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Weekly Vegetable Update

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North Country—Clinton, Essex, northern Warren and Washington counties

Just a week ago we needed more rain and then it wouldn't quit and we had had over four inches this week. A Nor'easter brought 2 days of high winds and daytime temperatures in the high 30's. Light to moderate frost hit much of northern NY on Sunday and Monday with several inches of snow in Lake Placid on Monday.

Cucumber beetles are out in droves. The cold, wet weather kept most bugs at bay last week but get ready for a whole variety of bugs by the end of the week when warm weather arrives. Be sure you know what you're dealing with. Send us photos, save us samples, call or email us – we're glad to help.

Image: Larry Master. From NPR.org. View from Lake Placid



Capital District—Albany, Fulton, Montgomery, Rensselaer, Saratoga, Schenectady, Schoharie, southern Warren and Washington counties

The weather extremes are taking a toll on transplants across the region. We are seeing significant losses from wind whip on exposed transplants, along with heavy feeding from cucumber and flea beetles. Insect pressure in general seems to be pretty high and a little early.

Image: wind-whipped cucumbers with cucumber beetle feeding. Plants also wilted onto the plastic. Image: CLS

Mid-Hudson Valley—Columbia, Dutchess, Greene, Orange, Sullivan and Ulster counties

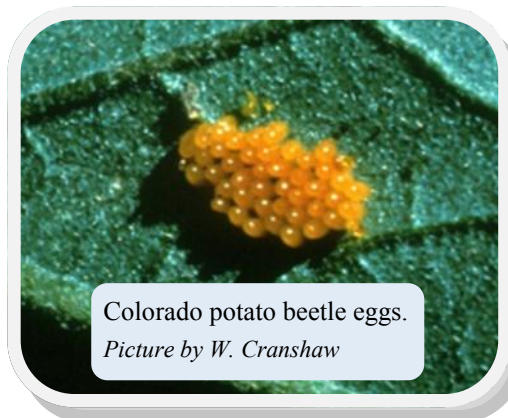
First ECB moths were trapped last night. Greenhouse tomatoes first-picks are at full size and starting to pink. Cooler temperatures have decreased plant growth. Yellowing can be seen on many seedlings and recent transplants due to cool soil temperatures. This should pass this week as temperatures increase and nitrogen is released. Slow growth has caused some plantings to succumb to feeding injury from soil dwelling insects such as grubs, bulb mites and wireworms.



Start Scouting for Colorado Potato Beetle

Anyone who grows potatoes should be on the lookout for Colorado potato beetle adults. It's not practical to try to spray for the adults with some products (see below) but they're easy to spot, and once you notice them on the move, it's a signal for you to get ready for the next generation. The newly hatched larvae are the easiest stage to control.

Colorado potato beetles overwinter as adults, emerging in the spring (right about now) and immediately laying eggs once they find a potato crop. It's those egg masses you really want to look for. Flag the first couple of masses you find so you can monitor them. The eggs hatch in about a week so check them daily in order to know when they are first emerging.



Colorado potato beetle eggs.

Picture by W. Cranshaw

Adult. Photo from <http://www.ca.uky.edu/entomology/entfacts/ef312.asp>



By watching your flagged eggs you'll be able to time your sprays much more accurately and avoid wasted applications, saving you time and money, and slowing the buildup of resistance.

This careful timing is important whether you use organic or conventional products.

To hunt for eggs, walk through your potato field each day after the dew has dried and turn the leaves over. The eggs are bright orange and are laid in distinctive clusters of 20-40 on the underside of the leaves. Scout the field edge closest to last year's potato crop first, since beetles will walk from their overwintering sites in that field to the new field.

If using "softer" products such as **Avaunt**, **Bt**, **Neem**, or **Triguard**, spray when you find 4 egg masses that are at least 25% hatched per 50 vines you scout. When the weather is above 70 degrees, you should be scouting every 3-4 days because this threshold will be reached quickly. You will probably need to re-apply product at 5-7 day intervals to catch all the larvae from this hatching. These products will not kill adults.

If using systemic neonicotinoid products with the active ingredient **imidacloprid (Admire, Assail, Provado)**, season-long control may be possible using early season application(s) as an in-furrow treatment (Admire) or as foliar treatments (Provado). If you do not manage complete control, switch to a product with a different mode of action such as **Coragen or Voliam Express**, which will kill both adult beetles and larvae. For complete information on resistance management and chemical recommendations, consult the *Cornell Vegetable Guidelines*. -ADI and CLS

Weed Control Under Plastic Mulch

By Andrew Senesac, CCE Suffolk Co., Long Island Fruit and Vegetable Update, May 9, 2013

Crops such as tomatoes, eggplant and peppers will soon be transplanted into the field, often through black plastic mulch. Although black plastic offers an excellent barrier to weed growth there are situations when a pre-emergent under the plastic layer is desired. This is needed when weeds grow up through the planting holes and in the case of yellow nutsedge, poke through the plastic itself.

There are a few instances where this practice is specifically allowed on the label. These include: Devrinol (tomato, eggplant, pepper), Prefar (eggplant, peppers), halosulfuron (Sanda, other trade names) (for tomatoes), Prowl H2O (tomatoes, eggplant, peppers). The generally recommended practice is to apply the herbicide only on the bed that will be covered with mulch. This can be incorporated shallowly or with irrigation. Following the mulch application, the bare ground area between the beds can be sprayed. This allows for better weed control on the edge of the plastic layer. Care should be taken to avoid application on the plastic itself, as this can be carried and concentrated in the plant holes where rain or overhead irrigation moves it. With halosulfuron, a waiting period is required after plastic is laid over the herbicide before tomatoes can be planted into it. This herbicide can be useful in this application to suppress yellow nutsedge from penetrating the plastic. If nutsedge is a problem, reducing the tautness of the plastic layer slightly may allow the sharp growing points of the rhizomes to open slightly and pose less of a risk of penetrating the plastic. It is worth reviewing labels and guidelines from Cornell and New Jersey on this topic which provide useful information.

Look Out For the Wireworm

Occasionally, we find vegetable plantings under attack by wireworms. This spring I'm seeing more damage than usual. I believe the cool weather and slow growth have made crops more susceptible. So far I've seen wireworms and their damage in two garlic plantings and in high tunnel kale.

Wireworms are the subterranean larval stage of the click beetle. The majority of the lifecycle is spent underground in the larval stage, which takes two to six years to complete. The click beetle, which is the adult stage of the wireworm, does not inflict damage to crops. The wireworm larval stage can be especially damaging to root crops, where the marketable portion is constantly vulnerable to feeding. However, they may also feed on corn, small grains, grasses, flowers, beans, peas, tomatoes, and cucurbits. The larvae primarily feed on small roots produced by the plants, or they will consume the insides of seeds, preventing germination. They will also burrow into larger roots and underground parts of the stem, cutting off the supply of nutrients and water to the plant. This results in the plants being stunted or wilted.

Wireworm infestations are generally not uniformly distributed throughout a field, so patches of damaged plants often result. All life stages remain in the same locality where they hatched (the adults will even return to where they hatched to lay their eggs) so one location could likely have multiple generations present. Since all generations tend to stay close to their origin and the wireworm stays in the larval stage for up to six years, an infestation could continue for several years. They

prefer moist, cool, heavy soil. If the topsoil is too hot or too cold, they will migrate further down into the soil. They are therefore less likely to be detected in extreme conditions.

If you suspect a wireworm problem, bait stations can be used to monitor populations (see <http://www.nysaes.cals.cornell.edu/recommends/16frameset.html> Chap. 16.6.5). If there is an average of one or more larvae per trap, then control will be necessary. **Fields that were previously fallow**

or were planted with sod are more often infested with wireworms. In

some cases, wireworm infestations are initiated in wheat, barley, timothy and clover rotational crops. Adults are more attracted to these areas and are more likely to lay their eggs in these sites. In contrast, fields previously planted with corn or soybeans are at less of a risk of being infested.

Generally, the longer it takes for a seed to germinate and grow, the more susceptible it is to wireworm damage.

Therefore, it is better to plant the seeds when the soil is warm. Planting when it is cold and wet will slow growth and encourage damage. If a field is known to have a wireworm infestation, the use of an insecticide when planting is helpful (example: Diazinon AG500 broadcast and incorporated just prior to

planting carrots). Avoid planting in poorly drained soils or wet areas and keep land free of grassy weeds during egg laying period (May-late June) will greatly reduce potential for infestation. -TR



Tunnel injury on potato tubers from the corn wireworm.
Courtesy Virginia Cooperative Extension.

The Weekly Weed: Common Lambsquarters (*Chenopodium Album*)

By Justin O’Dea, Vegetable Resource Educator, Cornell Cooperative Extension of Ulster County. Edited by CLS.

Lambsquarters has been exploding in fields across the region over the past few weeks and is quickly becoming the current dominant weed on the scene. This ubiquitous species is one of the most common and perpetual cropland weeds, and warrants long-term control strategies because of its prolific and long-lived seed. If lambsquarters is one of your major weed pests, key changes in your cultural practices may need to be taken for efficient and lasting control.

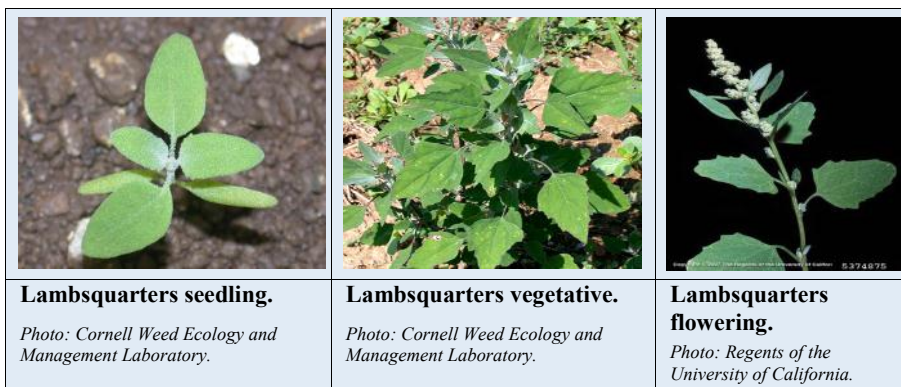
- Common lambsquarters is a **cool-season summer annual** in the **Amaranth family**, along with their more drought and heat-adapted relatives referred to as pigweeds (*Amaranthus* species). Lambsquarters is closely related to cooler-season crops also in the same family: spinach, beets, chard, and especially, quinoa.

These species are widely adaptable and are markedly tolerant of salty soils since they can accumulate exude excess salts through their leaves.

- **Germination** requires at least a brief dormancy period, and is aided by light, significant day/night temperature fluctuation, and soil nitrate availability. Therefore, the brunt of Lambsquarters **emergence** usually occurs in mid to late spring, and is aided by tillage/cultivation bringing seeds to the soil surface (0.1-1” depth); tillage-induced germination flushes usually occur 2-3 weeks after turning soils. Germination can continue throughout the rest of the growing season (but with less intensity) as seeds continue to break their dormancy.
- Lambsquarters is intolerant of shade, waterlogging, and heavy frost, but will tolerate light frost and moderate drought. Flowering occurs ~5-6 weeks after emergence, and single plants may produce several hundred to ~100,000 **seeds** depending on plant vigor. Seeds generally mature ~6 weeks after flowering if maturation is not induced early by significant drought. *Lambsquarters produces one of the most hardy and highly long-lived cropland weed seedbanks.* Their seeds commonly remain viable in soils for many decades and often survive animals’ digestive tracts; it has been estimated that lambsquarters seedbanks take ~12 years to be reduced by 50% and ~80 years to be virtually eliminated.

- Lambsquarters can host **disease pests** that can infect a wide range of vegetable crops: downy mildew of spinach, *Sclerotinia sclerotiorum*, *Rhizoctonia solani*, clubroot, a wide range of viruses vectored primarily by aphids, and beet and northern root knot nematodes. Besides aphids, lambsquarters can host the **insect pests**: cabbage maggot, tarnished plant bug, and northern and southern corn rootworm.

- Long-term Lambsquarters **control** depends on preventing seed production, preventing germination, and/or facilitating the decline of existing seedbanks. Lambsquarter plants are generally not very hardy to mechanical damage (though large plants are capable of re-rooting after cultivation), and several tillage approaches can be used strategically to manage lambsquarters. Deeper tillage can be used initially to bury a portion of a season’s seed bank, BUT is recommended with caution because seeds buried will likely remain viable if brought to the surface later. Repeated shallow cultivation ($\leq 1.5''$) can be used more effectively to induce



both germination and consequent uprooting of emerged seedlings. No-tillage can significantly reduce seedbanks by encouraging surface seed predation and seed mortality through exposure to the elements. In crops where cultivation is difficult, a strong crop stand is key to suppressing lambsquarters through shading. Avoiding overfertilization can importantly discourage lambsquarters competitiveness alongside crops. Pre-emergent herbicides are more effective against lambsquarters; post-emergent herbicide effectiveness can decline substantially after plants reach 4-6”. Herbicide resistance in Lambsquarters has been reported, particularly for triazines and glyphosate. Consult with the Cornell Guidelines for specific herbicide recommendations for each crop.

Sources:
 Mohler, C.L., and DiTommaso, A. (unpublished, 2011) *Manage Weeds on your Farm: A guide to ecological strategies. Version 6.0.* Cornell University’s Department of Crop and Soil Sciences.
 Davis, A., K. A. Renner, C. Sprague, L. Dyer, and D. Mutch. 2005. *Integrated Weed Management “One Year’s Seeding...”* Extension Bulletin E-2931. East Lansing, MI. Michigan State University.

For more information see: <http://weedecology.css.cornell.edu/weed/weed.php?id=8>
<http://extension.psu.edu/pests/weeds/weed-id/common-lambsquarters>

Cabbage Maggot Control Options

By Christy Hoepting, Cornell Vegetable Program. Printed in the *Weekly Veg Edge Vol 9 Issue 8*

Emergence of the overwintering population of cabbage maggot (CM) as adult flies is 75 to 95% complete across our region, according to degree day models available on NEWA. This event coincides with the flowering of Yellow Rocket. Emerged flies mate and lay eggs, which hatch in 2-10 days, depending on temperature. CM larvae feed on and tunnel their way into the roots of young plants, resulting in death, severe stunting or unacceptable feeding damage in radish (Fig. 1). Above-ground symptoms include wilting and stunting. When the plant is uprooted, white maggots up to 0.25 inch in length with black mouthparts should be evident (Fig. 2). Look for brown tunnels in stems and roots. Broccoli and cauliflower are more susceptible than cabbage and Brussels sprouts. CM can be sporadic and are favored by cool temperatures and moist soil conditions. Protection from CM is often needed in earliest plantings in the field and transplant beds. Unfortunately, once plants are established, there is nothing that can be done to control CM.

Lorsban (15G, 4E, 75WG and Advanced) and its generics (e.g. Warhawk), an OP insecticide, can be used at transplanting as an in-furrow application or immediately after seeding or transplanting as a directed banded spray (rates based on 4-inch band) on most Cole crops. A minimum of 40 gpa should be used when Lorsban is applied as a band over the row. Do not add any adjuvants, surfactants or spreader stickers. **Check the pH of your tank -mix with Lorsban, it should not be greater than 7, or else it will not work properly.** Note, transplant water treatments of Lorsban may result in stand reduction due to plant stress at time of transplanting. Lorsban is also labeled as a band treatment for direct seeding where the band placement should be behind the planter shoe and in front of the press wheel to achieve shallow incorporation. Make sure that the proper rate of Lorsban and depth of incorporation is used, or else the product will be diluted and off-target, leading to control failures.

Diazinon (AG500, 50W and AG600 WBC), another OP insecticide, can be used in the same manner as described for Lorsban except for the band treatment with direct seeding. In

addition, diazinon can also be used on seedbeds, broadcast and incorporated just before planting. It is only labeled on broccoli, Brussels sprouts, cauliflower, cabbage and rutabagas.

Lorsban and Diazinon are federally-restricted organophosphate materials and require oral warnings and signs to be posted at the entrances of treated areas.

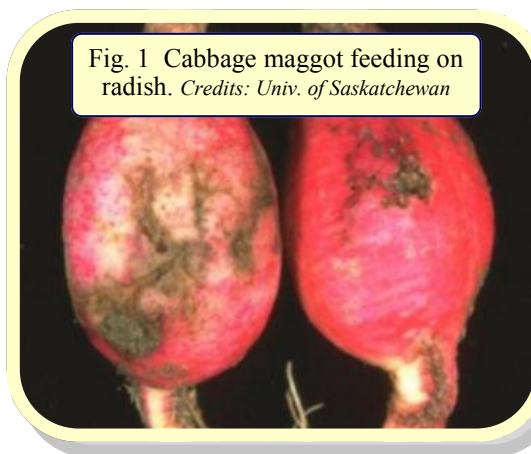


Fig. 1 Cabbage maggot feeding on radish. Credits: Univ. of Saskatchewan

Coragen (new in 2012), a diamide insecticide, has a 2(ee) label to be used as a transplant water treatment for control of CM in cabbage only. Apply 5 fl oz per acre as a transplant water treatment at planting. Apply a minimum of 2 fl oz of treatment solution per plant. It is critical that transplants be watered before transplanting and that the root zone is adequately treated or poor performance will result. Coragen is systemic and needs to be taken up by the roots and get into the plant to be

effective. It does not move well in soil. Therefore, it does not work well as a directed spray to the base of plants after planting and is not labeled for CM in this manner. Do not apply more than 10 fl oz of Coragen per acre per crop by any combination of soil and foliar applications. In a preliminary Cornell study, Coragen performed statistically as good as Lorsban 4E for CM control.

Advantages of using Coragen over Lorsban include:

- Coragen also provides excellent control of worms and flea beetles;
- There are no risks of phytotoxicity to the crop with Coragen;
- Coragen belongs to a different chemical class than Lorsban and Diazinon for resistance management;
- Coragen is not a restricted use insecticide.

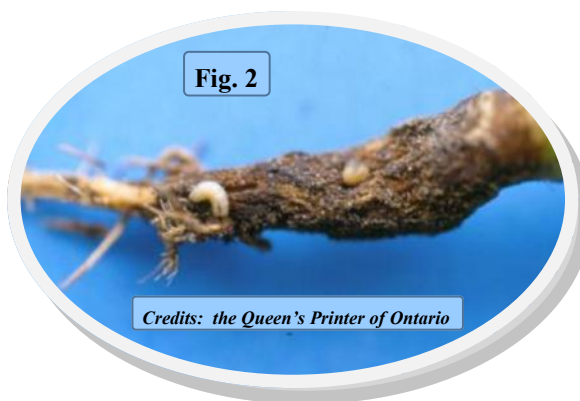


Fig. 2

Credits: the Queen's Printer of Ontario

The 2(ee) label must be in the possession of the user and is available at <http://128.253.223.36/ppds/529807.pdf>.

Capture LFR, a pyrethroid insecticide, is labeled for CM control as a band over the row on the soil surface, or over the furrow (T-band), or in-furrow with the seed. In Cornell studies, Lorsban performed much better (compare 100% clean plants with Lorsban to 55% with Capture LFR) than Capture LFR for control of CM.

Weekly and Seasonal Weather Information						
	Growing Degree Information Base 50° F			Rainfall Accumulations		
Site	2013 Weekly Total 5/21—5/28	2013 Season Total 3/1 - 5/28	2012 Total 3/1—5/20	2013 Weekly Rainfall 5/21—5/28 (inches)	2013 Season Rainfall 3/1—5/28 (inches)	2012 Total Rainfall 3/1—5/28 (inches)
Albany	80.0	309.8	510.5	4.48	10.20	9.24
Castleton	77.3	292.5	514.2	4.65	5.94	9.24
Chazy	58.5	285.7	432.8	4.71	8.27	8.15
Clifton Park	71.9	287.8	474.7	6.19	11.49	10.11
Clintondale	91.6	344.8	308.0	1.22	NA	8.19
Glens Falls	68.7	261.2	381.0	2.86	9.06	7.72
Granville	72.0	NA	327.0	4.38	10.43	10.75
Guilderland	79.0	268.5	427.5	0.91	1.58	5.00
Highland	89.5	358.5	544.0	1.60	4.94	7.69
Lake Placid	39.9	145.9	NA	4.57	9.38	NA
Montgomery	87.9	300.4	415.5	1.84	6.84	NA
Monticello	64.3	212.4	370.5	0.00	0.00	0.72
Redhook	83.5	297.5	500.5	1.06	4.82	7.24

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