Maggots continue to cause damage to area vegetable crops. Seedcorn maggot affects numerous crops. Find out if your crops are at risk.

PAGE 1

Yellow nutsedge is the Weed of the Week. Learn more about how this weed spreads and how to control it.

PAGE 3

Herbicide applications are common now on conventional farms. Drift of herbicides off-target can cause serious injury to your vegetable crops.

PAGE 5

Wondering what sweet corn varieties work well for mechanical harvest? See a list of recommendations.

PAGE 9

VEGEdge

YOUR TRUSTED SOURCE FOR RESEARCH-BASED KNOWLEDGE

Volume 10 | Issue 9 | June 11, 2014

Photo: Julie Kikkert, CVP

Cornell University
Cooperative Extension
Cornell Vegetable Program

Maggot Feeding is Evident Now

Julie Kikkert, CCE Cornell Vegetable Program

Calls continue to come in about maggot damage in vegetable crops. One or more of three different insect species may be involved. *Delia platura*, referred to as seedcorn maggot affects numerous crops (sidebar). Cabbage maggot (*D. radicum*), which affects cole crops was covered in the June 4 issue of VegEdge and onion maggot (*D. antiqua*) is regularly discussed in the onion sections of VegEdge. This article will focus on seedcorn maggot, however, the insects of all three species appear similar and the scouting section is relevant to all.

SCOUT FIELDS FOR DAMAGE

Areas of poor emergence or growth may indicate seedcorn maggot injury. Dig up 5 to 10 seedlings or transplants in a suspect area. Infested seeds and stems are often hollowed out. Seeds may be killed and fail to germinate. Infested seedlings are often weak and die. They may have damaged cotyledons or lack a growing point. Onion plants infested early may not emerge, whereas, later damage to pre-bulbing plants may cause misshapen bulbs from which the foliage tends to grow from the side of the bulb. Finding the maggots in association with the damaged tissue is the best evidence. Full grown seedcorn maggot larvae are yellow-white, tough skinned, legless, about ¼ inch long. They have wedge-shaped heads and two black hooks for feeding.

VEGETABLES SUSCEPTIBLE TO SEEDCORN MAGGOT

beans
beets
corn
cruciferous crops
cucurbits
onions
peas
spinach

continued on page 3

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.

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

Web address: cvp.cce.cornell.edu

Editor
Carol MacNeil

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

Publishing Specialist/Distribution/Sponsors
Angela Parr

VegEdge is published 25 times per year, parallel to the production schedule of Western New York growers. Enrollees in the Cornell Vegetable Program receive a complimentary electronic subscription to the newsletter. Print copies are available for an additional fee. You must be enrolled in the Cornell Vegetable Program to subscribe to the newsletter. For information about enrolling in our program, visit cvp.cce.cornell.edu. Cornell Cooperative Extension staff, Cornell faculty, and other states' Extension personnel may request to receive a complimentary electronic subscription to VegEdge by emailing Angela Parr at aep63@cornell.edu. Total readership varies but averages 750 readers.

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

The next issue of VegEdge will be produced June 18, 2014.

Kale growing in Eden Valley this week. *Photo: Darcy Telenko, Cornell Vegetable Program*

continued from cover - Maggot Feeding is Evident Now

Attack is most severe when cool, moist spring conditions slow seed germination and growth of young plants. Seedcorn maggot adults emerge from overwintering pupae. Mated females fly close to the ground in search of suitable egg laying spots – preferably near decaying organic material or germinating seed to provide a food source for the newly hatched larvae. If damaged plants aren't killed outright, the injury provides wounds for plant pathogens to attack, causing root and stem rots to develop.

Seedcorn maggot feeding on green peas. The seed of the plant on the left has completely rotted away and the stem has extensive tunneling, note larva in the red circle. Damage to the center plant is mostly restricted to the seed. Note the healthy seed and stem of the non-infested plant on the right. *Photo: Julie Kikkert, Cornell Vegetable Program*

PREVENTION is the key to control, because there are no effective rescue treatments. Here is a list of steps you can take:

- Encourage fast germination by planting high quality seeds in a well prepared seedbed at the minimum depth consistent with soil moisture.
- Handle seeds carefully since cracked seed coats can provide entry points for maggots.
- Using transplants may reduce your risk, but maggots can tunnel in stems of young plants, especially if growth is delayed by cold weather after planting.
- Avoid low, wet areas.
- Incorporate crop residues/cover crops 2 to 3 weeks prior to planting.
- Reduced tillage seems to result in lower maggot populations because the organic matter stays on the soil surface (*K. van Wychen Bennett, et al, Univ. MN*).
- Avoid manure applications right before planting as this attracts egg-laying adults.
- Plant after the first generation maggots have pupated (mid-June).
- Row covers may prevent egg laying and subsequent plant damage.
- Use insecticide and fungicide treated seed to protect seeds/seedlings –see Cornell Vegetable Guidelines for individual crops.
- In-furrow or planter-box insecticide treatments are available in some crops.

MORE INFORMATION can be found at http://web.entomology.cornell.edu/shelton/veg-insects-ne/pests/scm.html

Weed of the Week

YELLOW NUTSEDGE

Darcy Telenko, CCE Cornell Vegetable Program

Yellow nutsedge (*Cyperus esculentus* L.) is an erect, persistent, perennial herb that is native of North America. It is found throughout New York State vegetable production areas. It is distinguished by 3-angled stems with long grass-like leaves. Reproduction is primarily by tubers produced at the end of rhizomes (creeping underground stems), but rhizomes can also aid in spread of the weed. Tubers sprout early May once the soil is warm and can remain dormant in the soil four or more years making it difficult to eliminate from heavily infested areas.

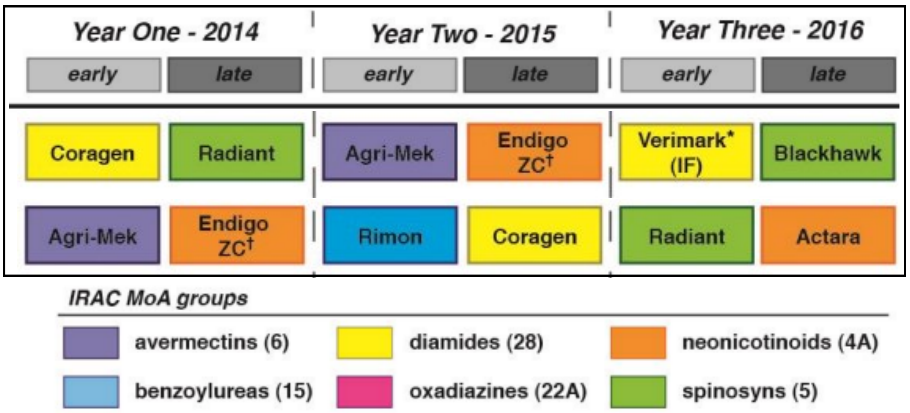
Nutsedge is sensitive to dense shade therefore control measures as heavy shading crops, close crop spacing, and cultivation before canopy closure can utilize this characteristic. Vegetables with large leaves such as pumpkins and squash can provide enough shade to choke out nutsedge. Herbicides with good to excellent postemergence activity on nutsedge include Basagran, Gramoxone, and Sandea/Permit. Fall tillage and nonselective chemicals can be used once vegetable crops are harvested. Herbicides will not damage tubers in the soil so a combination of cultivation and herbicides are needed.

Managing Colorado Potato Beetle Insecticide Resistance - New Tools & Strategies

Anders Huseth and Brian Nault, Cornell - Geneva (ed. C. MacNeil, CVP)

For the past 18 years, neonicotinoid insecticides (Admire, Provado, Cruiser, Gaucho, Assail, Platinum, Leverage, Actara, Endigo, and dozens of generics) have been the cornerstone of pest management in potato. With the registration of imidacloprid (Admire, Bayer CropScience) in 1995, potato growers had a new class of systemic insecticide that provided excellent control of green peach aphid, potato aphid, potato leafhopper (PLH), and Colorado potato beetle(CPB). Since then new neonicotinoid insecticides (i.e., thiamethoxam, acetamiprid) have been registered on potato. Insecticide resistance, however, threatens the sustainability of these compounds. No CPB insecticide since the 1950s has survived more than a few years, in high pressure, frequent use situations, including in NYS, without the development of CPB resistance. This is also true for the neonicotinoids. The duration of CPB control within the growing season has declined significantly over time. *(In upstate NY the duration of control has dropped by several weeks on some farms. ed. CRM, CVP)*

New tools and strategies for managing CPB – The key to slowing the development of CPB resistance to all insecticides is to rotate different Modes of Action (MoA). *(This is not just rotating insecticides. Many insecticides have the same MoA. See Table 1. ed. CRM, CVP)* Only one MoA should be used against a particular larval generation, and a different MoA should always be used against the following larval generation. Repeat applications of a MoA may be needed against a single larval generation. A three year MoA rotation, with each MoA only used once every three years, will provide the most protection. MoA rotation plans for specific insecticide resistance situations are detailed in *Managing Colorado potato beetle neonicotinoid resistance: New tools and strategies for the next decade of pest control in potato*, A. Huseth and B. Nault, Cornell – Geneva, on the CVP website (cvp.cce.cornell.edu), Potato section. Foliar neonicotinoid insecticides are reserved for use on mixed size larvae later in the season. *(Be sure not to use a foliar neonicotinoid insecticide later in the season if one was used at planting!! ed. CRM, CVP)* Prepack insecticides with pyrethroids should only be used in situations when both CPB larvae and PLH reach threshold. Here are two of the eight CPB insecticide/MoA rotations suggested in the full article:



Neonicotinoid was used in prior year with limited success. Early season colonization has been historically high. Neonicotinoids maintain effectiveness annually.

All insecticides included have the greatest activity on smaller larvae. Many foliar insecticides require specific spray conditions (e.g., pH, compatibility), and adjuvants. Several insecticides lack activity on key potato pests (e.g., PLH and colonizing aphids). Scouting and use of thresholds for all pests remains critical, when deciding whether to spray. For more info see the *2014 Cornell Pest Management Guidelines* at: http://veg-guidelines.cce.cornell.edu/24frameset.html and the product label.

Table 1. Products to manage CPB. Note IRAC Mode of Action (MoA) groups.

Treatment Window	Active ingredient	IRAC MoA group	Delivery[a]	Common trade names
early generations	abamectin	6	F	Agri-Mek, generics
	chlorantraniliprole	28	F	Coragen
	cyantraniliprole	28	F, IF	Exirel*, Verimark*
	imidacloprid	4A	IF, ST	Admire Pro, generics
	novaluron	15	F	Rimon
	spinetoram	5	F	Radiant
	spinosad	5	F	Blackhawk, Entrust
	thiamethoxam	4A	IF, ST	Platinum, Cruisier Maxx Potato
late generations	abamectin	6	F	Agri-Mek, generics
	chlorantraniliprole	28	F	Coragen, Voliam Xpress†
	cyantraniliprole	28	F	Exirel*
	imidacloprid	4A	F	Admire Pro, Leverage 360‡, generics
	indoxacarb	22A	F	Avaunt
	spinetoram	5	F	Radiant
	spinosad	5	F	Blackhawk, Entrust
	thiamethoxam	4A	F	Actara, Endigo ZC†
trap crop	indoxacarb	22A	F	Avaunt
	phosmet	1B	F	Imidan

[a] Foliar (F), In-furrow (IF), and Seed treatment (ST)
† Contains lambda-cyhalothrin, use when PLH and CPB at threshold
‡ Contains cyfluthrin, use when PLH and CPB at threshold
* Anticipated New York registration 2015 season

Off-Target Herbicides Easily Injure Vegetable Crops

Julie Kikkert, CCE Cornell Vegetable Program

Herbicide applications are common in May and June on conventional farms as crops are becoming established in the field. Vegetable growers need to be aware of application conditions on their own farm as well as neighboring farms to avoid crop damage. Below are some of the common problems:

Spray Drift

Drift of herbicides off-target can cause serious injury to vegetables (Fig. 1). Make sure the herbicides you select are labeled on all of the vegetable crops that might be near the area to be sprayed. Gramoxone applied with hooded sprayers can also drift and injure crops (Fig. 2). Another big concern is application of herbicides to field crops that are adjacent to vegetable fields. Many of the herbicides can stunt or kill vegetable crops. Even herbicide-resistant GMO corn and soybeans are often sprayed with tank mixes of herbicides to combat the ever growing resistance problems. New GMO field crop varieties are being developed that have the genes for resistance to multiple herbicides. Herbicides that contain dicamba (Banvel, Clarity, Distinct, Marksman, NorthStar, Status, Yukon), 2,4-D (Crossbow), and mesotrione (Callisto, Camix, Halex GT, Instigate, Lexar EZ, Lumax EZ, Realm Q), are particularly troublesome. I've seen damage to both peas and cole crops from mesotrione. Leaves of the susceptible plants turned white or had white blotches on them. In one case, young seedlings were completely killed from spray drift that moved across a 20 ft wide hedge row and then 30 ft or more into the adjoining vegetable field.

Vegetable growers should inform their neighbors who grow field crops of the risk from these herbicides. Buffers of 50 to 100 ft are recommended. Avoid spraying when conditions are favorable for atmospheric inversion or wind drift. Spray when wind is moving away from sensitive crops, use larger droplets, lower boom heights, and lower pressures. For more info on reducing pesticide drift, see http://web.entomology.cornell.edu/landers/pestapp/index.htm

Improper Spray Tank Cleaning

Dicamba and 2,4-D are plant growth regulators which cause leaf cupping, twisting, and death. They are effective in miniscule concentrations. In one case, an entire field of cabbage was lost after a sprayer had been used with dicamba in field crops and then used directly to apply cabbage herbicides. There were no marketable heads in the field. It's always best not to use the same spray equipment on sensitive crops. However, where this is necessary, proper clean out of the spray tank is a must. Read the product labels for details on sprayer clean out.

Misapplication of Labeled Herbicides

Much research and product testing is done before an herbicide ever gets labeled. The proper rate of product, adjuvants, application method, soil type, environmental conditions, and crop and weed growth stage are among the items that must be attended to in order to avoid crop injury. Make sure to read and follow all product labels.

Figure 1. Sprayer ready to apply herbicides to field corn. Drift can injure nearby vegetable crops
Photo: Julie Kikkert, Cornell Vegetable Program

Figure 2. Gramoxone injury in zucchini due to drift outside hooded sprayer (above and below).
Photos: Darcy Telenko, Cornell Vegetable Program

CROP INSIGHTS

CABBAGE & OTHER COLE CROPS

Flea beetles, cabbage maggot, diamondback moths (DBM) and imported cabbage worms (ICW) are the main pests this week. The critical growth stage to control these worms is from the 8 leaf stage until head formation. Look for newly hatched larvae in the heart leaves where their feeding leaves tiny brown scarring. Once they get bigger, they generally feed on the undersides of leaves making small irregular holes (windows) leaving the upper leaf surface intact (Fig. 1). This type of injury generally does not affect yield UNLESS populations are high or the feeding is in the heartleaves prior to head formation. When scouting, be sure to look at both the undersides of leaves as well as digging into the heart leaves. DBM wriggle when prodded and hang by a silk thread and ICW are sluggish and fuzzy. In seedlings, treatment is warranted if 20% (all worms included) of plants are infested. The threshold rises to 30% infestation in the early vegetative to cupping stage and then drops to 5% through harvest. Bts (Dipel, Xentari, etc.) are all very effective against ICW and can also be used for DBM at low populations. Avaunt, Radiant, Coragen, Voliam Xpress, Proclaim and Belt are also very effective against all the main worm pests and are recommended if high populations of DBMs appear. Pyrethroids are generally effective for ICW and flea beetles, but note that their use is sometimes associated with a buildup of DBM and aphids.

Figure 1. Diamondback moth feeding (windowpaning) on undersides of leaves. *Photo: Christy Hoepting, CVP*

Cabbage maggots have been found in fresh market cabbage, along with symphilids, attacking roots in cabbage that is under stress from other abiotic factors.

DRY BEANS

Dry bean planting is beginning. We will be setting up traps for Western bean cutworm (WBC) across the dry bean production area next week to begin monitoring the population and will alert growers if necessary. *Thanks to the NYS Dry Bean Industry for their support!*

EGGPLANT

Keep an eye out for aphids. We have found areas with high populations, especially on eggplant along with a few leafhoppers.

Aphids on eggplant. *Photo: Darcy Telenko, CVP*

GREENS

The lettuce harvest is looking good with steady growth for most plantings. Aphids and leaf hoppers starting to show up in higher numbers. Slugs have become problematic where heavier crop residue is found.

Flea beetles have dropped off in some areas while being persistent in others. Mustards and Asian greens still being damaged.

Cabbage worms are hatching on some of Asian brassicas causing feeding damage as well. Keep an eye out for this because it doesn't take long for them to ruin the plants. Scout for the worms especially if you see those white butterflies hovering about the crop. Preventive treatment is easy to apply to knock back the worms.

ONIONS

Another great week for growing onions! Plant height has really jumped since last week thanks to the two half-inch rainfall events last week. Direct seeded onions are mostly in the 2-3 leaf stage with some later plantings just coming out of 1-leaf and early plantings in the 4-leaf stage. Transplants range from 4 to 7-9 leaf. Despite the rain, it seems that the generally windy conditions have kept Botrytis leaf blight pressure extremely low with lesions very hard to find and fungicides sprays are not recommended at this time. Onion thrips pressure is also very low and insecticide sprays are not recommended at this time. Onion maggot activity was observed for the first time this week. Pull up any plants that are wilted and look for white maggots feeding inside the base of the bulb (Fig. 1). If you notice any above-average levels of damage, please let Brian Nault or Christy know. We are very interested in knowing how Sepresto seed treatment compares to Farmore FI500.

Figure 1. a) Above-ground symptoms of onion maggot: wilted plants. b) Onion seedling infested with onion maggot. *Photo: Christy Hoepting, Cornell Vegetable Program*

continued - CROP insights

POTATOES

Some planting continues, potatoes are emerging, and hilling of the earliest plantings has continued. Check the *Late Blight Risk* section to see if a weather station(s) near you has accumulated 18 late blight (LB) severity values (SV), the threshold for beginning fungicide applications on all potatoes at least 4 in. tall. Protectant fungicides such as chlorothalonil or mancozeb are generally sufficient at this time of year.

Adult Colorado potato beetles (CPB) are numerous in some potato fields and on volunteers in some other fields, with egg-laying occurring and some small larvae present. The duration of CPB control with seed treatment/in-furrow neonicotinoid insecticides has dropped significantly on some farms, but by switching from imidacloprid to thiamethoxam insecticides adult CPB control has generally been maintained to date*. There is no OMRI approved insecticide effective against adult CPB for organic growers. Egg hatch to the small larvae stage is the target for applying Entrust, etc. See the article in this issue *Managing Colorado Potato Beetle Insecticide Resistance - New Tools & Strategies.* Note: There is a Special Local Needs label for use of Rimon to control CPB (small to medium larvae). You must have a copy of the SLN label when using Rimon. Go to: http://128.253.223.36/ppds/535376.pdf A second application after no more than 7 days is often needed, according to Sandy Menasha, CCE – Suffolk Co.

*If you have adult over-wintering CPB populations high enough to warrant the application of an insecticide (average 1+ adult CPB/plant) please contact Carol MacNeil at 585-313-8796. If you have already treated for adult CPBs please let me know. We are trying to gauge CPB pressure in a time of increasing insecticide resistance. Also, if you had significant European corn borer (ECB) tunneling in vines, and vine collapse from subsequent bacterial infection, please let me know. We are doing limited ECB pheromone trapping in potatoes this year.

SWEET CORN

The warmer days and rain have really helped to kick start growth. A number of fields jumped into tasseling this week. The pale green leaf colors have darkened. There are still some flea beetles, aphids, and a few thrips, but beneficial insects (lady bugs and damsel bugs) are going after them and seem to be out-numbering them in the sweet corn. European corn borer moths were again caught in traps, but no egg masses have been detected in the field. Now is the time to catch up on weed control before the stalks get too big.


Striped cucumber beetle.
Photo: Jim Ochterski, CCE Ontario County

VINE CROPS

Wet conditions have interfered with some plantings while dry conditions have slowed the growth of transplants in other areas. In the earliest squash there are flowers and 3-5 inch fruit developing. A number of striped cucumber beetles are out and about in the most mature plantings. Stay on top of these pests early.

As weed control measures are still being implemented please be cautious of spray drift hitting non-target crops. See article, page 5.

Late Blight Risk

Carol MacNeil, CCE Cornell Vegetable Program

A few weather stations exceeded the 18 severity value (SV) threshold, an alert for the need for the first late blight (LB) fungicide spray, during the past week. In those areas all potatoes 4+ inches tall, and uncovered field tomatoes, should receive a protective fungicide application. It can be chlorothalonil, mancozeb or copper. Some other weather stations are likely to reach 18 SVs in the next week. See the table of LB SVs for many weather stations in the area. Check your potato cull piles to be sure there is no live foliage!

Late Blight Severity Values* 6/10/14

Location**	Week	Total	Location	Week	Total
Albion	4	12	Lodi	7	17
Appleton	2	3	Medina	3	9
Baldwinsville	3	6	Penn Yan***	8	26
Buffalo***	5	19	Ransomville	0	3
Bergen	1	1	Romulus	0	20
Ceres	7	11	Rochester***	5	16
Elba	4	12	Silver Creek	7	24
Farmington	3	7	Sodus	0	4
Gainesville	6	23	Versailles	4	6
Geneva	2	4	Williamson	1	5
Kendall	NA	NA	Wolcott	NA	NA

* Severity value accumulations start 5/15/2014
**For more sites: http://newa.cornell.edu/ Crop Pages, Potato, Blitecast
***Airport stations, with RH increased to estimate field conditions

The Late Blight Decision Support System (DSS) forecast was used on over 4,000 acres of potatoes and tomatoes last year. If you have a LB DSS account (free) be sure to input your first spray on the DSS website, http://blight.eas.cornell.edu/blight/ . The system will then switch to the much more comprehensive and accurate Simcast forecast for later sprays. Point weather forecasts for your farm/fields are used in Simcast to give several day warning of the need to spray. You can sign up for email or text Alerts on the DSS website so you'll automatically be notified. Once you've set up a file for this year's crops/fields (variety, first emergence date) you can access much of the DSS by smartphone or tablet. For info about using the LB DSS contact Carol MacNeil at crm6@cornell.edu or 585-313-8796. If you've forgotten your log-in Name or Password contact Ian Small at: ims56@cornell.edu

LB has not yet been confirmed farther north than FL this season. To check on LB confirmations (US, local), or to sign up for Alerts to LB detected in the area, go to: http://www.usablight.org/

Focus on Food Safety - An Overview of Foodborne Illness in the U.S.

Craig Kahlke, Lake Ontario Fruit Team, and Betsy Bihn, Cornell

Are you a fruit or vegetable grower that is beginning to get asked questions about your food safety practices or having a 3rd-party food safety audit that requires a comprehensive farm food safety plan? Are you concerned with ever increasing food safety requirements that are part of the Food Safety Modernization Act (FSMA) and the extra burden it might put on your business? ***Well, you are not alone, and hopefully this multi-part series of articles on food safety will help ease your mind.*** *This series will focus on clearing up common misconceptions, providing background information on the risk of foodborne illnesses associated with fresh fruits & vegetables, sharing a brief history of produce-related foodborne illness outbreaks, and outlining basic Good Agricultural Practices (GAPs) to guide you through thinking about the potential food safety risks on your farm. Throughout, we will provide resources that can give you more detailed information and ask you to give us ideas for future articles.*

The Center for Disease Control (CDC) *estimates* that each year roughly 1 in 6 Americans (or 48 million people) gets sick, 128,000 are hospitalized, and 3,000 die of foodborne illnesses. There is much more information here on the CDC website following their 2011 estimates/findings. http://www.cdc.gov/foodborneburden/2011-foodborne-estimates.html**. It is important to realize these are ESTIMATES because not everyone who has a foodborne illness is documented.** Many people get flu-like symptoms, diarrhea, stomach cramps, etc. for a day or 2, do not go to the doctor, and then recover. Many such instances are likely to be caused by foodborne illnesses that go unreported, in many cases severely under-reported. For instance, the CDC estimates that for salmonellosis, the illness caused by certain strains of *Salmonella* bacteria, 36 times more people have may have contracted salmonellosis than report it. Unfortunately, an increasing number of the US population have weakened or compromised immune systems, making them more susceptible to foodborne illnesses. Immunocompromised groups include the elderly, young children under 5, pregnant women and those with organ transplants. Since it is impossible to know the health status of those that eat fresh produce grown on your farm, reducing produce safety risks is one way to protect all consumers.

To understand some of the data presented next, it is important to understand the distinction between a foodborne illness and a foodborne outbreak. An illness is a confirmed case of an individual becoming sick from a foodborne pathogen. This requires testing and confirmation via a health department or medical facility, and linking the pathogen to its source (e.g. *Salmonella* from eating chicken from a specific source). An outbreak is defined as 2 or more confirmed illnesses in people resulting from the same pathogen and source. Although this is very tough to do, recent advances in pathogen subtyping and communication systems such as PulseNet make it possible.

Before we talk specifically about fresh produce, it is important to realize that foodborne illnesses can be associated with all types of foods. High profile foodborne illness outbreaks associated with undercooked hamburgers are remembered by many, but as Figure 1 shows, produce was implicated as the cause of about 15.6% of FDA-regulated outbreaks from 1996-2006. These outbreaks led to 37.3% of all illnesses in the same time period (Fig. 2.). These two figures are included to highlight the fact that fresh produce can be the vehicle for human pathogens and once consumed, result in illnesses and outbreaks.

There are many attributes that make fresh produce a good vehicle for human pathogens. Fruits and vegetables are often eaten uncooked, so there is no cooking step to kill pathogens that may be present. Produce is grown in the open environment that includes risks from wildlife, wind, water, and soil. Unfortunately, many different commodities have been associated with illnesses and outbreaks. Figure 3 shows a collection of fresh produce items that became contaminated resulting in illnesses. Although sprouts, leafy greens, tomatoes, and melons lead the way, accounting for over 70% of produce-related outbreaks, commodities such as berries and green onions are also implicated. The important point to understand is that all produce can become contaminated, so understanding produce safety risks on your farm and how to reduce them is very important to protecting the fresh produce you grow.

In the next installment of this series, we will examine the pathogens that most frequently cause foodborne illnesses associated with fresh produce. Understanding a little bit about the microorganisms and what they need to survive and multiply is important to understanding how to assess and minimize risks on the farm.

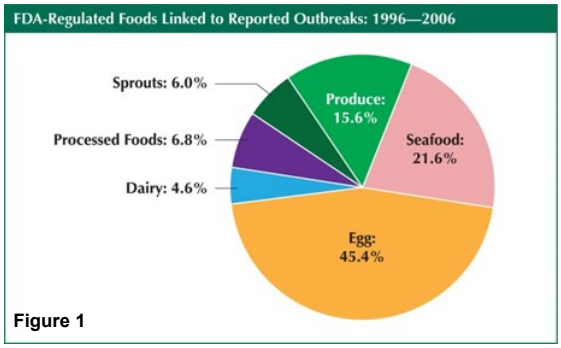


Figure 1

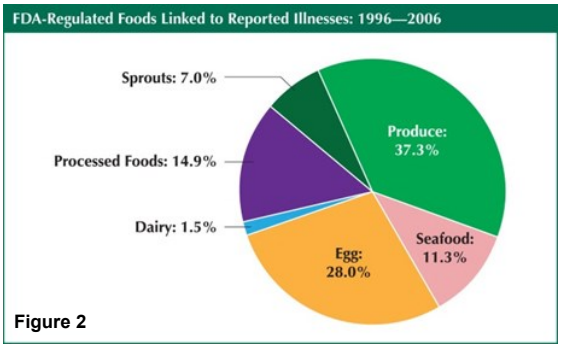


Figure 2

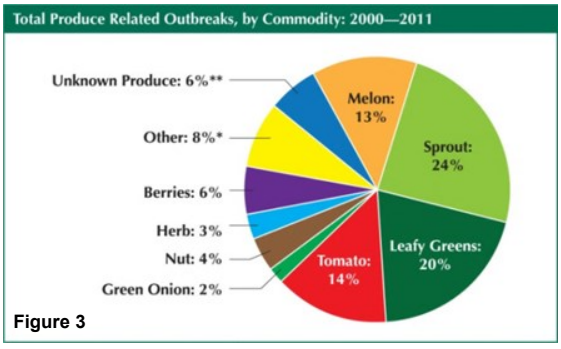


Figure 3

WNY Sweet Corn Trap Network Report

Marion Zeufle, NYS IPM Program, 6/3/14

Four of the eleven sites reporting this week caught moths. So far only European corn borer (ECB) were caught. The new site in Seneca Castle again had the highest trap catch. Still no fall armyworm (FAW) or corn earworm (CEW) caught at any of the sites.

Some early corn in Erie County is beginning to tassel. Corn that is tasseling during the first flight of ECB will not show the typical feeding damage that is observed on bare ground corn that is in the whorl stage during the first flight and scouting is less reliable. In this early corn, pheromone trap catches can be used to time sprays. Growers can time sprays to coincide with egg hatch after there is a significant increase in ECB trap catches. For more information please see the Managing ECB in Plastic, Row Cover, or Transplanted Sweet Corn.

Average corn earworm catch			
Per Day	**Per Five Days**	**Per Week**	**Days Between Sprays**
<0.2	<1.0	<1.4	No Spray (for CEW)
0.2-0.5	1.0-2.5	1.4-3.5	6 days
0.5-1.0	2.5-5.0	3.5-7.0	5 days
1-13	5-65	7-91	4 days
over 13	over 65	over 91	3 days

Add one day to the recommended spray interval if daily maximum temperatures are less than 80° F for the previous 2-3 days.

WNY Pheromone Trap Catches: June 10, 2014

Location	ECB -E	ECB -Z	CEW	FAW	WBC
Baldwinsville (Onondaga)	NA	NA	NA	NA	NA
Batavia (Genesee)	0	0	0	0	NA
Bellona (Yates)	NA	NA	NA	NA	NA
Eden (Erie)	1	15	0	0	NA
Farmington (Ontario)	3	1	0	0	NA
Hamlin (Monroe)	NA	NA	NA	NA	NA
LeRoy (Genesee)	NA	NA	NA	NA	NA
Lockport (Niagara)	0	0	0	0	NA
Penn Yan (Yates)	6	4	0	0	NA
Seneca Castle (Ontario)	24	6	0	0	NA
Spencerport (Monroe)	NA	NA	NA	NA	NA
Waterport (Orleans)	NA	NA	NA	NA	NA
Williamson (Wayne)	0	0	0	0	NA

Sweet Corn Varieties for Mechanical Harvest

Robert Hadad, CCE Cornell Vegetable Program

There have been a number of questions about what varieties work well for mechanical harvest. In the past, the choices weren't very extensive. Harvesters were less forgiving when it came to rolling through fields. Corn ears had to be tougher to take the harvesting and these often didn't equate with the best tasting types. Corn stalks couldn't be lodged (some varieties had lodging problems). Most "se" varieties didn't stand up. Varieties that produced underdeveloped second ears weren't used for mechanical picking either.

Today there are more choices. Newer machines do a better job on handling the ears. For roadside or farmers market sales, longer shanks on the corn are acceptable so most varieties work here. For shipping, shorter shanked varieties work better.

With some input from Chuck Bornt, Cornell Vegetable Specialist with the Eastern NY team, and Blake Myers of Siegers Seeds, I have put together a rough list of varieties that do well with mechanical harvest. This is by no means an all inclusive list. Again, the quality of the harvested ears depends on the age and type of harvester, the market you are picking for, tendency for stalks not to lodge, ears that are higher up on the stalk, and the toughness of the pericarp. Also looking for better rust resistant varieties.

Here are some of Chuck's choices: Obsession, Stellar, Fantastic, Awesome, XTH 2173, XTH 2573.

According to Blake, Obsession and 7143 are probably the most grown mechanical harvest varieties.

Here's some SE bicolors that are commonly picked by machine:

- Temptation
- Allure
- Synergy
- Ka-Ching
- Kristine
- Montauk
- Providence
- Cameo
- Delectable

Here are some sh2 bicolors that are commonly picked by machine:

- XTH 2171
- 7002R
- 2472
- XTH 2573
- XTH 20173
- 274A
- Fantastic
- 7112 R
- Mirai 315
- Stellar
- Obsession
- 7143 and a white version: 1580

UPCOMING EVENTS

Farm Food Safety Training / GAPs Overview

June 16, 2014 | 8:30 AM Registration & Refreshments; 9:00 AM - 3:30 PM Training
Arkport American Legion, 1 Carter St, Arkport 14807

An overview of farm food safety practices, this **1 day only** training is meant to be an introduction and is not the full GAPs training. This will be a unique **training without the use of technology**. This will be an outline format with discussion and no power point presentation. $50 per person; $10 each additional attendee from the same farm. Contact Robert Hadad at 585-739-4065 for more info. To register, call 585-268-7644 x18 or email Lynn Bliven at lao3@cornell.edu. Pre-register by Friday, June 13, 2014. Space is limited!

Muck Donut Hour

June 17, 2014 | 8:30 - 9:30 AM
Elba muck, corner of Transit and Spoilbank, Elba 14058

Meet with Cornell Vegetable Program Specialist Christy Hoepting every Tuesday morning to ask questions and share your observations.

Beneficial Insects and Habitats - June Rolling Hills Discussion Group

June 17, 2014 | 6:00 - 7:30 PM
Honeyhill Farm, 6241 Price Rd, Livonia 14487

1.5 DEC credits are available in categories 1a, 10 and 23. Abby Seaman and Marion Zuefle, of the NYS IPM Program, will teach which beneficial insects are used to control certain pests. Come learn about their lifecycles, predation strategies, and potential to be used on your farm! Kira White, Vegetable Manager at Honeyhill Farm, will share the farm's use of benefical insect promoting habitat. FREE! A potluck dinner will follow the meeting. For more details, contact Elizabeth Buck at 607-425-3494 or emb273@cornell.edu or Robert Hadad at 585-739-4065 or rgh26@cornell.edu.

Muck Donut Hour

June 24, 2014 | 8:30 - 9:30 AM
Elba muck, corner of Transit and Spoilbank, Elba 14058

Meet with Cornell Vegetable Program Specialist Christy Hoepting every Tuesday morning to ask questions and share your observations.

Muck Donut Hour

July 1, 2014 | 8:30 - 9:30 AM
Elba muck, corner of Transit and Spoilbank, Elba 14058

Meet with Cornell Vegetable Program Specialist Christy Hoepting every Tuesday morning to ask questions and share your observations.

New York Vegetable & Field Crops Weed Science Field Day

July 16, 2014

8:00 - 11:30 AM - Vegetables
Thompson Research Farm, east of Freeville (Fall Creek Rd, Rt 366 exit; 10 miles northeast of Ithaca)

$8 info packet available – Preregistration by 7/10 is requested, at:
http://blogs.cornell.edu/ccefieldcropnews/files/2014/05/WEED-DAY-2014-Registration-Form-1i9wptn.pdf

12:00 - 1:30 PM - NYSABA BBQ Lunch
Musgrave Research Farm

Preregister by 7/10 to save, at: http://blogs.cornell.edu/ccefieldcropnews/files/2014/05/WEED-DAY-2014-BBQ-Ticket-Request-Form-1fhtjmt.pdf

1:30 - 5:00 PM - Field Crops
Robert Musgrave Research Farm, 1256 Poplar Ridge Rd, connects Rts 90 and 34B, Aurora

CCA and DEC Credits have been requested for both sessions.
For more info contact Maxine Welcome: mw45@cornell.edu or 607-255-5439 (Veg), or Russ Hahn: rrh4@cornell.edu or 607-255-1759 (Field Crops).

Weather Charts

John Gibbons, CCE Cornell Vegetable Program

Weekly Weather Summary: 6/03 - 6/09/14

Location	Rainfall (inch)		Temp (°F)	
	Week	Month June	Max	Min
Albion	1.04	1.04	82	48
Appleton, North	1.03	1.03	76	45
Baldwinsville	0.45	0.60	85	49
Buffalo*	1.66	1.66	79	48
Ceres	1.78	1.78	82	43
Elba	0.95	0.95	77	44
Farmington	0.28	0.97	80	46
Gainesville	0.91	0.94	79	42
Geneva	0.55	0.82	81	52
Kendall	NA	NA	NA	NA
Lodi	1.93	1.94	84	48
Penn Yan*	1.04	1.04	79	51
Ransomville	1.03	1.03	78	44
Rochester*	0.52	0.52	81	49
Romulus	0.33	0.33	82	49
Silver Creek	0.30	0.50	79	46
Sodus	0.42	0.65	83	44
Versailles	NA	NA	79	43
Williamson	0.16	0.38	84	43
Wolcott	NA	NA	NA	NA

Accumulated Growing Degree Days (AGDD)
Base 50°F: April 1 — June 9, 2014

Location	2014	2013	2012
Albion	430	493	499
Appleton, North	325	380	440
Baldwinsville	517	506	566
Buffalo	432	552	703
Ceres	400	408	451
Elba	335	448	558
Farmington	469	467	503
Gainesville	348	519	479
Geneva	487	526	550
Kendall	NA	NA	NA
Lodi	508	572	523
Penn Yan	512	531	565
Ransomville	387	443	494
Rochester	510	570	576
Romulus	490	524	NA
Silver Creek	397	509	517
Sodus	450	448	483
Versailles	426	538	526
Williamson	387	484	518
Wolcott	NA	NA	NA

* Airport stations
** Data from other station/airport sites is at: http://newa.cornell.edu/ Weather Data, Daily Summary and Degree Days.

Cornell University
Cooperative Extension
Cornell Vegetable Program

480 North Main Street
Canandaigua, NY 14424

VEGEdge

YOUR TRUSTED SOURCE FOR RESEARCH-BASED KNOWLEDGE

VEGEdge

YOUR TRUSTED SOURCE FOR RESEARCH-BASED KNOWLEDGE

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

VEGETABLE SPECIALISTS

Robert Hadad | 585-739-4065 cell | 716-433-8839 x228 office | rgh26@cornell.edu
food safety & quality, organic, business & marketing, and fresh market vegetables

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

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

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

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

Darcy Telenko | 716-697-4965 cell | 716-652-6400 x178 office | dep10@cornell.edu
soil health, weed management, plant pathology

PROGRAM ASSISTANTS

Elizabeth Buck | 607-425-3494 cell | emb273@cornell.edu

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

Cordelia Hall | ch776@cornell.edu

Nelson Hoover

ADMINISTRATION

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

Steve Reiners | sr43@cornell.edu

Mark Giles | fmg4@cornell.edu

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

Cornell University
Cooperative Extension
Cornell Vegetable Program