



# WEEKLY CROP UPDATE

UNIVERSITY OF DELAWARE COOPERATIVE EXTENSION

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## Vegetable Crops

Vegetable Crop Insects - Joanne Whalen,  
*Extension IPM Specialist*; [jwhalen@udel.edu](mailto:jwhalen@udel.edu)

### Asparagus

Be sure to check for asparagus beetles laying eggs on asparagus spears. As a general guideline, a treatment is recommended if 2% of the spears are infested with eggs. Since adults will also feed on the spears, a treatment is recommended if 5% of the plants are infested with adults.

### Cabbage

Continue scouting fields for imported cabbage worm and diamondback larvae. As a general guideline, a treatment is recommended if you find 5% of the plants infested with larvae.

### Peas

Be sure to sample for pea aphids on all stages of peas. On small plants, you should sample for aphids by counting the number of aphids on 10 plants in 10 locations throughout a field. On larger plants, take 10 sweeps in 10 locations. As a general guideline, a treatment is recommended if you find 5-10 aphids per plant or 50 or more aphids per sweep. Be sure to check labels for application restrictions during bloom.

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### No-Till and Strip-Till Fresh Market

Vegetables - Gordon Johnson, *Extension Vegetable & Fruit Specialist*; [gcjohn@udel.edu](mailto:gcjohn@udel.edu)

Most fresh market vegetable crops are either grown under conventional tillage or plasticulture systems requiring significant tillage. From a soil health perspective organic matter is the driver for healthy soils and the more the soil is worked, the faster that organic matter is decomposed and lost from soils.

One solution for this dilemma is using no-till, where organic matter can be conserved or increased. The best success story with no-till vegetables has been with pumpkins, which are commonly direct seeded through a killed cover crop mulch (often hairy vetch or rye) or through crop residue (most commonly barley or wheat small grain stubble). The mulch provided keeps pumpkins off of the ground and has greatly reduced fruit diseases and improved quality. Other seeded crops such as sweet corn and snap beans have been successfully no-tilled in the region.

No-till also has been shown to work with transplanted crops. Systems were developed and tested for tomatoes on hairy vetch and for numerous crops transplanted through small grain cover from peppers to cantaloupes. There were several no-till transplanters developed and we tested one at UD back in the 1990s.

Incorporating leguminous cover crops into these systems can reduce nitrogen needs for the

vegetable crop being grown. In the pumpkin no-till into hairy vetch system, typically no additional N will be needed.

There are several reasons why no-till has not been more widely adopted for vegetable crops. No-till vegetables cannot be grown for early crops which are often the most profitable, due to soil temperatures remaining cooler, longer. Establishment can be an issue, especially through thick cover crop mulches. Weeds are controlled partially by the mulches and herbicides can be used for residual control; however, weed escapes can be problematic because cultivation is not available as a tool. Certain pests such as slugs, mites, and several insects can be an issue in no-till. Drip irrigation is also more difficult to use in no-till.

An alternative that combines some of the benefits of no-till with conventional tillage is strip-till, where cover is maintained between rows and a 6-12 ft tilled strip is where vegetables are seeded or transplanted. Strips can be formed with narrow rotary cultivators or with strip till coulters. This allows for earlier crops and for better establishment. A subsoiler can be run in the strips to improve root development. Management of the strip area needs to be planned ahead of time so that cover crops do not get too large - strips are formed when cover crops are small. There is also potential to install drip irrigation in the strips. In a strip-till system weed management is critical and residual herbicides will be critical.

Research has shown that for many vegetables, yields in strip till and no-till are comparable or higher than similar season conventional or plasticulture production.

The following are some of the keys to success with no-till fresh market vegetables:

- 1) Well drained soils are best for no-till and strip-till.
- 2) Fields to be no-tilled or strip-tilled should have minimal weed seed banks and little or no perennial weed problems.
- 3) An effective cover crop is required for no-till and strip-till systems to work. The cover crop

should produce enough biomass to cover the soil and provide mulch that limits light and weed germination. Winter cover crops that have worked well for vegetable no-till in our area are hairy vetch, crimson clover, rye, vetch-rye combination, ryegrass, and subterranean clover. For late summer no-till vegetable crops, several of the millets have provided good cover.

4) The cover crop should be easy to kill by chemical or mechanical means and have little or no-regrowth potential. Proper timing of cover crop kill is necessary to avoid reseeding in no-till systems. For strip-till systems, strips need to be formed early in the growth stage of the cover.

5) Attention needs to be paid at planting in no-till systems to provide good soil-seed contact for direct seeding or root placement and firming for transplants.

6) Provision should be made for moving residual herbicides into the soil through the mulch cover. This may require overhead irrigation.

7) Provision should be made to manage weed escapes. This may require spot spraying or hand weeding.

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### Late Blight Found in Wisconsin Grown Seed Potatoes - Bob Mulrooney, Extension Plant Pathologist; [bobmul@udel.edu](mailto:bobmul@udel.edu)

Plant pathologist, Amanda Gevens, confirmed the late blight pathogen, *Phytophthora infestans*, in potato seed grown in Wisconsin on April 12, 2011. Dr. Gevens says:

"Given the sampling method and size, it is not known how widespread or with what incidence this disease risk may be. Additionally, our testing methods are highly sensitive and our levels of detection were weakly positive, indicating low quantity of pathogen. This notification is to make potato seed and production growers aware of the potential risk of late blight in the 2011 crop. Infected seed may result in a poor stand or delayed emergence, and can initiate an epidemic when disease spreads from seed piece to sprout and foliage." *Long Island Fruit and Vegetable Update*. 4-21-2011

Given the above information, growers in Delaware and elsewhere should be watchful this season, inspecting crops on a regular basis and adhering to spray schedules when risk of disease infection and/or spread is high.

Note: The Potato Disease Advisory will be a regular feature in WCU once we get farther into the season. This does provide information on conditions that are favorable for late blight and provides growers with the information to make well-timed sprays. Wisconsin used to provide potato seed for Delaware growers and I am not sure if anyone still gets seed from Wisconsin. Delaware growers do get seed from Maine and fortunately there were no reports of late blight in Maine seed last season according to Steve Johnston, Extension Potato Specialist. Scout fields early to avoid surprises later.

## Agronomic Crops

**Agronomic Crop Insects** – *Joanne Whalen, Extension IPM Specialist; [jwhalen@udel.edu](mailto:jwhalen@udel.edu)*

### Alfalfa

Continue to scout fields for both alfalfa weevil and pea aphids. Economic levels of both can be found in alfalfa fields at this time. As a general guideline, you should consider a treatment in alfalfa less than 10 inches tall if you find 40-50 aphids per stem. The treatment threshold for alfalfa 10 inches or taller in height is 75- 100 per stem. Although beneficial insects can help to crash aphid populations, cooler temperatures will slow their activity. As a general rule, you need one beneficial insect per every 50-100 aphids to help crash populations. As soon as temperatures increase, we will start to see a significant increase in feeding damage from alfalfa weevil. As alfalfa approaches harvest, the decision to cut instead of treat may be considered. However, this option should only be used if you plan to cut shortly after you find an economic threshold level since damage can occur quickly. Cutting should only be considered as a management option if you can cut within 3-5 days of finding an economic level. Also, the effectiveness of using cutting as a management strategy is affected by temperatures after cutting. If the temperature remain cool, it has not always been effective. Since you need

“stubble heat” to get control. As you get close to harvest, be sure to check labels carefully for time between application and harvest.

### Field Corn

As soon plants emerge, be sure to check for cutworm feeding, even if an at-planting insecticide or a Bt corn was used for cutworm control. The wet soil conditions this spring have resulted in a higher level of grey garden slugs being found under residue in no-till fields. Although we see more problems in seedling corn when temperatures remain cooler and soil remains wet, it is generally during the warmer days of April when we start to see egg hatch. You will need to sift through previous crop residue and look at the soil surface for slugs. We are generally finding eggs and adults at this time; however we have started to see the first juveniles as well. The eggs, which are clear and about half the size of a BB, are often found in clusters within crop residue or at the soil surface. Although no thresholds are available, past experience in the Mid-Atlantic has indicated that pre-plant levels of five or more grey garden slugs per square foot can indicate the potential for a problem. In 2010, DuPont issued a 2ee recommendation for Lannate LV for slug management (<http://www.cdms.net/LDat/ld183004.pdf>); however, we have limited experience with the use of Lannate for slug management. Most of our experience has been with the use of a broadcast application of Deadline M-Ps at the low end of the labeled rate (<http://www.cdms.net/LDat/ld7CL003.pdf>). For more information on slug biology, sampling and management, please refer to the following fact sheet from Ohio State University: <http://ohioline.osu.edu/ent-fact/pdf/0020.pdf>.

### SmartStax Approved for Refuge-In-Bag

Here is a summary of information on recent federal labeling of refuge-in-the-bag (RIB) from the Ohio State C.O.R.N newsletter (Ron Hammond, Extension Entomologist). Commercialization is pending individual state authorizations and notifications, as required.

“Two SmartStax corn products having the refuge-in-the-bag (RIB) concept have received registration from the U.S. Environmental Protection Agency, Genuity SmartStax RIB

Complete by Monsanto Company and REFUGE ADVANCED™ powered by SmartStax by Dow AgroSciences. Both of these products are a blend of 95 percent SmartStax corn seed and 5 percent refuge (non-Bt) seed that farmers can plant across their entire field. This means farmers who plant these products no longer need to plant a separate, structured refuge for above-or below-ground pests in the Corn Belt. These new products are the outcome of collaboration between Monsanto and Dow AgroSciences, with both expecting a full commercial launch with broad lineups of hybrids for sale for 2012 planting.”

### Small Grains

Although aphid population remain low, weather conditions favoring quick increases in populations include a combination of cool temperatures followed by a quick increase in temperatures. Although beneficial insects can help to crash aphid populations, cooler temperatures will slow their activity. As a general rule, you need one beneficial insect per every 50-100 aphids to help crash populations. Since barley heads are starting to emerge in some locations, be sure to watch for the movement of aphids into grain heads. In many cases, beneficial activity is still not high enough to take care of populations that can move from the lower canopy of the plants into the grain heads.

<http://ag.udel.edu/extension/IPM/ExtensionFactSheets/AphidControlinSmallGrainIPM-4.pdf>

Cereal leaf populations still remain relatively low but we can now find the first larvae in fields. Refer to our factsheet (<http://ag.udel.edu/extension/IPM/ExtensionFactSheets/CerealLeafBeetleFactSheetIPM-5.pdf>) as well as the [Agronomic Crop Insects](#) article in [WCU 19:2](#) for sampling and treatment guidelines.

Once grain heads have emerged, you should also begin sampling small grains for grass sawfly and armyworm larvae. Although we can see economic damage from local overwintering armyworm populations, we often see significant outbreaks in years when moths coming from the South migrate to our area. Reports from trapping programs in Kentucky are indicating that trap catches for 2011 appear to be following their 2006 & 2008 outbreak levels - so be sure to begin

checking for small larvae.

<http://www.ca.uky.edu/agcollege/plantpathology/extension/KPN%20Site%20Files/pdf/KPN1264.pdf>

Remember, armyworm larvae are nocturnal so look for larvae at the base of the plants during the day. As a general guideline, a treatment should be considered if you find one armyworm per foot of row for barley and 1-2 per foot of row for wheat. The first small sawflies have been found by consultants in wheat and barley in Kent and Sussex counties. Since sawflies feed on the plants during the day, small sawfly larvae can often be detected early using a sweep net. *However, there is no threshold for sweep net samples.* Once sawfly larvae are detected, sample for larvae in 5 foot of row innerspace in 5-10 locations in a field to make a treatment decision. You will need to shake the plants to dislodge sawfly larvae that feed on the plants during the day. As a guideline, a treatment should be applied when you find 2 larvae per 5 foot of row innerspace or 0.4 larvae per foot of row. If armyworms and sawflies are present in the same field, the threshold for each should be reduced by one-half. The higher rates of insecticides are needed for grass sawfly control. <http://ag.udel.edu/extension/IPM/ExtensionFactSheets/SawflyandArmywormIPM-6.pdf>

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**Small Grain Disease Update** - Bob Mulrooney, *Extension Plant Pathologist*; [bobmul@udel.edu](mailto:bobmul@udel.edu)

### Barley

We are getting more reports of powdery mildew in 'Thoroughbred' barley. This variety is very susceptible and growers have been spraying fungicides to control the disease and protect their yields. Tilt or other labeled triazole fungicides work well along with strobilurin combination products like Quilt, Stratego, etc. Folicur, which is a triazole or sterol-inhibiting fungicide, does not have powdery mildew control on the label for barley or wheat. Folicur (tebuconazole) is now available as a generic as Monsoon, Orius, Embrace, Tebustar and others. When small grains are followed by soybeans there are no plant back restrictions but if you are planting processing or fresh market

vegetables be sure to check the label for what can be planted if a fungicide is used in barley or wheat.

### Wheat

Disease activity has been light so far. Another sample of wheat spindle streak mosaic virus was received this week. See the article titled [Viruses in Winter Wheat](#) in [WCU 19:2](#) for more information. The one control option for wheat spindle streak is planting resistant varieties. Seed company literature and web sites can provide that information. The University of Maryland has some ratings for disease resistance from their variety trial plots. Dr. Arv Graubaskas revised the MD list last December and it is online at: <http://agdev.anr.udel.edu/weeklycropupdate/wp-content/uploads/2011/04/MDWheatDiseaseRatings2010.pdf>.

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### Barley with Multiple Nutrient Deficiencies -

*Richard Taylor, Extension Agronomist;* [rtaylor@udel.edu](mailto:rtaylor@udel.edu) and *Phillip Sylvester, Kent Co., Ag Agent;* [phillip@udel.edu](mailto:phillip@udel.edu)

Another field of barley with severe deficiency symptoms showed up in Kent County this past week. Although the field had received ammonium sulfate this spring, the rate used provided only about 10 to 15 lbs of S per acre, which is less than the crop requirement. If the low S fertilization rate is coupled with the heavy rainfall many areas have experienced over the past several weeks, it would not be surprising that a significant amount of the sulfate-S has leached below the rooting zone of barley. In this case, although the visual symptoms (Photo 1 and 2) suggested sulfur (S) deficiency with general chlorosis of the leaves, especially the newest leaves, and shortened plants, the soil test suggested that S was not the only deficiency likely to impact barley yield even if sulfur were added (Table 1). On the bad sample note the low soil organic matter (SOM) level (0.9%) and the impact on the cation exchange capacity (CEC) of the soil (2.1 meq/100 grams of soil in the bad area versus 3.6 meq/100 grams of soil in the good area). The CEC impact was also evident in the amount of potassium (K) and magnesium (Mg) that the soil could hold.



Photo 1. Close-up of deficient barley plants showing general chlorosis, especially in newest leaves, and stunting.



Photo 2. Field view of deficient barley plants showing general chlorosis and stunting compared with less affected plants in the background.

The short term solution to the problem is the addition of K-Mag (0-0-22-11Mg-22S) fertilizer to the field. However, the soil test results suggest that on a longer-term horizon, the critical need of the field is the addition of organic matter, either as green manure crops, compost additions, or manure additions. Trying to maximize the amount of crop residue and minimize the amount of SOM mineralization due to tillage operations is also recommended. The use of winter cover crops and green manure crops whenever the field is not being cropped will gradually raise the SOM levels, as will any additions of manures or composts. Not only with organic will additions help raise the CEC and soil nutrient holding capacity but will also help

increase water holding capacity and improve yields in the long run.

Table 1. Soil test report on barley field comparing good and bad areas.

	Good Barley	Bad Barley
Soil pH 1:1	6	6.3
Buffer pH	6.9	7
Organic Matter %	2.4	0.9
U of D P Sat Ratio	39	59
Mehlich3 Phosphorus ppmP/FIV	193	144
K ppm	98	54
Ca ppm	442	275
Mg ppm	74	44
SO <sub>4</sub> -S ppm	20	7
Zn ppm	4.56	2.99
Mn ppm	61	15
B ppm	0.36	0.16
CEC meq/100g	3.6	2.1
H*	15	10
K*	7	7
Ca*	61	65
Mg*	17	18
Na*	0	0

\*Indicated Base Saturation

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**When Do Corn Yields Begin to Decline with a Late Planting Date?** - Richard Taylor, *Extension Agronomist*; [rtaylor@udel.edu](mailto:rtaylor@udel.edu)

With the five-day forecast for New Castle County showing a chance of light rain or showers all five days, a grower asked me when to expect corn yields to begin to decline. Some of the work done in the past with planting dates indicate that the "ideal" planting window for corn, where you can expect maximum yields, is April 25 to May 10, although those dates will vary slightly as you move from north to south in the state. Many growers have developed the habit of planting corn very early and are therefore a bit concerned that we are moving from mid-April to late April with little accomplished in the northern portions of Delaware. Southern Delaware missed some of the recent rains and growers there were able to go full out planting corn this week, while many in the northern

sections of the state were again delayed with wet, cold soils.

We all hope that the weather will cooperate soon so the corn and bean crops can be planted on time; but, for those not constrained by large acreages to plant, the good news is that there are still several weeks to go in the ideal corn planting window. Once we get past mid-May, corn yield potential does begin to decline -- slowly at the beginning but rapidly as we move into June.

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**Small Grain Weed Control** - Mark VanGessel, *Extension Weed Specialist*; [mjv@udel.edu](mailto:mjv@udel.edu)

I have looked at a few fields of winter wheat or barley where growers were concerned about lack of weed control. Turns out these fields had jagged chickweed or speedwell in them, which spring applications of Harmony Extra do not control. Based on our observations either Osprey or Harmony Extra *applied in the fall* did do a good job of controlling jagged chickweed. Speedwells are not controlled with Harmony Extra. We have trials this spring and will have more to share with you by fall, but most of the products that can be sprayed this late in the season do not control speedwell.

For wild garlic control, Harmony Extra is the product of choice and the label allows two applications per season. But, be sure to read the label for the total amount that can be used per season.



Common chickweed



Common chickweed



Jagged chickweed

**Grain Marketing Highlights** - *Carl German, Extension Crops Marketing Specialist;*  
[clgerman@udel.edu](mailto:clgerman@udel.edu)

### Slow Planting Progress Bolsters Commodity Prices

U.S. corn planting progress was 7% complete as of Sunday, April 17, one point behind the five-year average and nine points behind last year's pace. Corn Belt states were reported to be mostly behind schedule with only Illinois in line with the five year average. Another storm system is moving across the Midwest on Tuesday with rain expected the remainder of the week. The storm system is expected to delay planting further. Corn planting is not expected to make much progress this week.

New-crop contracts for soybeans are expected to lose ground to corn on the idea that continued delays in corn and spring wheat planting could lead to increased soybean acreage later this spring. Spring wheat planting progress was reported at 5% complete as compared to 12% for the five-year average. The weather situation across the various wheat growing areas remains poor. The condition of the winter wheat crop continues to weigh-in on wheat futures prices, with only 36% of the U.S. crop rated as good to excellent compared to 69% last year. Dry weather persists in the U.S. Plains. Hard red winter wheat in the region has been too dry since it was sown last fall. Dry weather continues to be a concern in China.

### Market Strategy

Outside market forces have turned supportive to commodity prices this week. The Dow is currently at 12,462, nearby crude at \$110 per barrel, and the U.S. dollar index at 74.391. The recent strong sell-off in the U.S. dollar index could drive demand back to U.S. soybean supplies. Dec '11 new crop corn futures are currently trading at \$6.83 per bushel (a new life-of-contract high); Nov '11 soybeans at \$13.81; and July SRW wheat at \$8.39 per bushel. May '11 old crop corn futures are trading at \$7.62; May '11 soybean futures at \$13.69, and May '11 SRW wheat futures at \$8.05 per bushel. Commodity prices are expected to remain strong this week, barring any unexpected external factors, due to weakness in the dollar and the slow U.S. planting

pace. The next USDA Supply and Demand report will be released on Wednesday, May 11.

## General

### Inconsistent Control with Burndown Herbicides - Mark VanGessel, Extension Weed Specialist; [mjv@udel.edu](mailto:mjv@udel.edu)

There are a lot of fields that have been sprayed with a burndown and the control was not as good as expected. It is not uncommon for early season burndown applications to be erratic, but this season seems worse than others. The most common complaints have been with grass control, henbit, and chickweed. A few observations from my experiences: glyphosate is good on most of these species, but is not great. Glyphosate often provides good to excellent control of grasses if the rate is adequate (at least 0.75 lbs acid equivalent) and the plants are growing. However, annual ryegrass (aka Italian ryegrass) is hard to kill with glyphosate and requires close to a 2X rate if spraying in early spring. The addition of a triazine will significantly reduce the control of annual ryegrass. I often see only fair control of henbit with glyphosate. The addition of a triazine herbicide like atrazine or simazine will help. That is the tough choice, adding a triazine may help with some species, but can reduce the control of other species. You have to determine what weeds you have and which are going to be the most difficult to control and decide.

As far as paraquat, adding a triazine for the burndown before corn almost always improves control. However, grass control of annual ryegrass or grass cover crops will probably not be acceptable due to significant regrowth.

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### A Few Changes to Rotational Intervals for Herbicides - Mark VanGessel, Extension Weed Specialist; [mjv@udel.edu](mailto:mjv@udel.edu)

Since the Weed Control Manuals were updated last fall, I have been made aware of a few label changes for crop rotations. The label for Raptor now requires a longer interval for barley (9 months); and intervals for alfalfa, lima beans,

snap beans, and peas are shorter (no restriction for these crops). Basis rotations also are not correct in the guides, most notably barley has been shortened to 4 months, cucumber 10 months, and tomatoes 1 month; while snap beans and peas have switched from 8 to 10 months and squash is now 18 months. Remember our guides are revised in September and any changes made since then are not updated so it is important that you always refer back to the current label.

## Weather Summary

Carvel Research and Education Center Georgetown, DE

Week of April 14 to April 20, 2011

Readings Taken from Midnight to Midnight

### Rainfall:

1.11 inch: April 16

0.01 inch: April 17

### Air Temperature:

Highs ranged from 84°F on April 20 to 59°F on April 15.

Lows ranged from 51°F on April 19 to 41°F on April 15.

### Soil Temperature:

58.5°F average

Additional Delaware weather data is available at [http://www.deos.udel.edu/monthly\\_retrieval.html](http://www.deos.udel.edu/monthly_retrieval.html) and <http://www.rec.udel.edu/TopLevel/Weather.htm>

*Weekly Crop Update is compiled and edited by Emmalea Ernest, Extension Associate - Vegetable Crops*

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