



# 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)

### Cabbage

Continue to scout all fields for beet armyworm, fall armyworm, diamondback and cabbage looper larvae.

### Lima Beans

Continue to scout all fields for lygus bugs, stinkbugs, corn earworm, soybean loopers and beet armyworm. Multiple sprays will be needed for worm control.

### Peppers

Be sure to maintain a 5 to 7-day spray schedule for corn borer, corn earworm, beet armyworm and fall armyworm control. You should also watch for economic levels of aphids.

### Snap Beans

All fresh market and processing snap beans will need to be sprayed from the bud stage through harvest for corn borer and corn earworm control. You should also watch for beet armyworm and soybean loopers. In addition, the highest labeled rates may be needed if population pressure is heavy in your area.

### Spinach

Garden webworm, Hawaiian beet webworms and beet armyworms are active at this time and controls need to be applied when worms are

small and before they have moved deep into the hearts of the plants. Controls need to be applied early when worms are small and before significant webbing occurs.

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Controlling Downy Mildew and Alternaria in Cole Crops - Bob Mulrooney, Extension Plant Pathologist; [bobmul@udel.edu](mailto:bobmul@udel.edu)

Symptoms of downy mildew include purple to yellowish-brown spots on upper leaf surfaces. A grayish-white spore mass will develop and cover the underside of leaves under ideal temperatures (night temperatures of 46 - 61°F and day temperatures below 75°F). Downy mildew can kill young plants. Heavily infected leaves may drop providing entry points for bacterial infections (black rot and soft rot). Symptoms of Alternaria on infected leaves include small, expanding circular lesions with concentric rings that may have a 'shot-hole' appearance as lesions age. Heavily infected seedlings may result in damping-off. Control of Downy mildew and Alternaria begins with preventative fungicide applications. Use one of the following at the first sign of disease and continue every 7 to 10 days (Please refer to the pesticide table on page F21 of the [2011 DE Commercial Vegetable Production Recommendations](#) to determine which fungicide is labeled for each specific crop.):

- Quadris (azoxystrobin, 11) at 6.0 to 15.5 fl oz 2.08SC/A, or
- chlorothalonil (M5) at 1.5 pt 6F/A or OLF, or
- Cabrio (pyraclostrobin, 11) at 12.0 to 16.0 oz

20EG/A, or

- Endura (boscalid, 7) at 6.0 to 9.0 oz 70WG/A, or
- Ridomil Gold Bravo (mefenoxam + chlorothalonil, 4 + M5) at 1.5 lb 76.5WP/A (14-day schedule),
- Manzate Pro-Stick (mancozeb, M3) at 1.6 to 2.1 lb 75DF/A, or
- Switch (cyprodinil, 9) at 11.0 to 14.0 oz 62.5WG/A (*Alternaria* only).

For downy mildew only, apply either:

- Actigard (acibenzolar-S-methyl, P) at 1.0 oz 50WG/A (begin applications 7-10 days after thinning and re-apply every 7 days for a total of 4 applications per season.), or
- Aliette (fosetyl Al, 33) at 3.0 to 5.0 lb 80WDG/A (on 14-day schedule).

For more information please see [2011 DE Commercial Vegetable Production Recommendations Guide](#).

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**Weather Conducive for a Host of Lima Diseases** - Bob Mulrooney, *Extension Plant Pathologist*; [bobmul@udel.edu](mailto:bobmul@udel.edu)

The recent heavy rainfall from the storms has been very favorable for development of downy mildew. Lima bean fields should be scouted carefully now for the presence of downy mildew as well as white mold. The weather has also raised the possibility of seeing gray mold (*Botrytis*). Race F of *Phytophthora phaseoli* was the only race of downy mildew identified in 2006, 2008, 2009, and 2010. Preventative applications of 2 lbs. fixed copper, 2 lbs. Ridomil Gold/Copper, or 3- 4 pts. Prophyte have provided control of downy mildew in the past. The newest formulation of fixed copper from DuPont is Kocide 3000 and it performs as well as the other formulations of copper at the rate of 1.3 lbs/A. The best controls continue to be Ridomil/Gold Copper, Prophyt, or other labeled phosphonate fungicides and Omega, especially when disease pressure is high. Application at flowering or when pods are first forming is recommended if weather is favorable for disease. If disease is present Ridomil/Gold Copper and phosphonate fungicides have shown to provide some curative activity if applied when

downy mildew is first seen. If downy is present in the field do not use copper fungicides alone for curative control, they will not provide control. Another product that is labeled on lima beans for white mold control is Omega but not downy mildew, but in DE this would be a 2ee use that someone like me can recommend since the fungicide is labeled on lima beans. I have three years data that show excellent control of downy mildew at 5.5 fl oz and 8.0 fl oz/A as a preventative application (before disease is found in the field). Omega is not labeled for aerial application, however. Headline from BASF is also labeled for downy mildew. I have tested it and it has provided good control of downy when applied on a 10 day schedule at 6.0 fl oz. /A. It does not give as good disease control as Ridomil Gold/Copper or the phosphonates preventatively but the yields have been comparable. It is also labeled for anthracnose which the other products do not control. See the [2011 DE Commercial Vegetable Production Recommendations](#) for more information on fungicides for lima beans.



Downy mildew caused by *Phytophthora phaseoli*



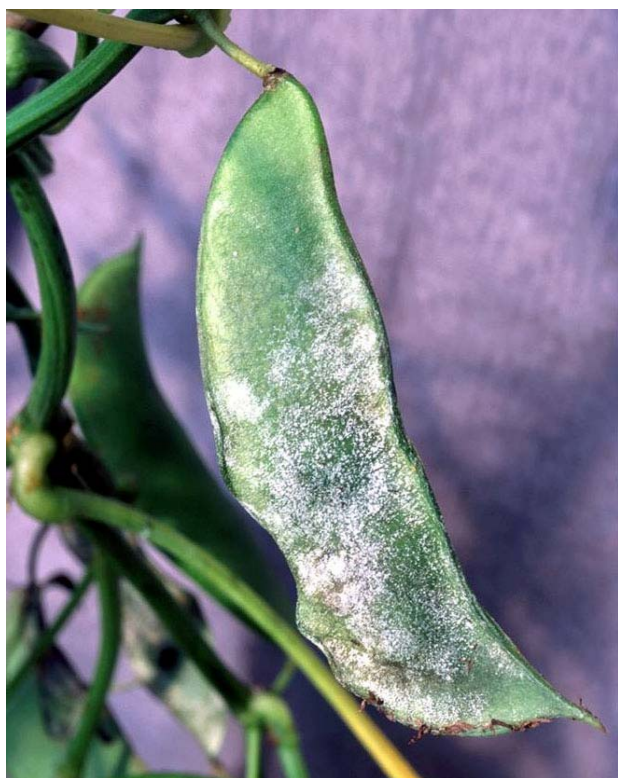


Downy mildew on raceme and petiole

*Phytophthora capsici* will infect lima bean pods as well and can look very similar. *P. capsici* or lima bean pod rot is usually found in wet low spots in the field. The fungus growth looks more granulated or “pebbly” than downy mildew, microscopic confirmation is encouraged.



Downy mildew on the upper pod and lima bean pod rot on the lower pod. Note the granular appearance of the fungus on the lower pod and the lack of a reddish brown border on the pod infected with lima bean pod rot or *Phytophthora capsici*.



*Phytophthora capsici* on lima bean pod.

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**Time to Sample for Nematodes in Vegetable Fields** - Bob Mulrooney, Extension Plant Pathologist; [bobmul@udel.edu](mailto:bobmul@udel.edu)

Fall is the best time to soil sample for nematode pests such as root knot, lesion, and other plant parasitic nematodes. After fall harvest but before any fall tillage is done take soil cores six inches deep between plants in the row. Samples should be taken in the root zone of the old crop. Twenty cores/ sample should be taken from random spots in the field and placed in a plastic bucket gently mixed, and a pint of soil submitted for analysis. Large fields should be subdivided into blocks of 15- 20 acres each and sampled separately. Nematodes are not uniformly distributed in the soil and it would be easy to miss significant numbers if a single sample of 20 soil cores represented a large acreage. Nematode test bags and instructions are available for purchase from the county Extension offices. Samples cost \$10.00. Fall sampling for root knot nematodes is strongly

recommended for fields that will be planted in cucumbers, watermelons, cantaloupes, lima beans or other high value vegetables where root knot could reduce production. Forms and instructions are also available on the web at <http://ag.udel.edu/extension/pdc/index.htm>.

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**Wet Weather Lima Bean Issues** - Gordon Johnson, *Extension Vegetable & Fruit Specialist*; [gcjohn@udel.edu](mailto:gcjohn@udel.edu)

Due to the wet conditions, lima bean growers are reminded to check all fields for downy mildew and white mold. *Phytophthora capsici* and *Pythium* also may be present and can confuse diagnoses. Consult with your extension pathology specialists, county agents, or state disease diagnosis personnel for correct identification. As harvest nears, note days to harvest if fungicides are to be applied. See additional articles for identification and control of these diseases.

The main fall lima bean harvest is starting. However, harvest is being hampered by wet conditions. Rain and wet fields at harvest lead to several issues that growers will face.

The first issue is brown beans. Many of our June planted fields had variable and partially split sets. This means that there are higher numbers of dry pods on the plants. In dry harvest conditions, these dry seeds can be harvested, separated, and processed. However, during wet weather, dry seeds will start to deteriorate and will turn brown. This makes processing more difficult due to the necessity of removing them.

In addition, because of recent storms where plants or have lodged and more branches are touching the ground, many of the dried pods will rot, leading to rotted seeds that must be removed.

A third issue is seed sprouting. In recent plot harvests, I have seed small but significant numbers of seeds that have started to sprout. Again these must be removed during processing.

Finally, as harvest resumes, wet field conditions along with harvester and truck traffic on fields will lead to more rutting and compaction that

will need to be addressed in future cropping cycles.

## Fruit

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

Planting season is here for plasticulture strawberry systems. In our area, most strawberries are planted using plugs produced by rooting tips. While plugs are more forgiving than bare root plants, actions prior to planting and at planting still can affect future performance. The goal is to have quick, uniform rooting across all plants on the bed so that proper sized crowns are produced before going into winter.

The first key is to have a firm, high, uniform raised bed with black plastic mulch tight against the soil. This allows heat to transfer to the soil, warming the root zone, and promoting fall growth. Loose plastic will not do this.

Liming should be done ahead of time if necessary to raise pH and provide Ca and Mg if necessary. Base fertilizer should be applied to the bed before formation to provide necessary P and K and adequate but not excessive N for fall growth (60-75 lbs N is recommended at bedding).

Whether you are planting by hand using a dibber to make holes or are using a water wheel transplanter, uniform planting depth is critical. Workers placing plugs should be trained to place plants so that crowns are not buried or are not above soil level. If buried, crowns will be susceptible to rots and plants may die or be stunted. Buried buds may not be able to leaf out. If planted too shallow, plugs will be susceptible to drying out before being able to root. In addition, during planting, workers should not plant weak, diseased, or damaged plants

Water is also critical during establishment. While we are having a spell of rainy weather, you cannot always count on rain during the establishment period. Drip irrigation should be run to wet the bed. However, this is usually not enough. Plants should receive water at transplanting in the hole and should also be

watered overhead during the establishment period for best results.

Planting date is critical for plasticulture systems. While row cover management can be used to control growth, planting at the proper date will make row cover management in the fall much simpler. The ideal planting window is the first half of September, prior to September 20, for most areas in our region. Strawberries planted in this window should produce adequate numbers of branch crowns in the fall period and can then be covered in late November or early December for winter protection.

Later plantings (after September 20) will require earlier row covering to trap some heat and put on adequate fall growth.

In high tunnels, the planting window in the fall will be wider because of the extra heat provided and later plantings can be successful. However, some earliness will be lost.

## Agronomic Crops

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

### Soybeans

We continue to find corn earworms in soybeans. If you have not checked your fields, be sure to sample fields so you do not miss a late hatch of larvae. We can still find moths laying eggs in fields. Although trap catches appeared to be declining on Sept 5, our most recent trap catches showed an increase again. You should also check the recent report from VA regarding their high trap catches and recent, new infestations (<http://www.sripmc.org/Virginia/>).

A number of defoliators are still present in double crop beans including bean leaf beetles, grasshoppers, and in some cases hot spots of beet armyworm. The threshold for defoliation will need to be reduced if a mixed population is present. Although soybean looper populations still remain low, there are reports from the southern states of building populations. Be sure to check my comments from last week's newsletter regarding soybean loopers. In addition, the following link also provides useful

information for managing this important defoliator.

<http://www.arkansas-crops.com/2011/08/30/loopers-loom-be-ready/>

This past week I received a question about lodging in double crop soybeans. It appears that damage may have been caused by an insect pest that is rarely seen in soybeans, the lesser corn stalk borer. Although I have never observed this pest in soybeans in Delaware, there have been a number of reports of this pest in states to our south this past season (especially North Carolina and Tennessee). Information from the south indicates that it is primarily a problem in late planted fields grown in sandy soils. In addition, it is most often found in areas of the field where there is little or no small grain stubble. The following links provide information on this insect pest.

<http://www.utcrops.com/news/2011/08/lesser-cornstalk-borer-in-soybeans/>

<http://agfax.com/Content/north-carolina-lesser-corn-stalk-burer-08192011.aspx>

[http://ipm.ncsu.edu/current\\_ipm/11PestNews/11News15/pestnews.pdf](http://ipm.ncsu.edu/current_ipm/11PestNews/11News15/pestnews.pdf)

### Small Grains

As you make plans to plant small grains, you need to remember that Hessian fly can still be a problem. Since the fly survives as puparia ("flax seeds") in wheat stubble through the summer, you should still consider this pest as you make plans to plant small grains. In our area, damage has been the result of spring infestations. Plants attacked in the spring have shortened and weakened stems that may eventually break just above the first or second node, causing plants to lodge near harvest. Warm fall weather conditions can extend fly emergence and egg-laying beyond the fly-free dates, but these dates should still be used as a guideline for planting. Since we rarely see plants stunted in the fall, we still feel that most of the damage we see is occurring from spring infestations. Plants attacked in the fall at the one-leaf stage may be killed outright. Wheat attacked later in the fall will be severely stunted, with the first tillers killed and plant growth delayed. Plants infested in the fall can easily be recognized by their darker than normal bluish coloration and leaves



with unusually broad blades. Combinations of strategies are needed to reduce problems from Hessian fly:

- Be sure to completely plow under infested wheat stubble to prevent flies from emerging.
- Avoid planting wheat into last season's wheat stubble, especially if it was infested with Hessian fly.
- Avoid planting wheat next to last season's wheat fields - the most serious infestations can occur when wheat is early planted into wheat stubble or into fields next to wheat stubble.
- Eliminate volunteer wheat before planting to prevent early egg-laying.
- Do not use wheat as a fall cover crop near fields with infestations.

- When possible, plant after the fly-free date. (Oct 3 - New Castle County; Oct 8 - Kent County; Oct 10 - Sussex County).

- Plant resistant varieties. You should look for varieties that have resistance to Biotype L. You will need to check with your seed dealers to identify varieties that our adapted our area.

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

For the past two weeks I have written about weed control for winter wheat. The concepts and ideas I talked about are the same for barley and other winter grains. The following table is a list of herbicides labeled for the various small grains.

Herbicide	Form.	Active Ingredient	MOA / Grp #	Winter Wheat	Barley	Oats	Rye
<b>Broadleaf Weeds</b>							
Harmony SG	50 SG	Thifensulfuron	2	XX	XX	XX	
Unity	75 DF	Thifensulfuron	2	XX	XX	XX	
Harmony Extra	50 SG	thifensulfuron + tribenuron	2 + 2	XX	XX	XX	
TNT Broadleaf	75 DF	thifensulfuron + tribenuron	2 + 2	XX	XX	XX	
Starane Ultra	2.8 L	Fluroxypyr	4	XX	XX	XX	
2,4-D	various	2,4-D	4	XX	XX	XX	XX
dicamba (Banvel)	4 S	Dicamba	4	XX	XX	XX	XX
Finesse	75 DF	chlorsulfuron + metsulfuron	2 + 2	XX	POST only		
<b>Numerous Grasses / Broadleaves</b>							
Osprey	4.5 WG	Mesosulfuron <sup>™</sup>	2	XX			
Axiom	68 DF	flufenacet + metribuzin	15 + 5	XX			
PowerFlex	7.5 WG	Pyroxsulam	2	XX			
<b>Strictly Ryegrass</b>							
Hoelon	3 EC	Diclofop	1	XX	XX		
Axial XL	0.42 L	Penoxaden <sup>™</sup>	1	XX	XX		
<b>Seldom Recommended</b>							
Peak	57 WDG	prosulfuron	2	XX	XX	XX	
Stinger	3 L	clopyralid	4	XX	XX	XX	
Buctril	4 EC	bromoxynil	6	XX	XX	XX	
Aim	2 EC	carfentrazone	14	XX	XX	XX	
Prowl H2O	3.8 ACS	pendimethalin	3	XX			
Maverick	75 WG	sulfosulfuron	2	XX			

\*Finesse is labeled in barley for postemergence applications only

\*\* Also contains a safener

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

### USDA September Supply and Demand Report to Rule the Day

USDA's September U.S. and World Supply and Demand report will be released next Monday, September 12. Most private firms have made forecasts expecting USDA to lower their production estimates for 2011 U.S. corn and soybean production, with one exception where the soybean production estimate was higher than USDA's August forecast. On Monday we will know the answer to whether the corn and soybean production estimates are lowered or not, and to what extent? Production concerns and outside market forces have kept commodity markets in an extremely volatile mode over the past couple of weeks. Recent highs for new crop corn and soybeans were set on August 30 and 31. New crop corn closed at \$7.75 per bushel with a high for the day at \$7.77 on August 30. New crop soybeans closed at \$14.57 per bushel on August 31 with the high for the day at \$14.65. Monday's report will determine the next price move. If the production forecast is lowered significantly then we could see the recent highs taken out.

Currently, before the open, Dec '11 day trade corn futures are at \$7.48; Nov '11 soybeans at \$14.20; and July '12 SRW wheat at \$8.10 per bushel. Position squaring/profit taking, demand reduction, and economic uncertainty in the U.S. and Europe are all contributing factors to the break in commodity prices ahead of the report.

### Market Strategy

This may not be the year that a farmer would want to store the physical commodity in hopes of achieving a higher price. As long as basis bids are firm, it is likely to be advisable to take the cash sale at harvest. Quoted this morning, the new crop corn basis bid into Salisbury was 15 under DEC and the new crop soybean basis was even. If for some reason STAYING POWER were to become an issue one could consider selling the cash commodity and purchasing call options. For example, the premium for a Mar '12 corn call with a strike price of \$8.00 is currently costing 50 cents per bushel and the premium for a \$15.00 Mar '12 soybean call is costing 57 cents per bushel.

An analysis of the September report will be released on Monday.

## General

**Fall Control of Perennial Weeds** - *Mark VanGessel, Extension Weed Specialist;*  
[mjv@udel.edu](mailto:mjv@udel.edu)

Fall is the best time to treat most perennial weeds because it is the time that plants are best able to move the herbicide to the roots where it will do the most good. When considering fall weed control the emphasis should be on what the patch of weeds will look like next spring or summer not the amount of dead stems this fall. Also, it is important to consider that a fall application will not eradicate a stand of perennial weeds; the fall application will reduce the stand size or the stand vigor. Fall applications of glyphosate is the most flexible treatment for most perennial weeds such as artichoke, bermudagrass, Canada thistle, common milkweed, common pokeweed, dock, hemp dogbane, horsenettle and johnsongrass. Rates of 1 to 1.25 lb acid per acre are consistently the most economical (or about 1.5X the normal use rate for annual weeds). Allow at least 7 days after treatment before tilling, mowing, or planting through the treated area. Dicamba (Banvel) at 2 to 4 pints is also labeled for artichoke, bindweeds, dock, hemp dogbane, horsenettle, milkweeds, pokeweed or Canada thistle. Allow 10 days after treatment before disturbing the treated plants. Planting small grains must be delayed after dicamba application 20 days per pint of dicamba applied. Fall herbicide applications should be made to actively growing plants. Allow plants to recover after harvest before treating them. Consider keeping the combine header as high as possible so the weeds are quicker to recover; or combining around the weed patches and then spraying those patches immediately after harvesting. Weed species differ in their sensitivity to frost; some are easily killed by frost (i.e. horsenettle) others can withstand relatively heavy frosts. Check the weeds prior to application to be sure they are actively growing.

## Cleaning Equipment to Prevent Spreading Weed Problems Around - Mark VanGessel, Extension Weed Specialist; [mjv@udel.edu](mailto:mjv@udel.edu)

This summer has been very challenging for weed control so I want to remind you to not spread the problems around the farm. I have seen a number of fields with heavy weed pressure due to escapes. Some of these are suspected to be resistant biotypes, others just hard to control weeds and others are due to poor herbicide performance as a result of the summer drought. If a particular weed is giving you headaches, wouldn't you rather deal with it in only one field rather than all of your fields? Ask yourself, what you would do if you could no longer use the best herbicide for a problem weed. In vegetables, where we only have one or two broadleaf herbicides, what are your options when they are no longer effective?

Granted weeds that get blown around (like mare's tail or thistle) or spread (by birds like pokeweed) are difficult to prevent. Nevertheless, many of our problems are due to moving seeds from field to field on equipment; pigweed and lambsquarters are two that come to mind. Take the time to clean the equipment in the field before it gets moved and isolate where those infestations are located. A new weed species or a resistant biotype does not just take over a field in one year. A few plants get started and they produce seeds which next year leads to more plants and more seeds (see where this is going). Prevent the problems from developing and spreading. Clean the equipment and leave the seeds where you found them.

## Announcements

### University of Delaware Lima Bean Twilight Meeting

Thursday, September 15, 2011 4:30 p.m.  
UD Carvel Research and Education Center  
16483 County Seat Highway  
Georgetown, DE

The University of Delaware will be hosting a lima bean twilight meeting and tour on Thursday, September 15. Featured will be preliminary research results from yield trials with UD breeding materials. Other research on lima beans at UD will be discussed

including breeding and evaluation for disease resistance, weed control, disease management, insect management, inoculation trials, cropping systems, regrowth cropping, and irrigation. Researchers will be on hand to discuss their work and present current results. There will be a wagon tour to visit late season plots.

Light refreshments will be provided.

Please RSVP by Wednesday, September 14 by calling 302-856-2585 ext. 540 or emailing [adams@udel.edu](mailto:adams@udel.edu).

## Weather Summary

Carvel Research and Education Center Georgetown, DE

Week of September 1 to September 7, 2011

Readings Taken from Midnight to Midnight

### Rainfall:

0.29 inch: September 6  
0.01 inch: September 7

### Air Temperature:

Highs ranged from 86°F on September 7 to 75°F on September 6.  
Lows ranged from 70°F on September 7 to 55°F on September 1.

### Soil Temperature:

75.5°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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