INSV, a virus commonly spread by thrips, has been found in tomato transplants. Scouting for thrips and prompt control is critical.

PAGE 1

Cracked tomatoes provide a site for spotted wing drosophila to lay eggs and larvae to develop. Learn more about SWD in tomatoes.

PAGE 4

Learn about tomato varieties resistant to late blight, a valuable tool for managing the disease. LB can be hard to control with fungicides after onset.

PAGE 5

Weeds in pea fields can reduce yields, interfere with harvest, or contaminate harvested peas. Be prepared to control weeds in your peas this season.

PAGE 6

VEGEdge

YOUR TRUSTED SOURCE FOR RESEARCH-BASED KNOWLEDGE

Volume 11 | Issue 4 | April 1, 2015

Photo: Judson Reid

Cornell University
Cooperative Extension
Cornell Vegetable Program

Impatiens Necrotic Spot Virus Detected in Local Tomato Transplants

Judson Reid, CCE Cornell Vegetable Program

Impatiens Necrotic Spot Virus (INSV) has been confirmed in local transplant greenhouses. This disease causes necrosis on tomatoes as well as ringspots (see photo). Infected plants are unlikely to produce marketable yield. This virus is most often spread by thrips, which were indeed confirmed present in the affected facility. As thrips are the primary vector of INSV, scouting and prompt control thereof is critical to successful prevention. As implied by name INSV is a virus common to impatiens, but also other ornamentals such as petunias and perennials. Greenhouses with overwintered plants can be reservoirs for the virus, in either lingering thrips populations or stock plants. Thus, isolation from ornamentals may be advised to reduce INSV risk.

Keep your tomato crop INSV free:

- Scout for thrips manually and with yellow sticky cards
- Control thrips once discovered with greenhouse transplant registered materials
- Remove and destroy any symptomatic plants

Ringspots on tomato transplant due to INSV.
Photo: Judson Reid, Cornell Vegetable Program

VegEdge newsletter is exclusively for enrollees in the Cornell Vegetable Program, a Cornell Cooperative Extension regional agriculture team, serving 11 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.

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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

Contents

Seeking Organic Grower to Host Variety Trial

The Cornell Vegetable Program is **looking for an experienced, transitioning or certified organic cucurbit grower** to host a variety trial for muskmelon, cucumbers, and summer squash. The trial would require space for 80-120 plants/crop x 3 crops and counting fruit for 1 harvest/week. We're looking at powdery mildew, downy mildew, bacterial wilt, and cucumber beetle tolerance in the trial. CVP staff will visit the trial weekly to collect disease and pest tolerance data. A small stipend is available to help offset expenses associated with hosting the trial. Interested parties should contact Elizabeth Buck at 607-425-3494 **by April 10**.

National Survey on Cover Crops

Sustainable Agriculture Research and Education Program (SARE)

Farmers are invited to share their thoughts on cover crops in a national survey, now in its third year of collecting data. The results will help growers, researchers, agricultural advisors, ag retailers and policy makers more effectively address questions about cover crops and learn about best practices. To take the survey, go to: http://2014-2015covercropsurvey.questionpro.com/

The survey is being conducted by the Conservation Technology Information Center (CTIC) and is sponsored by USDA's Sustainable Agriculture Research and Education (SARE) program, the American Seed Trade Association (ASTA), and Corn+Soybean Digest.

Updates on Food Safety

Robert Hadad, CCE Cornell Vegetable Program

The Food and Drug Administration (FDA) has announced that the Food Safety Modernization Act (FSMA) for produce growers will take effect by the end of October 2015. The regulations will be phased in over several years based on farm sales. One of the many big questions about the regulations centers on compliance. Who will police the farms to verify if the regulations are being followed?

Recently the FDA has announced that most of the compliance verification will be through the states using state inspectors like NY has with its Department of Agriculture and Markets.

The FDA itself will not be involved with the bulk of the on-site inspection. There may be instances where they would come to a farm. The focus right now is that the FDA is working with the states to partner with their existing inspection divisions to do the work. It is estimated that initially, about 40,000 produce farms will fall under the regulations. The FDA stated in a March 9th public hearing that the states will integrate the inspections into their already existing programs and it will be up to the states to administer the activities of the inspectors accordingly. There was no mention of frequency of inspections.

The FDA also noted that the goal during implementation of the regulations isn't going to be punitive but to answer questions about compliance and assisting farmers meet the implementation of FSMA as easily as possible.

In other food safety news, the USDA will be looking to revise the Good Agricultural Practice standards to be more in line with the new FSMA regulations. A workgroup comprised of USDA, FDA, and state inspectors will be meeting in the near future.

The goal is to update the standard GAPs guidelines to comply where necessary with the FSMA rules and to line up with the audit process. There are a few parts of the GAPs standards that will have to mesh with the new law. Two of the areas for revision would be pre-harvest surface water use and the other is manure application. FSMA will have set water testing regulations dealing with frequency and levels of pathogens. The manure standards have to do with the number of days between application of raw manure and harvest date of the produce.

In NY, the Cornell Farm Food Safety training will be combining the GAPs/HGAPs training with FSMA training. This approach will benefit both the farms that just need FSMA certification and those who are required by their buyers to develop a farm food safety plan and receive an audit with certification.

Potato Weed Control: Reflex Herbicide, and the Potential for Bindweed Control with Matrix

Robin Bellinder, Cornell, and Andrew Senesac, CCE Long Island, HREC

Reflex Herbicide – Research trials have been conducted with this herbicide at the H.C. Thompson Vegetable Research Farm in Freeville since 1993 and it has largely been shown to be safe for use in potatoes, though potato varieties may vary in sensitivity. In June 2014 Reflex was registered for use in potatoes in New York, however not on Long Island. Reflex is an herbicide that controls largely broadleaf annual weeds, particularly pigweeds, galinsoga, Eastern black nightshade and purslane. Lambsquarters, morninglories, and ragweed are suppressed, as is crabgrass. Reflex is to be applied at 1 pt/A as a broadcast preemergence application after planting but before potato emergence. It is recommended that it be applied with other registered herbicides for control of weeds not controlled, e.g. annual grasses, nutsedge, etc. While it does have some postemergence control of broadleaf weeds, if applied to emerged potatoes it will cause some crop injury and may result in decreased yields. It cannot be applied preplant-incorporated. There is a 70 day preharvest interval. Also, there is a two year crop rotation restriction in New York, so planning rotations is critical.

Bindweed Control – Hedge bindweed *Calystegia sepium* CAGSE (also called hedge false bindweed) is an occasional but difficult perennial weed infesting potato fields. This weed overwinters by underground rhizomes produced the previous year. It is a very aggressive climbing viney species that is slow to start in the spring, but that can quickly overgrow potatoes and seriously interfere with production and pest management. Because of its sporadic occurrence, it is difficult to establish replicated field trials to evaluate herbicide efficacy.

A container study was conducted on Long Island to evaluate the effect that Matrix (rimsulfuron) has on young hedge bindweed plants growing from rhizomes segments. The treatments were applied to young plants (6-12)" that had regenerated from field-dug rhizomes. The treatments consisted of Matrix applied from 1 to 4 oz. (product)/acre equivalent, with and without nonionic surfactant. 2.5% ammonium sulfate (AMS) was evaluated as an activator of Matrix at the 1 and 2 oz. rates.

Following treatment, the plots were evaluated periodically until they were harvested for fresh weight at 24 days after treatment. The results suggest that adding AMS to the surfactant increased Matrix control very significantly at 1 and 2 oz /acre. Although these were small plants at treatment time, 90% suppression should translate into a manageable level of control for this weed in most vegetable crops where Matrix is labeled. *The question remains whether the addition of the AMS would also cause unacceptable crop injury.*

Spotted Wing Drosophila – Risk to Tomatoes

Marion Zuefle, NYS IPM Program, Cornell

Spotted wing drosophila (SWD), an invasive fruit fly originally from Asia, was first detected in NY in 2011. It has become of major concern to small fruit growers. Unlike other fruit flies, it has a serrated ovipositor that allows it to penetrate intact fruit and lay eggs before the fruit has ripened. The larvae will hatch and develop with no initial external damage to the fruit. Known hosts of SWD include soft skinned fruit like raspberries, blueberries, and strawberries. Even though the wild host range of SWD includes nightshades (*Solanum* spp.), a relative of tomatoes (*Solanum lycopersicum*), the potential expansion of SWD onto other soft skinned fruit or vegetables is unknown and no research has been conducted to evaluate the threat of SWD to tomatoes.

A field experiment was conducted in 2014 using fifteen tomato varieties to determine the likelihood of SWD laying eggs in tomatoes in the field as well as in the lab. The tomatoes were selected based on the perceived firmness of their skin, under the assumption that the softer skinned tomatoes would be more likely to serve as hosts to SWD.

In addition some heirloom varieties were selected that are prone to cracking but are marketable after cracking (Prudence Purple, Brandywine, Yellow Perfection, Striped German, Yellow Pear). These were selected because the cracks would allow a place for SWD to lay their eggs regardless of skin firmness.

In the field experiment, no SWD emerged from any intact tomatoes collected from the field. Four percent of cracked tomatoes collected from the field had SWD emerge. When adult SWD were placed on intact tomatoes in the lab under a no-choice situation, no option but to lay eggs on tomatoes, 12% of the tomatoes had some SWD emerge.

Since the fruit most at risk has been shown to be softer skinned fruit, additional data was collected on the skin firmness of various tomato varieties and compared to known hosts of SWD (Figure 1). The average penetration force for all tomato varieties was 13 times greater than that of raspberries, one of the more susceptible fruits to SWD oviposition. There was a moderate correlation between skin firmness and SWD emergence; the softer the tomato the more likely that SWD would emerge.

Intact tomatoes grown in the field did not have any SWD emerge, but cracked tomatoes in the field provide for a suitable oviposition site. It is therefore recommended that cracked tomatoes that are no longer marketable be removed from the field to decrease the potential of SWD laying eggs and larvae developing. This is especially true for growers with more susceptible fruit, such as raspberries or strawberries, nearby.

This work was supported by the USDA National Institute of Food and Agriculture, Hatch project 1001709. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the National Institute of Food and Agriculture (NIFA) or the United States Department of Agriculture (USDA).

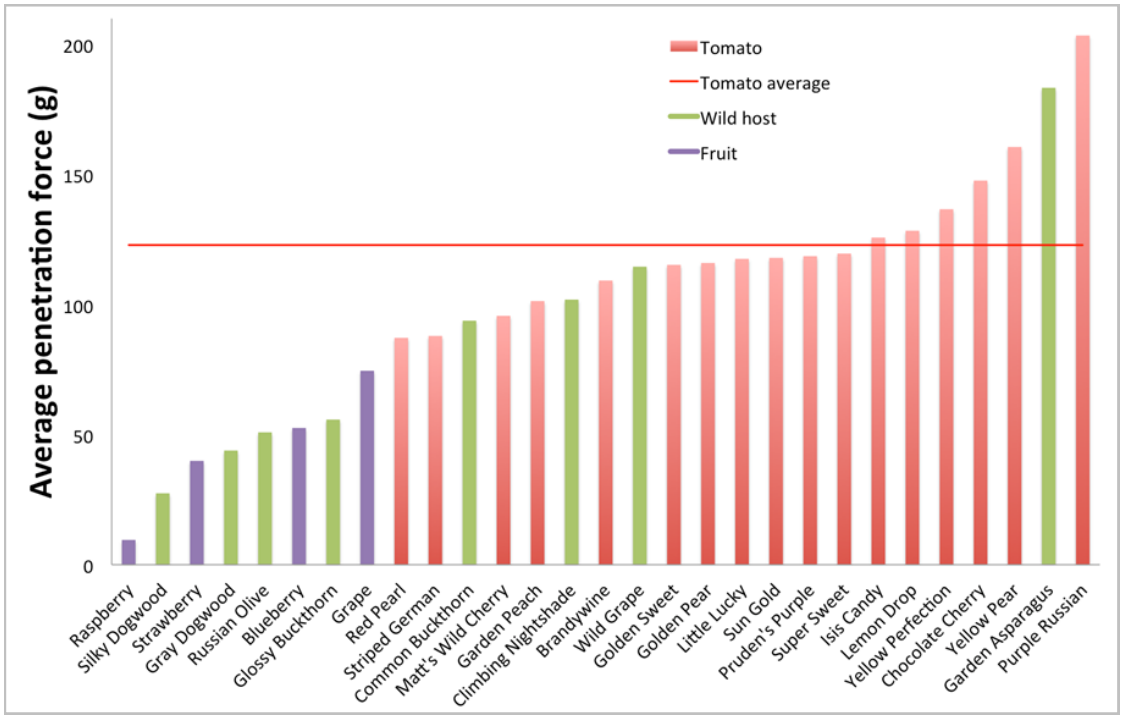
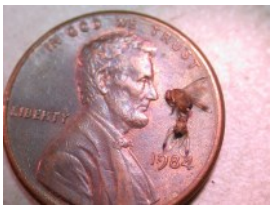


Figure 1. Average force (g) required to penetrate the skin of seventeen different tomato varieties, eight known wild hosts, and four known cultivated fruit hosts of SWD. The solid red line indicates the average penetration force of all tomatoes.

Photo: Martin Hauser, California Department of Food & Agriculture



SWD adults compared to a penny.
Photo: Phil Pellitteri, UW - Madison Insect Diagnostic Lab

Tomato Varieties Evaluated for Resistance to Late Blight

Meg McGrath, Cornell - Long Island Horticultural Research & Extension Center

Resistant varieties are a valuable tool for managing diseases, particularly late blight, because it can be very difficult to control with fungicide applications started after onset and it cannot be 'tolerated'. Left unmanaged, late blight is much more likely than other diseases to completely destroy a crop and also to have devastating impact on other tomato/potato plantings in a region due to the quantity of pathogen spores that can be produced and easily dispersed by wind.

A replicated experiment was conducted at the Long Island Horticultural Research and Extension Center (LIHREC) in 2014 to evaluate tomato varieties bred to be resistant to late blight and varieties that have been observed by others to be less affected by late blight than standard susceptible varieties. No fungicides were applied. The complete report is at: http://vegetablemdonline.ppath.cornell.edu/NewsArticles/NewsList.htm

Late blight was found in the experiment on 15 August, about two months after symptoms were first found on Long Island. US-23 was the only genotype of *P. infestans* found in the region, including at LIHREC. Late blight became moderately severe on the late blight-susceptible variety (Mountain Fresh Plus), reaching 52% leaves with symptoms and 46% canopy severity on 22 September. Subsequently many leaves died. Defoliation was 94% on 8 October.

All varieties evaluated were significantly and substantially less severely affected by late blight than Mountain Fresh Plus, including varieties tested that were not bred to be resistant. Among the varieties evaluated that were bred to be resistant, no symptoms of late blight were observed on cv. Mountain Merit (red slicer type fruit) or Mountain Magic (campari type). A few symptoms were found on Plum Regal. JTO 1175, an experimental variety from Johnny's Selected Seeds that produces plum-type fruit, exhibited the least defoliation on 29 September.

Few late blight symptoms were found on Pruden's Purple and Wapsipinicon Peach. None were found in the non-replicated plantings (single plots) of four varieties developed by plant breeder Tom Wagner: Clackamas Blueberry, Fahrenheit Blues, Blue Pitts, and Stripe of Yore. Seed of these were provided by a local grower-breeder who felt they might have resistance from her observations.

Powdery mildew and Septoria leaf spot also developed on plants in the experiment. Both were most severe on Wapsipinicon Peach and least severe on Mountain Magic.

In conclusion, from experiments conducted at LIHREC in 2012 to 2014, varieties bred to be resistant to late blight that have the *Ph2* and *Ph3* major genes for resistance exhibit excellent suppression, and there are varieties not bred to be resistant that exhibit good suppression. Varieties with both major genes are Mountain Magic, Mountain Merit, Defiant PHR, and Iron Lady. Other selected varieties that have performed well are Plum Regal (*Ph3* gene) and Jasper (cherry). Other varieties not selected for their resistance that have been significantly less severely affected by late blight than Mountain Fresh Plus are Matt's Wild Cherry, Lemon Drop, Wapsipinicon Peach, Pruden's Purple, and Mr. Stripey. Additionally, Clackamas Blueberry, Fahrenheit Blues, Blue Pitts, and Stripe of Yore performed well in an observational planting.

Additional information about resistant tomato varieties and results from previous evaluations: http://eorganic.info/node/10822 and http://vegetablemdonline.ppath.cornell.edu/NewsArticles/Tomatoes-LB-Resistant2013.html

Table 1. Severity of foliar diseases on tomato varieties and an experimental hybrid tested at LIHREC in 2014.

	Disease severity (% canopy affected)					
	Late blight		Powdery mildew		Septoria leaf spot	Defoliation (%)[z]
Entry name	17 Sep		17 Sep		29 Sep	29 Sep
Mountain Fresh Plus	33.4	a	8.4	c	2.8	46.3 ab
Pruden's Purple	1.2	b	14.6	bc	1.4	50.0 a
Wapsipinicon Peach	0.8	b	64.0	a	1.6	50.0 a
JTO 1175	1.0	b	1.7	c	0.6	5.5 b
Plum Regal	0.4	b	2.6	c	2.1	17.8 ab
Mountain Merit	0.0	b	45.5	ab	2.6	38.8 ab
Mountain Magic	0.0	b	0.2	c	0.1	15.0 ab
P-value (treatment)	*0.0001*		*0.0001*		*0.6601*	*0.0069*
Clackamas Blueberry	0.0		1.0		0.0	*20.0*
Fahrenheit Blues	0.0		30.0		0.0	*5.0*
Blue Pitts	0.0		0.3		0.0	*5.0*
Stripe of Yore	0.0		4.0		0.0	*5.0*

[z] Numbers in each column with a letter in common are not significantly different (Tukey's HSD, P=0.05).

Be Prepared for Weed Management in Your Pea Crop in 2015

Julie Kikkert, CCE Cornell Vegetable Program, and Robin Bellinder, Cornell

Weed management is an important component of pea production. Weeds in pea fields reduce yields and interfere with harvest. Buds of Canada thistle or corn chamomile ("daisy") can contaminate harvested peas because they are similar in size and color. Nightshade berries can also be a problem in late harvested peas. Injury to peas may occur if herbicide applications are not timed properly. This article is geared towards the processing pea industry in New York, but fresh market growers may also gain some useful information.

Peas do not compete well with weeds and it is wise to avoid fields with known serious weed problems. Growers should also note that peas are sensitive to residues of several herbicides. Peas are very sensitive to atrazine. Do not plant in fields where more than one pound of atrazine was applied the previous year. There is an 18 month restriction for planting into fields where mesotrione (Callisto, Instigate, Halex GT, Lexar, Lumax, Realm Q, Zemax) and clopyralid (Hornet WDG, Stinger, SureStart, TripleFlex) have been applied. Make sure to know the history of herbicide use in your field and note planting restrictions for peas.

Redroot pigweed (*Amaranthus retroflexus*), common lambsquarters (*Chenopodium album*) and common ragweed (*Ambrosia artemisiifolia*) are annual broadleaf weeds commonly found in pea fields in NY. They are particularly troublesome because they grow taller than the peas and compete for light, water and nutrients. These weeds can significantly reduce pea yields. Seeds of common lambsquarters and common ragweed tend to germinate earlier in the spring than redroot pigweed. The peak emergence of these two species generally occurs by mid-June, however, some seedlings will continue to emerge throughout the growing season. Annual grasses are also very competitive with peas. In NY we are particularly concerned with large crabgrass (*Digitaria sanguinalis*), barnyard grass (*Echinochloa crus-galli*), and foxtails (*Setaria* spp.)

Corn chamomile (*Anthesis arvensis*), also known by pea growers as daisy, is a winter or summer annual which often grows in clumps. It is of special concern to pea growers because the flower buds and seed heads can become contaminants at pea harvest. Reproduction is by seed which germinates in late summer, early autumn, or early spring. Research by Dr. Bellinder's group at Cornell has shown that the fall group cause the most problem because they bloom at the time the pea crop is in the field. Limiting the production of seed is very important to keeping this weed from spreading. None of the herbicides registered on peas will control this species. However, one option is to apply Harmony Extra (various formulations available) as a fallow application in the fall to infested fields. Read the label for specific application instructions. There is a 45 day rotation restriction before planting peas. Wheat and barley growers should note that Harmony Extra and Buctril will control corn chamomile when applied to young, actively growing seedlings in the fall.

Canada thistle (*Cirsium arvense*) is of special concern to pea growers because the flower buds can be a contaminant in the harvested crop. Canada thistle is a perennial broadleaf weed that often grows in patches. Thistrol and Basagran will inhibit bud formation, but neither will provide long-term control of Canada thistle because of its perennial root system that commonly extends to depths of 3 ft or more. The only way to really control this weed is to exhaust the storage roots. Begin first removal of shoots in late spring. Continue to remove shoots before they attain several leaves. After 2 years of shoot removal the weed will be killed.

Nightshade berries are another potential contaminant in peas. Furthermore, nightshade is attractive to Colorado potato beetles, which contaminate peas. Hairy nightshade (*Solanum sarrachoides*) and eastern black nightshade (*Solanum ptycanthum*) are the two common species in NY. They are annual broadleaf weeds. Being able to distinguish between the two species is important in their control. In the seedling stage, leaves of eastern black nightshade are purple on the underside. As its name implies, foliage of hairy nightshade contains many small "hairs", especially as the plant grows past the seedling stage. Readers are encouraged to consult weed identification references for this and other weed species. Nightshade berries may not have time to form in early planted and early maturing pea fields and thus are more of a concern in later harvested fields.

Volunteer wheat and other small grains are considered potential human allergens and are no longer tolerated in processing pea fields because of the gluten-free issue. Fields may be rejected if these species are found. Treflan pre-plant incorporated and Dual Magnum applied pre-emergence will suppress wheat. Select Max (12 fl. oz) and Assure II/Targa (8 fl. oz) provide effective control of 2 to 6 inch tall wheat. Poast (1.5 pt) will control wheat up to 4 inches tall.

The narrow row spacing in peas makes cultivation generally impractical. Rotary hoes and tine weeders are effective on germinating weeds, but may also pull stones onto the soil surface. Small stones become a contaminant problem in harvested peas, and larger stones directly interfere with harvesting equipment.

Herbicides labeled for use in peas include pre-plant incorporated, pre-emergence, and post-emergence products (see Table 1). Herbicide choice should be based on the weed species, crop growth stage, weather, and pre-harvest interval. A relative comparison of the effectiveness of products labeled in NY in 2015 is given in Table 1. Applicators should read the product labels carefully for full details.

Post-emergence herbicides need to be applied at the correct stage of pea growth to avoid crop injury. Most products refer to the number of nodes in a

Table 1.

Relative Effectiveness of Herbicides Available for Use in Peas in New York for 2015[1]

(compiled by Julie Kikkert, CCE Regional Vegetable Program and Robin Bellinder, Cornell University)

Key[2] E = Excellent G = Good F = Fair P = Poor to None	Rate/A[3]	PHI	BROADLEAF ANNUALS												ANNUAL GRASSES				PERENNIALS		
			Lambsquarters	Purslane	Common Ragweed	Pigweed	Smartweed	Galinsoga	Mustard	Eastern Black Nightshade	Hairy Nightshade	Velvetleaf	Jimsonweed	Chamomile "daisy"	Barnyardgrass	Crabgrass	Fall Panicum	Foxtail sp.	Quackgrass	Yellow Nutsedge	Canadian Thistle
Pre-Plant, PPI or PreE																					
Optill (saflufenacil + imazethapyr)	1.5 oz		G	P	P	E	P	P	E	E	E	P	P	P	P	P	P	P	P	P	P
Pre-Plant Incorporated (PPI)																					
Treflan HFP (trifluralin)	0.5-0.75 qt		F	F	P	P	P	P	P	P	P	P	P	P	E	E	G	E	P	P	P
Prowl 3.3EC (pendimethalin)	1.2-3.6 pt		G	G	P	G	F	P	F	P	P	G	P	P	E	E	E	E	P	P	P
Prowl H_20 (pendimethalin)	1.5-3.0 pt		G	G	P	G	F	P	F	P	P	G	P	P	E	E	E	E	P	P	P
Pre-Emergence (PreE)																					
Command 3ME (clomazone)	1.3 pt	45 d	F	F	F	P	F	F	P	P	P	G	P	P	G	G	G	G	P	P	P
Dual Magnum (s-metolachlor)	1.0-2.0 pt		G	G	P	E	P	E	P	G	P	P	P	P	E	E	E	E	P	E	P
Dual II Magnum (s-metolachlor)	1.0-2.0 pt		G	G	P	E	P	E	P	G	P	P	P	P	E	E	E	E	P	E	P
Reflex (fomesafen)	0.5-1.0 pt	46 d	G	G	G	E	P	G-E	E	E	F	P	P	P	P	P	P	P	P	F	P
PPI or PreE																					
Sharpen (saflufenacil)	0.75 fl oz		F	P	P	F	P	P	P	F	P	F	P	P	P	P	P	P	P	P	P
Post-Emergence																					
Basagran[4] (bentazon)	1.0-2.0 pt	10 d	G	F	G	F	G	P	G	P	G	G	G?	F	P	P	P	P	P	P	P
Thistrol 2S[5] (4-MCPB)	2.0 pt		G	P	P	G	G	P	P	P	P	P	P	P	P	P	P	P	P	P	F
Raptor[6] (imazamox)	3.0 fl oz		F	F	P	E	F	F	E	E	E	P	P	P	P	P	P	F	P	P	P
Poast (sethoxydim)	1.0-1.5 pt	15 d	P	P	P	P	P	P	P	P	P	P	P	P	G	F	G	G	F	P	P
Assure II/Targa (quizalofop P-ethyl)	0.375-0.75 pt	30 d	P	P	P	P	P	P	P	P	P	P	P	P	E	E	E	E	E	P	P
Select Max[7] (clethodim)	9.0-16.0 fl oz	21 d	P	P	P	P	P	P	P	P	P	P	P	P	E	G	E	E	G	P	P
PPI, Pre- or Post-Emergence																					
Pursuit (imazethapyr)	2.0-3.0 fl oz	30 d	G[8]	P	P	E	P	P	E	E	E	P	P	P	P	P	P	P	P	P	P

[1]For information only. Always read NYS approved product labels carefully before use.
[2]General comparison. Effectiveness may vary with method of application, rate, use of an adjuvant, size of weed, and soil and climatic factors. See label for specific information.
[3]Weed species controlled depends on rate. Lower rates than listed in this chart will result in poorer weed control.
[4]Peas must have 3 nodes with true leaves before application.
[5]Do not apply later than 3 nodes before flowering.
[6]Apply to peas at least 3 inches tall, but prior to 5 nodes before flowering. Basagran must be used with all Raptor applications.
[7]Must be applied before blossom
[8]Only the pre-plant incorporated application is effective.

pea plant. A node is a point on a stem where a leaf is or has been attached. When a pea seed germinates, the cotyledons remain below the soil surface (Figure 1). The shoot grows upward. The first two nodes have incomplete or stipular leaves. Beginning with the third node, the pea plant has a compound leaf comprised of two fleshy stipules at the base, a petiole (leaf stalk) with two or three pairs of leaflets, and usually several tendrils at the end. When counting nodes, it is very important to remember that one or several nodes may be below the soil surface depending on how deep the seed was planted. Thistrol and Raptor herbicides cannot be applied within a certain number of nodes to flowering. Early varieties can flower as soon as 9 nodes. The first node to flower for many of the processing varieties to be grown in 2015 is listed in Table 2. Contact the seed company for varieties not listed.

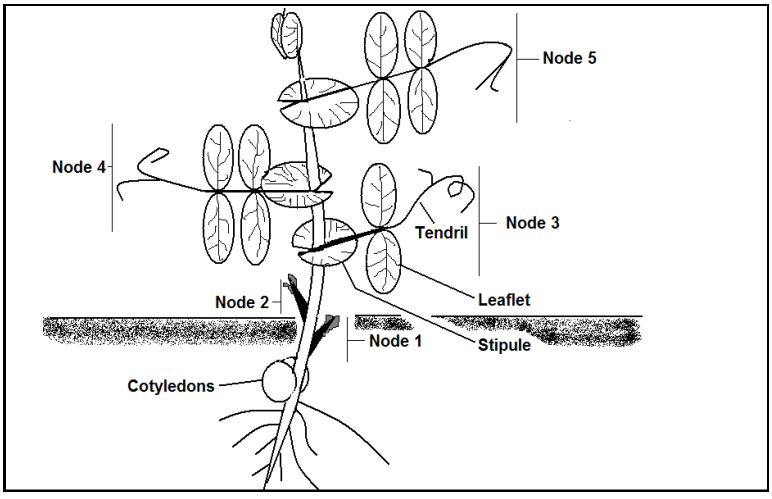


Figure 1. Morphology of a typical young pea plant. Note that nodes 1 and 2 have only small undeveloped leaves and may be above or below the soil surface depending on how deep the seed was planted. True leaves begin to develop at node 3. Afila (leafless) peas (not shown) have stipules and tendrils, but no leaflets. *Drawing by Julie Kikkert, Cornell.*

continued on page 8

continued from page 7 – Be Prepared for Weed Management in Your Pea Crop in 2015

Table 2. The average node to first flower for commonly grown processing pea varieties in New York.

Variety	Vine type	1st node to flower
Early Season		
Early Sweet 414	Normal	10
Ice Pack	Afila	9 to 10
Jumpstart	Normal	9
Salinero	Normal	9 to 10
Mid-Season		
CMG 416AF	Afila	10 to 11
Cosima	Normal	10
Gusty	Afila	10 to 13
Legacy	Normal	14
Portage	Afila	10
Tonic	Normal	10 to 11
Late-Season		
Ashton	Normal	14 to 15
Bolero	Normal	14 to 15
Boogie	Afila	14 to 15
Durango	Normal	14
FP 2278	Afila	15
Grundy	Normal	16
Ricco	Afila	16
Spartan	Afila	12 to 14

In summary, the best weed management strategy in peas begins with selection of fields without serious weed problems. Herbicides are needed in nearly all processing pea fields. Know which weed species you are trying to control and the best herbicide and management strategy for those species. Remember to time your herbicide applications properly to the growth stage of the peas and the weeds. In hot weather, peas can put on nodes rapidly so check the field again if herbicide applications must be delayed due to weather or time constraints. If you don't have weeds present, then there is no need to apply post-emergence herbicides. Lastly, there are temperature restrictions for some herbicides to obtain the best activity and least crop injury. Always read the product labels for details.

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

DEC Special Permit Training

April 8, 2015 | 8:30 AM - 12:30 PM English Session | 1:00 PM - 4:30 PM Spanish Session
CCE Wayne County, 1581 Rt 88N, Newark, NY 14513

April 9, 2015 | 8:00 AM - 12:30 PM Concurrent English and Spanish Sessions
Orleans County Cooperative Extension Fairgrounds Trolley Bldg, 12690 Rte 31, Knowlesville, NY

DEC Special Permit allows non-certified workers to apply and handle federally restricted use pesticides: The Special Permit does not relieve the responsibility of the certified applicator that supervises these employees, but it does relieve the requirement of "on-site, within voice contact" supervision while federally restricted pesticides are being applied. Several of the pyrethroid, organophosphate, and carbamate insecticides such as Warrior, Capture, Diazinon, Lorsban and Lannate, and a few herbicides such as Gramoxone and Atrazine, are federally restricted-use materials.

This permit is renewed annually through Special Permit Trainings. Trainings include Worker Protection Safety (WPS), non-target and environmental hazards, and prevention of the risk of exposure.

$20 per DEC Special Permit. Pre-register your non-certified applicators for this training **by April 3** by calling Kim Hazel at 585-798-4265 x26 or email krh5@cornell.edu. A mail-in registration form is available at http://tinyurl.com/2015SPT. We need info regarding farm name and address, name of applicators' supervisor and their DEC pesticide license number, and names of applicators/handlers so that special permit forms may be prepared in advance.

Webinars for Farmers Markets Using a Token System for SNAP

April 21, 2015 | Noon - 1:30 PM
April 29, 2015 | Noon - 1:30 PM
May 5, 2015 | Noon - 1:30 PM
May 21, 2015 | Noon - 1:30 PM

The Farmers Market Federation of NY will be holding free webinars for farmers markets who will be using a token system for SNAP (Supplemental Nutrition Assistance Program). The webinar training is mandatory for all markets using this system that have not previously participated in training. For all others, the webinar is a refresher course. To register for these webinars, click here for the registration information. For more information, contact the Farmers Market Federation of NY at 315-400-1447 or email deggert@nyfarmersmarket.com.

Marketing Your Traceability: Promoting What *Isn't* in Your Produce

Robert Hadad, CCE Cornell Vegetable Program

Around the country there is a growing demand by the food industry for farmers to have traceability protocols in place. In this way if there ever is a problem from microbial contamination the source of the produce could be easily traced back. From the food safety standpoint, farmers who have implemented farm food safety practices and have been certified, can use their certification or food safety plan as a marketing tool. Well consumers are thinking about traceability also. The local food movement has brought the farmer closer to the customer. Farm to table marketing has motivated more people to be thinking of where their food comes from.

More than that, people are wondering about how their food is grown and what is in their fruits and vegetables. Traceability interest comes from different issues. Early on, traceability schemes brought us coffee that was Fair Trade or Shade Grown. Then with food safety issues from the 2006 spinach contamination in CA, then the melon – Listeria contamination starting in 2011, traceability is touted to improve mitigating the risks of food borne diseases.

Now there is a labeling scheme to verify foods free of GMOs. This is becoming a booming business and it isn't simply for processed packaged food. Fresh fruit and vegetables can also attain a label. The Non-GMO Project Verified program has become a leader in this labeling traceability scheme. The program has over 22,000 certified products, and sales of these certified non-GMO foods has grown to be well over $7 billion just in the last 5 years. Organic food sales, which inherently are supposed to be free of GMOs have $32 billion in sales. It has taken some dozen years to achieve those high sales. The verified Non-GMO program is on track to compete with or compliment that market share.

I recently spoke with Arielle Stein, Program Assistant with the Non-GMO Project Verified program. I asked several questions about the program and what has been the interest.

I see through your web page a significant amount of your verification is with processed foods. Do you, and have you, verified any vegetable and fruit farms?

> You're right; there are more verified packaged products than fresh, but we do verify fresh produce also. You can find a listing of Non-GMO Project Verified fruits and vegetables, including fresh produce, on our product search page. Our verification program is designed to verify products themselves, not the farms or producers. However, when you search by category for fruits and vegetables, the list will include any farms who have verified produce.

Certified organic farms are explicitly not supposed to be using GMO seeds etc. though I think the average consumer may not equate the two. I am wondering if you have promoted Non-GMO verification to farms? Conventional growers would benefit from such labelling as well.

> As more GMO crops are in the works, having available this verification service will be a great marketing tool. We do field a fair number of questions from consumers looking to understand the differences between organic and Non-GMO Project Verified. While we haven't actively promoted verification to specific sectors, we certainly welcome and encourage both organic and conventional producers to verify their produce.

Approximately how much would it cost for a 10 acre vegetable farm to get your label?

> The costs to verify products (we do not verify the producer) vary based on independent certifier, complexity of the product and level of risk. Since produce is a single ingredient item, and most are low risk, the costs would be at the low end. You can see pricing models for the independent certifiers (also called Technical Administrators) in the links on our Technical Administrator information page (http://www.nongmoproject.org/product-verification/technical-administrators/).

For more information on the Non-GMO Verification Project, go to http://www.nongmoproject.org/ How have the sales been for the products labeled in a given year? Sales of Non-GMO Project Verified products are the fastest growing label claim, with $8.5 billion in sales in 2014.

New Applicant Organic Certification Application Deadline May 1st

NOFA-NY E-News, March 2015

Interested in becoming certified organic and expanding your markets? Do you already incorporate practices that are in line with organic certification? Did you know that Amy's Organics is building a production facility in the Hudson Valley and will be looking to source from New York State organic producers?

The Organic Certification Cost Share Program (OCCSP) will be available for all certified operations. The cost share program reimburses organic producers and handlers for 75% of their certification cost up to $750. Information and forms for producers certified in 2015 will be available soon.

For more information about NOFA-NY Certified Organic, LLC, or the certification process, please visit: http://www.nofany.org/organic-certification

When to Kill Cover Crops

Thomas Björkman, Cornell

One of the frightening things about using a rye cover crop is when it rains all spring, and the rye is over your cap by the time you can get to it. Tall rye is really challenging to manage, and even when you get the ground worked, it takes a long time for the soil condition to be good for planting vegetables. Fortunately, there is no need to cut it close on killing that winter cover crop. Most overwintering cover crops give you the most value if you kill them quite early. April is the best time to kill many overwintering cover crops. They can be killed with an herbicide that works at lower temperatures, and smaller plants can often be killed with shallow disking. April weather doesn't offer lots of chances to get on the ground, but it is worth taking those chances when they happen.

For getting nitrogen value out of grains like rye, the best time to kill them is when they have recently greened up and just started to grow, and are perhaps 6-8 inches tall. When rye is larger than that, the nitrogen concentration drops, leading to tie-up when your crop needs it. An early kill can give a 30 - 50 lb N credit (from those little plants!), while killing at the boot stage can cause a significant N debit. Killing at boot also means the rye is slower to break down, and the larger crowns make a seedbed more difficult to prepare. Delaying control also raises the risk of missing the chance and having it grow too big.

Rye vs wheat vs triticale - In my research program, we tested whether the crop inhibition caused by rye is reduced if one uses triticale or wheat, because they are less allelopathic. We killed all of them with herbicide at early to mid-boot, incorporated and let them break down. We transplanted tomatoes, peppers and cabbage, and direct seeded corn, beans and cucumber. All these crops showed about a 25% reduction in growth in the first month. The kind of grass cover made no difference. This shows how harmful late control of small grains can be, and that the cause is not allelopathy.

It may seem premature to kill cover crops before they put on much biomass in the spring. You do forego some addition of active carbon. However, the cost of adding the extra organic matter just before planting is too high. It is better to get the nitrogen value and the soil improvement from the extensive root growth, and to work on organic matter production at the end of the growing season.

Annual ryegrass only becomes sufficiently sensitive to glyphosate when it's warm enough for the leaves (and your lawn) to grow. Once it is sensitive, don't delay application. *(See more suggestions on killing annual ryegrass with herbicides in the April 30, 2014 VegEdge cover article.)*

Fall-sown crucifers usually die in the fall (radish, mustard) or early spring (turnip). The latter is better for recovering N to use in the next crop. In either case, there is little regrowth in the spring. The reason to think about controlling crucifers early in the spring is to avoid volunteers from stray survivors going to seed. If you see yellow (or pink radish) flowers in the field, it's a signal to get your attention.

Despite the disadvantages of killing rye at larger stage there is one practice where it is good. If the rye (usually a rye-vetch mix) is to be killed by mowing or rolling, the stems become lignified enough at the boot stage that rolling breaks them. The vetch is also at its maximum nitrogen content in late May, creating a favorable C:N ratio. I consider that a special case where the late kill is appropriate.

(For more info on cover crops go to: http://covercrops.cals.cornell.edu/ or go to: http://extension.psu.edu/plants/sustainable/courses/cover-crop-innovations-webinar-series/webinars Keep in mind that PA recommendations reflect a longer growing season than in NYS. ed. CRM, CVP)

VEGETABLE RESEARCH TECHNICIAN POSITION in WNY

The Cornell Vegetable Program anticipates hiring an individual to assist in research trial implementation, data collection and harvest from May through November, with the possibility of extension. Work in field and greenhouses throughout Western New York. Minimum 6 months training beyond HS diploma or Associate's degree.

More information and application instructions will be posted on our website soon at http://cvp.cce.cornell.edu. Applicants will be required to apply online but the posting is not currently available. To receive our job posting notification, email us at cce-cvp@cornell.edu.

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What Price Should You Charge? More Information on Pricing Your Produce

Robert Hadad, CCE Cornell Cooperative Extension

I get more calls about what prices growers should charge for vegetables than probably anything else in the early summer. The best answer to this question is that farmers should know their cost of production for each of their crops. Knowing the cost will give the truest assessment of what an individual operation needs to charge for the greatest return on investment.

It isn't always reliable to go by what the supermarket charges. They could be running a special or importing cheaper grown produce from south of the border. Their mark-up could be very low. If you are selling at a farmers market, basing your price on what the other growers at the market are charging may not be such a good idea either. You don't know what their cost of production is and you have no way of knowing if they know either. They could be losing money.

Still, vegetable growers want to have an idea of what the general price of a given crop is. For years, about the only place to get information on pricing was the listing of daily wholesale prices from the major terminal markets such as in NYC, Chicago, and Boston. The prices are posted on the USDA website from the previous day's sales. Along with the prices, other information is provided such as size of containers, high and low prices, and area where the crop was grown. The website is http://www.ams.usda.gov/mnreports/nx_fv020.txt .

Now there is more information collected by USDA on prices at several levels. From selected areas around the country, you now can find retail pricing from farmers markets and retail establishments. At the wholesale level, prices can be found from selected produce auctions, farm to school programs, and food hubs.

This new website is located through the USDA-AMS website. The address is http://www.ams.usda.gov/AMSv1.0/MarketNewsLocalRegional and the page is titled, "Market News: Local & Regional Food Marketing Information". As the season gets underway, a wider assortment of locations of farmers markets, auctions, etc. will be available to check out. Presently only a handful of links are posted with most of the farmers markets and auctions closed for the winter. Hopefully this will be a resource that will be useful.

Cornell Cover Crops Survey

Matt Ryan and Sandra Wayman, Cornell

We have created an online survey to learn about cover cropping practices and preferences of farmers. The survey is multiple-choice and should take between 5 - 10 minutes to complete. This is an excellent opportunity to hear directly from farmers about their needs for improving cover crop use and management. If you are a farmer, we invite you to take our survey at: https://cornell.qualtrics.com/SE/?SID=SV_6qWpsn7f9BZsyjj

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VEGEdge

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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.

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