

MOVENTO insecticide: (EPA No. 264-1050, a.i. spirotetramat, Bayer CropScience). To control onion thrips on dry bulb onions during the 2013 growing season in New York State. Valid from March 15, 2013 to September 15, 2013.

Special Local Needs (24C)

NORTRON SC herbicide: (EPA No. 264-613, a.i. ethofumesate, Bayer CropScience). For pre-emergent control of broadleaf weeds, grasses and nutsedge in garden beets.

DUPONT UPBEET herbicide: (EPA No. 352-569, a.i. triflusulfuron methyl, DuPont Crop Protection). For post-emergent broadleaf weed control in garden beets.

Discontinued Products

BAYTHROID XL insecticide: (EPA 264-840, a.i. beta-cyfluthrin, Bayer CropScience) is **SOLD OUT for 2013**, and will be reintroduced in 2014. It is labeled for broad-spectrum insect control on Brassica vegetables, cucurbits, fruiting vegetables, leafy vegetables, dry shelled legumes, potatoes and other tuberous & corm vegetables, carrots and radish.

DI-SYSTON 8 Insecticide: (EPA No. 264-734, a.i. Disulfoton, Bayer CropScience). Registered crops (except lettuce): Distributors, retailers and growers can sell and use Di-Syston 8 on registered crops (except lettuce) until **December 31, 2013**, after which time Di-Syston 8 tolerances on registered crops (except lettuce) will be cancelled. Distributors, retailers and growers can sell and use Di-Syston 8 on lettuce until December 31, 2014, after which time Di-Syston 8 tolerances on lettuce will be cancelled. Any uses of Di-Syston 8 after the listed dates are illegal.

HEADLINE EC fungicide: (EPA No. 7969-186, a.i. pyraclostrobin, BASF) will be replaced by **Headline SC** (EPA No. 7969-289) in snap beans, dry beans, peas and tuberous & corn vegetables (potato, sweet potato), and by **Headline AMP** (EPA No. 7969-291, a.i. pyraclostrobin + metconazole) in sweet corn for control of leaf diseases.

MONITOR insecticide: (EPA No. 264-729, a.i. methamidophos, Bayer CropScience). Distributors, retailers and growers can sell and use Monitor on registered crops until **December 31, 2013**, after which time, Monitor tolerances will be cancelled. Any uses of Monitor after December 31, 2013 are illegal.

MONSANTO herbicide brands LASSO (EPA No. 524-314), **BULLET** (EPA no. 524-418), **MICROTECH** (EPA No. 524-344), **INTRO** and **LARIAT** (EPA No. 524-329), a.i. acetochlor-containing herbicides will no longer be available for sale, distribution, or use in NYS after **December 31, 2013**. Stocks need to be used up this season.

RELY 280 potato desiccant: (EPA No. 264 -829, a.i. glufonsinate-ammonium, Bayer CropScience). **Will not be produced in 2013.**

SYNAPSE WG insecticide: (EPA No. 264-1026, a.i. flubendiamide, Bayer CropScience). Will be replaced by BELT for all vegetable uses. Product may be used until it is gone.

THIONEX 3EC & 50W Insecticide (EPA No. 66222-63(EC), 66222-62(W), a.i. endosulfan, MANA Crop Protection). For broad-spectrum insect control. It is unlawful to use endosulfan on broccoli, Brussels sprouts, cabbage, carrots, cauliflowers, celery, collard greens, cucumbers, dry beans, dry peas, eggplant, kale, kohlrabi, lettuce, mustard greens, summer melons, summer squash, greenhouse tomatoes, sweet potato and turnip. **Crops/Uses with a stop use date of July 31, 2015:** peppers, potatoes, pumpkins, sweet corn, tomato, and winter squash. **Crop Uses with a stop date of July 31, 2016:** Brassica vegetable crops grown for seed. ■

How to look up labels for pesticides labeled in New York

Go to the website of the NYS Pesticide Product, Ingredient, and Manufacturer System (PIMS): http://pims.psur.cornell.edu/

To look up primary and supplemental labels that are **currently registered**, you may search by product name, active ingredient or EPA number. From the product search results, click the "NYS" label under the "label" column of the pesticide that you are interested in and on the next page, click "view" of the most recent (by date) primary or supplemental label. Often, but not always, **Section 24C Special Local Needs** and **2(ee)** labels will be available via this search.

If you want to check and see if a **pesticide has been deregistered**, when searching by product name or EPA number, under "search options", select "archive".

To look up **Section 18 Emergency** labels, from the main search menu, click on "Special registrations". From this screen, scroll down to the "NYS 2 (ee), FIFRA Section 18" section and click on "NYS Emergency Exemptions (FIFRA Section 18s). A list will come up and you can click on the label directly from this screen to view the label as a pdf.

Updated Herbicide Charts Available for Select New York Vegetables

Julie Kikkert, CCE Cornell Vegetable Program

Updated charts of the Relative Effectiveness of Herbicides for 2013 are now available for the following crops: beets, cabbage, dry and snap beans, lima beans and peas. The charts are available on both the Cornell Vegetable Program website http://cvp.cce.cornell.edu and the Capital District Program Website http://cdvsfp.cce.cornell.edu. The dry and snap bean chart was printed in the April issue of Veg Edge. Hard copies of any of the charts are available by contacting Angela Parr at 585-394-3977 x426 or aep63@cornell.edu.

The charts, which were created in cooperation with Dr. Robin Bellinder, weed scientist at Cornell, list the herbicides that are labeled for each crop and which weed species are controlled. While the charts are a handy reference, it is critical to read the product labels thoroughly.

Changes this year include:

- Prowl H_20 (pendimethalin) has been added as a post-emergence directed spray for cabbage. This is the only product labeled for post-emergence suppression of velvetleaf in cabbage. Prowl H_20 is also effective on lambsquarters, purslane, pigweed, and annual grasses.
- For crops on which Raptor herbicide is labeled (peas, beans, others) note that there is no longer a PHI for this product. However, when tank mixing with Basagran, you must follow the PHI for Basagran. Under the current label, Raptor herbicide cannot be used on lima beans in NY.
- The only change to the beet herbicide chart was the deletion of desmedi-phan because products containing this ingredient are no longer available for purchase (although you can still use them if you have them).

If you've had problem weeds slipping through your management program, you might want to try some of the newer products to improve your results. Herbicide effectiveness depends on many things. If the weed species you are trying to control has a poor or fair rating with a particular product, you should try other options. To be most effective, herbicides must be applied at the correct state of crop development and weed size. Effectiveness may also vary with method of application, rate, use of an adjuvant, and soil and climatic factors. ■

Organic Potato Seed Treatments

Carol MacNeil, CCE Cornell Vegetable Program, from Tom Zitter, Cornell

The following organic potato seed treatments are OMRI approved. Always check with your organic certifier before using a pesticide.

From Tom Zitter: "Though I haven't tested them all I suspect all these seed treatments will perform well for reducing spread of Rhizoctonia black scurf and stem canker and Fusarium dry rot. All fungicides perform the best when application methods allow for uniform coverage, and in the case of in-furrow treatments, that the application spray pattern needs to contact the seed piece as it lies in the furrow and the surrounding soil."

Bacillus amyloliquefaciens	**Double Nickel 55** Strain D747	IF*
Bacillus subtilis	**Serenade Soil**	IF
Streptomyces lydicus	***Actinovate AG***	IF
Trichoderma asperellum + T. gamsii	***Bio-Tam***	IF
Trichoderma harzianum	**T-22**	Dust or aqueous
Trichoderma harzianum + T. virens	**Root Shield Plus WP**	Dust or IF

* IF = In-furrow application

For a detailed table of organic potato seed treatments go to the following link and scroll down to the bottom: http://vegetablemdonline.ppath.cornell.edu/NewsArticles/Potato-Seed-Piece-fungicide-chemicalgroup.pdf ■

Correction: Effectiveness of Potato Fungicides Chart

Carol MacNeil, CCE Cornell Vegetable Program

There are updates to Tom Zitter's, Cornell, chart of "Effectiveness of Potato Fungicides Against Common Diseases", included in the February, 2013, *Veg Edge*. Presidio does not have a label on potatoes for 2013 because the EPA needs more data. A label is expected for 2014. In addition, BioSave is no longer on the list of OMNI approved pesticides for organic use. Contact your own organic certifier for the final word on approved pesticides. For the latest updates on vegetable diseases and fungicides go to the Cornell Veg MD Online webite at:

http://vegetableonline.ppath.cornell.edu

Click on News Articles/Disease Alerts at the top of the left menu. Updates will also be included in the *Veg Edge Weekly*. ■

Seed Piece and In-Furrow Treatments for Disease Management

Sandy Menasha, CCE Suffolk Co., Long Island Fruit & Vegetable Update, 4/4/13

Chemical treatments are not a substitute for disease free or certified seed, but it is helpful in minimizing losses. *(In addition, be sure to warm seed to 50+ degrees F before handling to avoid bruise and the development of disease. CRM, CVP)* For late blight control, seed treatments containing mancozeb like Maxim MZ are best. Ridomil products are not listed or recommended as an in-furrow or banded treatment for controlling late blight because adequate coverage is difficult since numerous eyes occur on one seed piece and contact on all areas of the tuber cannot be guaranteed. Ridomil products are labeled for protecting against storage rots like leak and pink rot when applied in-furrow but resistance is a concern. Once the potatoes emerge, several effective and systemic options are available for late blight management like Ridomil when dealing with sensitive strains like US 22 or 23. However, it's best to initiate fungicide application based on severity values where the

threshold to initiate sprays is 18, accumulated from *(the first date of potato/tomato foliage emergence from planted fields, culls, volunteers or compost piles, within 30 miles. ed. C. MacNeil, CVP)* Severity values will be reported each week in the newsletter. See the table of labeled seed piece and in-furrow treatments. Refer to the pesticide label for more specific information on application uses, rates, restrictions, etc. For a more detailed table of potato seed treatments, conventional and organic, go to: http://vegetablemdonline.ppath.cornell.edu/NewsArticles/Potato-Seed-Piece-fungicide-chemicalgroup.pdf ■

Potato Seed and In-furrow Treatments

Trade Name	Common Name	Use*	Rate	Diseases Controlled**
Curzate	cymoxanil	SP	0.25-1 oz/cwt	LB
Maxim MZ	fludioxonil + mancozeb	SP	0.5 lb/cwt	Rh, SS, BD, Fus, LB
Monocoat MZ	flutolanil + mancozeb	SP	0.75-1 lbs/cwt	Rh, Fus, LB
Potato Seed Treater	mancozeb	SP	Rates vary by product. See label.	Fus, LB
Gaucho-MZ Potato	imidacloprid + mancozeb	SP	0.75 lbs/cwt	Fus, Rh, LB, aphids, CPB
Tops-MZ-Gaucho	imidacloprid + thiophanate-methyl + mancozeb	SP	0.75 lbs/cwt	Fus, Rh, SS, LB, aphids, CPB
Tops MZ	thiophanate-methyl + mancozeb	SP	0.75-1 lb/cwt	Fus, Rh, SS, LB
Evolve	thiophanate-methyl + mancozeb + cymoxanil	SP	0.75 lbs/cwt	Fus, Rh, SS, LB
T-22 HC (OMRI)	trichoderma harzianum	SP	0.5-3 oz/cwt	Rh and stem canker
Quadris DF	azoxystrobin	IF	0.4-0.8 fl oz/1000 ft	Rh, SS, BD
Quadris Ridomil Gold	azoxystrobin + mefenoxam	IF	0.82 fl oz/1000 ft	Rh, BD, PR, Pyth
Serenade Soil (OMRI)	Bacillus subtilis	IF	2.2-13.2 fl oz/1000 ft	Rh
Headline SC	pyraclostrobin	IF	0.4-0.8 fl oz/1000 ft	Rh
Ranman 400 SC	cyazofamid	IF	0.42 fl oz/1000 ft	PR
Ridomil Gold SL	mefenoxam	IF	0.42 oz/1000 ft	PR, Pyth (resistance?)
Ultra Flourish	mefenoxam	IF	0.84 fl. oz./1000 ft	PR, Pyth (resistance?)
Phostrol, OLF	phosphorus acid	IF	3.75-10 pt in 3 gal water	PR, Pyth
Blocker	quintozene	IF	5.2-10.4 fl oz/1000 ft	Rh

*SP = Seed Piece; IF = In-furrow
** BD = Black Dot; Fus = Fusarium; LB = Late Blight; Rh = Rhizoctonia; PR = Pink Rot; Pyth = Pythium leak; SS = Silver Scurf

Grants for Processing Crops Research Awarded

Julie Kikkert, CCE Cornell Vegetable Program

The NY Vegetable Research Association and Council awarded a total of $157,103 for 11 research projects. The funds for these grants are contributed by the growers and processors through the processing contracts. The following projects were awarded for 2013:

Researchers	Title	Award
Abawi, Moktan	Fungicide resistance management program for leaf spot on beets caused by *Cercospora beticola*	$8,941
Abawi, Moktan	Field evaluations of select pea varieties for tolerance to root pathogens and greenhouse evaluations of other varieties of interest	$8,291
Bellinder	Weed management research for sweet corn, peas, snap beans, beets & carrots	$35,775
Dillard, Strauss, Kikkert	Controlling white and gray mold on snap beans; monitoring diseases of lima beans	$19,000
Griffiths	Breeding snap beans for host plant resistance	$19,900
Griffiths, Hart	Development of a snap bean diversity panel and evaluation of interaction phenotypes to prevalent aphid-transmitted viruses	$9,500
Nault, Huseth, Seaman, Groves	Developing a risk assessment model for making European corn borer control decisions and optimizing insecticide use in snap bean	$6,000
Reiners, Ballerstein	2013 Processing snap bean variety trials	$16,000
Reiners, Ballerstein	2013 NYS processing sweet corn variety trials	$13,000
Reiners, Ballerstein	2013 Processing pea variety trials	$5,500
Shelton, Olmstead	Improving management of corn earworm in sweet corn: protecting the industry from an increasing pest concern	$15,196

New Specialty Crop Resource

Sean Westerveld, Evan Elford, Melanie Filotas, and Jim Todd, Ontario Ministry of Agriculture and Food, and Ministry of Rural Affairs

(Note: Regulations and pesticide registrations differ between Canada and the US/NYS! C. MacNeil, CVP)

Growers have a new online resource to help them choose and grow a wide range of specialty crops. The resource, called "SPECIALTY CROPportunities", has been launched. SPECIALTY CROPportunities was designed to assist growers considering production of a wide range of non-traditional crops, including many specialty vegetables and culinary herbs. It has information on agronomics, marketing and pests for 100 non-traditional crops, and we plan to add more crops in the future. While this was designed for Ontario growers, much of the information should be broadly applicable to all growers in the Great Lakes region. Specialty Cropportunities can be found at: http://www.omafra.gov.on.ca/CropOp/en/index.html ■

Food Safety Modernization Act Updates & Comment Period Extension

Gretchen Wall, Produce Safety Alliance Program Coordinator, Cornell University

The FDA issued Federal Register notices extending the comment periods on the proposed rules for Current Good Manufacturing Practice and Hazard Analysis and Risk-Based Preventive Controls for Human Food and Standards for the Growing, Harvesting, Packing, and Holding of Produce for Human Consumption until **September 16, 2013**. The comment period for the Draft Qualitative Risk Assessment of Risk of Activity/Food Combinations for Activities (Outside the Farm Definition) Conducted in a Facility Co-Located on a Farm is also extended.

Produce Safety Alliance (PSA) Update - Q & A Recording Now Online

The first three question and answer teleconference recordings on the proposed rules are now on the PSA website (Soil Amendments, Understanding Exemptions, and Agricultural Water). Go to: http://producesafetyalliance.cornell.edu/news.html

Upcoming Q & A Sessions

May 6	11:00 AM	Growing, Harvesting, Packing & Holding
May 8	11:00 AM	Equipment, Tools, Buildings & Sanitation
May 10	11:00 AM	Health, Hygiene & Training of Workers
May 13	11:00 AM	Recordkeeping, Compliance & Enforcement

Call in instructions:

To participate in a teleconference, dial the toll-free number 5 min. prior to the presentation to receive instructions. No registration required. All participants will be placed on mute; however the moderator will provide instructions on how to ask questions. Questions on the Q & As? Contact Gretchen Wall at 607-255-6806 or glw53@cornell.edu

*Dial toll-free: 866-906-9888
*Enter passcode: 8140591

There are two ways to comment on the proposed rules:

1) Comment electronically at http://www.regulations.gov/#!docketDetail;D=FDA-2011-N-0921

2) Written comments may be faxed to the FDA at 301-827-6870, or you may mail them to:

Div. of Dockets Management (HFA-305)
Food and Drug Administration
5630 Fishers Lane, Room 1061
Rockville, MD 20852 ■

What Tomato Growers Need to Know About Disease Resistance

Thomas A. Zitter, and Martha A. Mutschler-Chu, Cornell

Selecting the best tomato (*Solanum lycopersicum*) cultivars (cvs.) to grow each season involves more than choosing the best color, shape and size, or even if they are determinant or indeterminant in growth habit. Purchasing cvs. with the most complete disease resistance package should now be a consideration for reducing losses to fungal and oomycete diseases, not to mention the added cost and time for any needed fungicide sprays that would normally be required. Studying most seed catalogs reveals that many cultivars offer the traditional disease identification codes, such as **VFN**, for Verticillium Wilt, Fusarium wilt and Nematode resistance.

You will also see abbreviations for the following: Alternaria stem canker (*A. alternata* f. sp. *lycopersici*) (**A** or **AS**); Stemphylium Gray (Grey) Leaf Spot (caused by three species) (**St** or **L**), with resistance more common in globe cultivars and rare in cherry and grape cultivars; Fusarium crown and root rot (*F. oxysporum* f. sp. *radicis*, a rot inducing pathogen) (**FOR**); Tobacco (**TMV**) or Tomato Mosaic Virus (**TOMV**), both mechanically transmitted; and Tomato spotted wilt virus (**TSWV**) which is vectored by thrips. For the most part these are not an issue for production in the Northeast US.

During the past few years a few new cultivars with tolerance for Early blight (*Alternaria tomatophila* or A. *solani*) (**AB** or **EB**), and resistance for Late blight (*Phytophthora infestans*) (**LB**) and Septoria leaf spot (*S. lycopersici*) (**SLS**) have been introduced to the public. These three diseases are responsible for most foliar defoliation, and two (LB and EB) result in high fruit losses. The remainder of this report will examine 1) what genetic controls are possible for control of these three diseases, 2) a summary of what to expect with each genetic offering among commercially available cultivars (Table 1), and 3) how best to use these cultivars.

Table 1. Tomato cultivars combining genetic control for 2 or more foliar diseases

Tomato cultivars by type with other Resistance[1]	Control for the big 3 defoliating diseases			What to expect	Seed available from:
Slicers –Determinate	LB	EB	SLS		-
Mountain Merit (F1) F3, N, TSWV, V	Heteroz[2] *Ph2, Ph3*	Heteroz EBT	Susceptible	Excellent control of LB; EB and SLS may require sprays	Bejo, Johnny's, Seedway
Defiant PHR (F1) F2, V	Heteroz *Ph2, Ph3*	Heteroz EBT	Susceptible	LB will be contained till end of season; EB and SLS require attention	Johnny's, Stokes
Iron Lady (F1) F2, V (Blue Ribbon)	Homoz[3] *Ph2, Ph3*	Homoz EBT	Heterozygous SLS-R	Provides the highest level of control for all 3	High Mowing
Campari - Indeterminate[4]	-	-	-	-	-
Mountain Magic (F1) F3, V (Blue Ribbon)	Heteroz *Ph2, Ph3*	Heteroz EBT	Susceptible	LB will be contained until end of season; EB and SLS require some attention	Johnny's, Totally Tomatoes, etc.
Fresh Market Plum - Determinate					
Plum Regal (F1) F2, V, TSWV	Homoz *Ph3*	Homoz EBT	Susceptible	Mild LB will occur; SLS will require attention	Johnny's, Seedway, Totally Tomatoes

[1] Resistance key: **F** = Fusarium wilt, F, F2, F3 (indicating number of races) **V** = Verticillium wilt
TSWV = Tomato spotted wilt virus **N** = Nematode
[2] Heterozygous = having only 1 copy of a gene pair with tolerance/resistance
[3] Homozygous = Having both copies of a gene pair with tolerance/resistance
[4] Large cherry clusters

FORMS OF GENETIC CONTROL CURRENTLY AVAILABLE

Early blight genetic control: The current genetic control available is tolerance! It is questionable how much protection is provided when the tolerance is only heterozygous (only 1 copy of the gene pair codes for tolerance). For example, when Mountain Merit (Table 1), which is heterozygous for EB T (tolerance), was tested in research trials it showed less infection than a fully susceptible cultivar, but will still have considerable defoliation and may require some fungicide applications. The level of tolerance is definitely beneficial in homozygous plants (both copies of the gene pair code for tolerance), but this tolerance does not provide complete control. The stems are kept clean of all but small lesions, thus preventing early plant collapse. Leaves can still sustain substantial lesion and disease development under conditions that favor this disease. Fruit lesions are rarely a problem. It is good to supplement this available tolerance with core horticultural practices (rotation out of tomato/potato crops for at least 2 seasons, no solanaceous weeds in the field during this period, an adequate nitrogen fertilization program). If minimal fungicides are required, then select those with low environmental impact quotient (EIQ) values like Quadris Top or the protectants chlorothalonil or mancozeb, and make the first application after fruit set occurs. For organic production choose from among the 6 copper fungicides registered in New York State.

Late blight genetic control: Three different genes have been described for late blight resistance in tomato.

Ph1: present in old cultivar New Yorker. *Ph1* is only known to control earlier genotypes of the late blight pathogen, but NOT to any of the current genotypes like US22 or US23. This gene is therefore not useful in modern production.

Ph2: was found in the old cultivar West Virginia 63. *Ph2* is effective against only some genotypes of the pathogen. *Ph2* slows, rather than providing complete control of the disease, and thus should be viewed as a LB inoculum provider to less tolerant cultivars being grown. *Ph2* is not very effective as a stand-alone genetic control. *Ph2* is also found as stand-alone homozygous resistance in the cultivar Legend. *Ph2* should NOT be relied upon for LB control.

Ph3: *Ph3* was found in a wild cherry tomato, and transferred into a number of tomato lines. *Ph3* is almost dominant: mild disease can still be present on hybrids heterozygous (only 1 copy of the gene pair codes for resistance) for Ph3, but hybrids homozygous (both copies of the gene pair code for resistance) for this form of resistance have virtually complete resistance against almost all genotypes including US22 and US23.

BEST CONTROL of late blight occurs when the hybrid is homozygous (both copies of the gene pair code for the trait) for BOTH *Ph2* and *Ph3*. To date, no genotype of late blight pathogen has been found to cause significant disease on such hybrids. We are still trying to determine if plants heterozygous for BOTH *Ph2* and *Ph3* have as complete protection as plants homozygous for both resistance genes, but we suspect that some late season infection of fruit can be expected.

Septoria Leaf Spot: This appears to be a nearly dominant single gene resistance. We are still trying to determine if plants homozygous (both copies of the gene pair code for resistance) for the SLS gene have stronger resistance than heterozygous plants (only 1 copy of the gene pair codes for resistance). SLS R (resistance) plants develop initial lesions that stay small, but SLS resistance strongly impedes pathogen reproduction, which suppresses epidemic development of this disease with many cycles per season. Best SLS control is obtained by minimizing initial sources of inoculum, so continue to use good core horticultural practices (see early blight) and grow resistant cultivars upwind/separate from susceptible cultivars for strongest and longest control of disease. If seasonal rains occur during June, July and August and a 3 year rotation out of tomatoes was not adhered to, then expect that one or two fungicide sprays will be required. The spread of SLS can explode dramatically, especially with splashing water, either natural or via overhead irrigation. Fungicide programs are the same as described under early blight.

CURRENT CULTIVARS

Development of resistant lines and hybrids using conventional breeding practices has been a goal of a number of breeding programs over the past decade. New hybrids have and are being released; Iron Lady has triple resistance, and is available for the 2013 season. The current cultivars combining resistance to 2 or 3 of these diseases are summarized in Table 1.

HOW BEST TO USE THE CULTIVARS CURRENTLY AVAILABLE

Disease control recommendations are dependent on the need to follow certain core horticultural practices. Crop rotation out of tomato for 2-3 seasons is one of the most important in terms of reducing soilborne inoculum for either early blight (EB) or Septoria leaf spot (SLS). This is not possible in all grower's (or homeowners) situations, thus the influence of these two diseases needs to be considered. If you compost and have included tomato debris from the previous season, you may be introducing EB and SLS in this manner, even if rotation is followed. If you interplant these cultivars (cvs.), EB-T (tolerance) (homozygous or heterozygous) or SLS-R (resistance) (either homozygous or heterozygous) with fully susceptible tomato cvs., you can expect to have some inoculum spread into these Tolerant or Resistant cvs., with the amount of defoliation experienced determined by the amount of overwinter inoculum present at the beginning of the season, and how favorable the season will be for each disease.

Commercial (conventional) agriculture: In general, growers who follow the TOM-CAST predicting system (see the NEWA website at: newa.cornell.edu/index.php?page=crop-page-tomato) will be able to increase the disease severity value index to 25 or higher DSV for their weekly calculations as to when sprays are necessary. If SLS is a threat on your farm, then closely following the spray schedule is necessary since SLS can explode during a summer with frequent showers. Still, a maximum of two sprays may be sufficient. In the case of EB, TOM-CAST can be followed using the same criterion and perhaps a single spray will be necessary. Make sure that no strobilurin fungicides are used alone because of widespread resistance for EB among all Group 11 fungicides. These fungicides can be used if mixed with another effective fungicide, (ie. Quadris Top, Quadris Opti, or other new chemistry that may be registered in the near future). In general, LB is not an issue if using the cvs. shown in Table 1 and due attention is paid.

Organic agriculture: Options are more limited since only copper (at least 6 OMRI formulations are registered in NYS) is available. Copper, when used preventatively, can be an effective control when teamed up with the resistance mentioned for either EB and SLS. We expect that under most situations the spray schedule can be reduced to a 10 day or longer interval. Again, LB should not be an issue, until late in the season, depending on the cvs. grown. ■

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Visit our website at http://cdvsfp.cce.cornell.edu

If you have questions or comments about this publication or the Capital District Program in general, please contact your county's grower advisory member or the Agricultural Program leader of your local Cornell Cooperative Extension office.

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SUCCESS FACTORS IN FARMING
giving you the long-term edge with wisdom from your fellow farmers

Records and notes lead to sustainable success.

Adam Finkelstein of VP Queen Bees in Frederick, MD, VT believes that written records are vital to the success of a farm. As a breeder of queen bees, there are many details to attend to. In the tradition of Thomas Jefferson, his notebook is full of careful notes and data about his practices. **Crop notes, harvest records, and income statements form the backbone of sustainable agriculture, and give a farmer a long-term view of their performance.** Adam knows his honeybee breeding efforts would have failed if he tried to keep it all in his head:

> "Like anything else in agriculture, the heads-up manager is going to do well. Our records are the difference between good and bad decisions. My notebook is how I define sustainability."

Adam is performing cutting-edge research on his own bee operation to bring small-farm solutions to the national Colony Collapse Disorder problem. Learn more about his approach at http://www.vpqueenbees.com.

Success Factors in Farming provides tips and advice from the vast collective knowledge found among farmers in our area. These thought-provoking commentaries have been collected by Extension agent Jim Ochterski, and are presented exclusively in the Cornell Vegetable Programs award-winning newsletter, *Veg Edge* to offer real-life insights about sustainability and long-term success in agriculture.