



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

Cabbage

Be sure to watch for imported cabbage worm (ICW) and diamondback moth larvae (DBM) within a week of transplanting. As a general guideline, treatment is recommended if you find 5% of the plants infested with larvae. If DBM is the predominant species, be sure to select an insecticide that is effective for this insect pest since it can be difficult to control. The pyrethroids have not provided effective control of DBM in many cases, especially where resistance has been documented. Please refer to the Commercial Vegetable Recommendations for suggested chemical controls: (<http://extension.udel.edu/ag/files/2012/03/CoVeCrops.pdf>).

Peas

As soon as plants emerge, be sure to sample on a weekly basis for pea aphids. Cool weather will favor an increase in populations. 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.

Potatoes

As soon as plants emerge, be sure to sample fields for Colorado potato beetle adults,

especially if an at-planting material was not used. A treatment should not be needed for adults until you find 25 beetles per 50 plants and defoliation has reached the 10% level.

Controlled Release Fertilizer Products in Vegetable Crops - Gordon Johnson, Extension Vegetable & Fruit Specialist; gcjohn@udel.edu

There has been considerable work on controlled release fertilizer over the years and many of the different technologies have shown potential for use with vegetable crops. Controlled released fertilizer is most useful with nutrients that are subject to leaching losses, particularly nitrogen.

Controlled release fertilizers are most commonly based on coatings (polymer or sulfur coated ureas for example) or having nutrients in chemical forms that slow their release (Ureaform and IBDU nitrogen for example). Polymer coatings can be used on most fertilizers and are common in the nursery and greenhouse industries with complete fertilizer products applied to potted plants. Coated product technologies have advanced over the years to give more precise release properties. However, release will still be dependent on the type of coating, the thickness of the coating, as well as temperature and moisture. Controlled release fertilizers are commonly rated as to how long they take to release nutrients in days (70 day, 90 day, 120 day formulations for example). They can also be mixed with a small amount of regular soluble fertilizer to give an initial nutrient charge.

It should be noted that manures have a component of their nitrogen (the organic fraction) that is available upon decomposition and mineralization so they can be considered a slow release fertilizer.

One main advantage of controlled release fertilizers is that only one application is necessary for a crop, thus reducing application and management costs. The other main advantage is reducing nitrogen leaching losses because not all nitrogen is available at once. In some trials, efficiency of nitrogen utilization is improved (by reducing losses) so that less nitrogen is needed.

For many years, the cost of controlled release fertilizers limited their use to high value horticulture applications. As costs are decreasing, especially with the polymer coated products, the economics is changing for vegetable and field crops.

Vegetable Transplant Height Control - *Gordon Johnson, Extension Vegetable & Fruit Specialist; gcjohn@udel.edu*

One of the most important considerations for transplant production is managing “stretch” or height of transplants. The goal is to produce a transplant of a size that it can be handled by mechanical transplanters without damage and that are tolerant to wind.

Most growth regulators that are used for bedding plants are not registered for vegetable transplants. One exception is Sumagic® registered for use as a foliar spray on tomato, pepper, eggplant, groundcherry, pepino and tomatillo transplants (no other crops are registered at present). The recommended label rate is 0.52 to 2.60 fluid oz per gallon (2 to 10 ppm) and one gallon should be sprayed so it covers 200 sq ft of transplant trays (2 quarts per 100 sq ft). The first application can be made when transplants have 2-4 true leaves. One additional application may be made at the low rate, 0.52 fluid oz per gallon (2 ppm), 7-14 days later, but you cannot exceed 2.60 fluid oz of total product (per 100 sq ft) for a season. Growers are advised to perform small-scale trials

on a portion of their transplants under their growing conditions before large scale adoption.

For other crops alternative methods for height control must be used. One such method that is successful is the use of temperature differential or DIF; the difference between day and night temperatures in the greenhouse. In most heating programs, a greenhouse will be much warmer during the day than the night. The critical period during a day for height control is the first 2 to 3 hours following sunrise. By lowering the temperature during this 3-hour period, plant height in many vegetables can be modulated. Drop air temperature to 50° - 55° F for 2-3 hours starting just before dawn, and then return to 60° - 70° F. Vegetables vary in their response to DIF. For example, tomatoes are very responsive, while squash is much less responsive.

Mechanical movement can also reduce transplant height. This may be accomplished by brushing over the tops of transplants twice daily for with a pipe or wand made of soft or smooth material. Crops responding to mechanical height control include tomatoes, eggplant, and cucumbers. Peppers are damaged with this method.

Managing water can also be a tool to control stretch in some vegetables. After plants have reached sufficient size, expose them to stress cycles, allowing plants to approach the wilting point before watering again. Be careful not to stress plants so much that they are damaged.

Managing greenhouse fertilizer programs is yet another method for controlling transplant height. Most greenhouse growing media come with a starter nutrient charge, good for about 2 weeks after seedling emergence. After that, you need to apply fertilizers, usually with a liquid feed program. Greenhouse fertilizers that are high in ammonium forms of nitrogen will induce more stretch than those with high relative proportions of nitrate nitrogen sources. Fertilizers that are high in phosphorus may also promote stretch.

Exposing plants to outside conditions is used for the hardening off process prior to transplanting. You can also use this for transplant height control during the production period. Roll out benches that can be moved outside of the greenhouse for a portion of the day or wagons

that can be moved into and out of the greenhouse can be used for this purpose.

Garlic Problems - Jerry Brust, IPM Vegetable Specialist, University of Maryland; jbrust@umd.edu

Before 2010 I think I would get one call a year from a garlic grower with a problem, now it seems I get 10X the number of calls about garlic problems. Most of the problems are from bulb mites or garlic bloat nematodes. Bulb mites are extremely tiny and are a problem of garlic and sometimes of onion that usually goes unrecognized—until too late. These pests can reduce stands, slow plant vigor, and increase post-harvest diseases by their feeding on the bulb, roots and the stem plate (Fig. 1). Bulb mites have a very wide host range, but cause most of their damage to onions and garlic. These mite pests prefer crawling into the crevices between the roots and stem plate where they feed.

The best way to determine whether these mites are present is to carefully dissect the region where the roots and bulb come together. The mites also could be under one or two layers of scales at the lower end of the bulb. There are often other mites present, but with a hand lens the bulb mites usually can be identified from other mites.

The mite is bulb shaped with its legs moved forward and a bulbous rear end and many long fine hairs. The mouthparts and legs are purplish-brown while the main body is creamy white. These mites have been described as looking like tiny pearls with legs. The mites are extremely small (from 0.02 to 0.04 inches) and usually are slow moving. They are usually found in clusters underneath scales and at the base of the roots.

It is not just the direct feeding of these mites on garlic and onions that causes problems, but also that their feeding allows pathogens to enter through the wounds they create. These wounds are very good entry points for pathogens like *Fusarium* spp., *Sclerotium cepivorum* (causes the disease white rot), and various soft-rotting bacteria. The white rot fungus does best in cool

temperatures, and symptoms include white fungal growth on the stem or bulb with small, dark structures called sclerotia in the decayed tissue. Early in the growing season, bulb mites can cause poor plant stands and stunted growth as they feed on the plants. Infested plants easily can be pulled out of the soil because of the poor root growth. Later in the season, higher than normal amounts of soft rot and *Fusarium* dry rot may be seen because of the wounds caused by these mites.

Bulb mites survive in the soil on organic matter left behind from the previous crop. **As long as there is decaying allium vegetable matter in the soil, bulb mites can survive in the field.** The best way to control bulb mites is to allow the vegetation from the previous crop to breakdown before any new crop, especially garlic or onions are planted again. These mites may also come into a clean field on infested garlic cloves. The use of clean garlic clove seed or seed that has been hot water treated will control these pests. Hot water treatment of bulbs prior to planting can reduce mite populations, but effective temperatures also reduce germination. Effective times and temperatures were 130 ° F for 10-20 min, or 140 ° F for 10-15 min. It is also possible to get good control when soaking affected cloves for 24 h in 2% soap (not detergent) and 2% mineral oil.



Figure 1. Feeding damage by bulb mites, notice the absence of roots.

Fruit Crops

Radiant and Entrust Label Changes Affecting Use in Strawberries - Joanne Whalen, *Extension IPM Specialist*; jwhalen@udel.edu

Strawberries - Be sure to check the Radiant and Entrust labels for federal label changes (3/20/2015)

<http://www.cdms.net/LDat/ld8DN002.pdf> - Radiant SC

<http://www.cdms.net/LDat/ldALN012.pdf> - Entrust SC

Agronomic Crops

Agronomic Crop Insects - Joanne Whalen, *Extension IPM Specialist*; jwhalen@udel.edu

Alfalfa

Continue to scout fields for both alfalfa weevil and pea aphids. The first weevil larvae have been found at very low levels. Fields should be scouted for these two insect pests until the first cutting. Examine 5-10 stems for damage and weevil larvae. A full stem sample is not needed until damage or larvae are found on the plants. Once larvae are found, a decision to treat should be based on collecting a minimum of 30 stems throughout a field and checking for the number of larvae per stem. The following thresholds, based on the height of the alfalfa, should be used as a guideline when making a treatment decision for alfalfa weevil: (a) up to 11 inches tall - 0.7 per stem; (b) 12 inches tall - 1.0 per stem; (c) 13 - 15 inches tall - 1.5 per stem; (d) 16 inches tall - 2.0 per stem and (e) 17 - 18 inches tall - 2.5 per stem. The following thresholds should be used as a guideline when making a treatment decision for aphids : (a) alfalfa less than 10 inches tall treat if you find 40-50 aphids per stem, and (b) alfalfa 10 inches or taller in height treat if you find 75- 100 per stem.

Field Corn

Although corn planting is delayed this year, you will need to scout for cutworm feeding as soon

as plants emerge, even if an at planting insecticide, seed treatment or Bt corn was used for cutworm control. Depending on when you plant, a number of cutworm species may be present at planting, including the black cutworm, dingy cutworm and clay backed cutworm. In Delaware, black cutworm populations result from local overwintering populations as well as moths migrating from areas in the south. Populations in Kentucky are currently higher than their rolling 5 year average. (<http://www.uky.edu/Ag/IPMPrinceton/counts/bcw/bcwgraph.htm>). Remember, this should be used as just an early warning sign since spring temperatures and weather conditions also have an impact on the size of the population and time of egg hatch.

Factors that favor black cutworm outbreaks include late planting, heavy infestations of winter annual weeds before tillage and planting, reduced tillage, and corn grown after soybean. Fields with a combination of these factors are more attractive to migrating moths and are likely candidates for egg laying. They should be monitored closely as corn emerges. Young larvae will feed on plants, resulting in small, irregular shaped holes. Black cutworms generally begin cutting plants at the fourth instar. One cutworm larvae can cut an average of three to four plants during its lifetime.

In certain years and locations, we can also find cutworms damaging very early emerging corn. In most cases, this damage is often caused by the clay backed cutworm or the dingy cutworm. These species overwinter as half-grown larvae in the soil so they can get a "jump" on black cutworms. Regardless of species, as a general guideline, a treatment should be considered in 1-2 leaf stage corn if you can find plants with 10% leaf feeding or 3% cut plants.

Small Grains

Insect activity remains light in fields throughout the state. As we see a return to warmer temperatures, be sure to scout fields on a weekly basis for aphids, cereal leaf beetles, armyworms and grass sawfly. Low levels of cereal leaf beetle adults and the first egg laying has been found in an occasional field throughout the state. As far as armyworm, a combination of local overwintering and migratory populations

can cause potential problems in small grains. The following link to the University of Kentucky's website provides an idea of the potential size of the migratory population: <http://www.uky.edu/Ag/IPMPrinceton/counts/taw/tawgraph.htm>

Trap counts in Kentucky at the end of last week for true armyworm were significantly greater than their rolling 5-year averages. If the armyworm counts continue to increase at the current rate, the population will approach the outbreak levels seen in 2006 and 2008 in Kentucky.

Updated Fungicide List for Small Grains and Disease Scouting Update - Nathan Kleczewski, Extension Specialist - Plant Pathology; nkleczew@udel.edu

Each year the NCERA 184 wheat pathology group gathers and publishes an updated list of fungicides for small grains. We utilize our local data to determine the relative performance of products on specific diseases. This year's list is changed somewhat from last years. Please note the footnote on fungicide resistance in leaf blotches at the bottom of the table. The table is at the end of this week's issue of WCU and can be found on the [Field Crop Disease Management Blog](#), at this link: <http://extension.udel.edu/fieldcropdisease/2015/04/13/2015-wheat-fungicide-table-now-available/>

Wheat is rolling and moving fast. Many fields are at FGS 5-6. Currently diseases are hard to come by, although powdery mildew is present in some fields at low levels. **If you have a field with powdery mildew, we are looking to collect samples to send to colleagues in North Carolina.** There they will screen the fungus and determine what resistance genes do not control the pathogen. We can then use this information to provide you with information on the resistance genes contained in wheat grown in this area, allowing you to select varieties that are unlikely to succumb to the disease in subsequent years. Feel free to contact me at 302-831-4768 and we can head out and collect samples.

Announcements



National Volunteer Week, April 12-18, 2015, gives us at UD Cooperative Extension the opportunity to thank and recognize the wonderful volunteers and partners who support our efforts. Please take a moment to view our thank you message. Just click on the link below.

[Thank You Volunteers!](#)

Thank you for all your support and contributions and for helping us make a difference in the lives of Delawareans!



Job Posting: Agronomy Program Manager

University of Maryland, Wye Research and Education Center, Queenstown, MD. Duties: Working with scientists, coordinate and implement research, demonstration and educational projects for agronomic crops.

Min. Qual.: BS in Agronomy or related field, 5 years of farm-related experience including research plot design and staff supervision. Salary commensurate w/experience, with base salary \$55,200.

Details/Apply: <https://ejobs.umd.edu/> Position #103087. Best consideration /closing date: May 8, 2015. Contact: Barbara South (410) 827-6202. EEO/AA.

Nematode Management and Nimitz Training Day

Monday, April 20, 2015 8:30 a.m. – 12:00 p.m.
University of Delaware

Carvel Research and Education Center
16483 County Seat Highway, Georgetown, DE 19947

Vydate will be in short supply for at least 2015, and growers have few options for root knot nematode management in vegetables. This technical session will cover fumigant options for nematode management and training in the use of **Nimitz**, a new contact nematicide offered by Adama®. Speakers will include Dr. David

Langston from Virginia Tech, and Pablo Navia Gine, Innovation Technical Leader at Adama®.

Food will be provided.

Participation will be limited to the first 90 registrants.
Please call Karen Adams at (302) 856-2585 ext. 540 to register

Season Extension Workshop & Field-Day: Extend your Season with High Tunnels

Friday, May, 15, 2015 10:00 a.m.-3:30 p.m.

Delaware State University

Smyrna Outreach & Research Center (SORC)

884 Smyrna-Leipsic Road, Smyrna, DE

Topics Include:

- High Tunnel Options
- IPM in high tunnels
- Small fruits in high tunnels
- EQIP program and High Tunnels
- Farmer Perspectives
- Do not miss an opportunity to experience the building of a high tunnel!

Speakers:

Judson Reid of Cornell University Extension will share his experiences on IPM in high tunnels

Michael Newell of University of Maryland will share his experiences with small fruits production in high tunnels.

To register for the free workshop or for more information, call Rose Ogutu at 302-387- 6397 or by emailing rogutu@desu.edu. RSVP by Monday May 11, 2015.

Presented by DSU Cooperative Extension, Small Farms Program

POULTRY GROWER'S FIELD DAY: Hot Weather Broiler Management

Wednesday, May 20, 2015 10:00 a.m.-3:00 p.m.

Woodpecker Farm

3557 Woodpecker Rd., Seaford, DE 19973

Note: Parking for this event is located at Gethsemane United Methodist Church, located at 2701 Woodland Ferry Rd., Seaford, DE 19973. Shuttles will be available to/from event location.

Demonstrations/Workshops:

- Maximizing Effective House Temperature in Market-aged Broilers
- Summertime Brood Chamber Cooling and Reducing Heat Stress in Young Birds
- Considerations for Managing Heat Loss Mortality
- Generator Management and Electrical Inspections
- Production Site Maintenance
- Marketing Manure to Third-party Users
- Utility Considerations for Tunnel Ventilation Upgrades
- Recordkeeping for CAFO Permits and Inspections
- Perdue AgriRecycle Plant tours (transportation provided)

All registrations include the full-day program and lunch

Nutrient Management Credits are Available

For more information on the program contact Bill Brown: brown@udel.edu, or call (302) 236-1887

There is NO CHARGE to attend this event. However, pre-registration is REQUIRED. REGISTRATION DEADLINE IS MAY 15, 2015

Please register online by visiting:

<https://www.eventbrite.com/e/2015-poultry-growers-field-day-tickets-15897956215>

Or, you may RSVP to any of the following:

Lisa Collins: lcollins@udel.edu, or (302) 856-2585 x702

Sheila Oscar: (410) 742-1178

Weather Summary

Carvel Research and Education Center Georgetown, DE

Week of April 9 to April 15, 2015

Readings Taken from Midnight to Midnight

Rainfall:

0.02 inch: April 9

0.25 inch: April 10

1.11 inch: April 14

Air Temperature:

Highs ranged from 74°F on April 10 and April 13 to 44°F on April 9.

Lows ranged from 48°F on April 14 and April 15 to 35°F on April 12.

Soil Temperature:

54.6°F average

Additional Delaware weather data is available at 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, Associate Scientist - Vegetable Crops

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Management of Small Grain Diseases

Fungicide Efficacy for Control of Wheat Diseases (Draft Revised 3-31-15)

The North Central Regional Committee on Management of Small Grain Diseases (NCERA-184) has developed the following information on fungicide efficacy for control of certain foliar diseases of wheat for use by the grain production industry in the U.S. Efficacy ratings for each fungicide listed in the table were determined by field testing the materials over multiple years and locations by the members of the committee. Efficacy is based on proper application timing to achieve optimum effectiveness of the fungicide as determined by labeled instructions and overall level of disease in the field at the time of application. Differences in efficacy among fungicide products were determined by direct comparisons among products in field tests and are based on a single application of the labeled rate as listed in the table. Table includes most widely marketed products, and is not intended to be a list of all labeled products.

Efficacy of fungicides for wheat disease control based on appropriate application timing

Fungicide(s)				Powdery mildew	Stagonospora leaf/glume blotch	Septoria leaf blotch	Tan spot	Stripe rust	Leaf rust	Stem rust	Head scab	Harvest Restriction
Class	Active ingredient	Product	Rate/A (fl. oz)									
Strobilurin	Picoxystrobin 22.5%	Aproach SC	6.0 - 12	G ¹	--	VG ²	VG	E ³	VG	VG	NL	Feekes 10.5
	Fluoxastrobin 40.3%	Evito 480 SC	2.0 – 4.0	G	--	--	VG	--	VG	--	NL	Feekes 10.5 and 40 days
	Pyraclostrobin 23.6%	Headline SC	6.0 - 9.0	G	VG ²	VG ²	E	E ³	E	G	NL	Feekes 10.5
Triazole	Metconazole 8.6%	Caramba 0.75 SL	10.0 - 17.0	VG	VG	--	VG	E	E	E	G	30 days
	Propiconazole 41.8%	Tilt 3.6 EC ⁴	4.0	VG	VG	VG	VG	VG	VG	VG	P	Feekes 10.5
	Prothioconazole 41%	Proline 480 SC	5.0 - 5.7	--	VG	VG	VG	VG	VG	VG	G	30 days
	Tebuconazole 38.7%	Folicur 3.6 F ⁴	4.0	NL	NL	NL	NL	E	E	E	F	30 days
	Prothioconazole 19% Tebuconazole 19%	Prosaro 421 SC	6.5 - 8.2	G	VG	VG	VG	E	E	E	G	30 days
Mixed modes of action ⁵	Metconazole 7.4% Pyraclostrobin 12%	TwinLine 1.75 EC	7.0 – 9.0	G	VG	VG	E	E	E	VG	NL	Feekes 10.5
	Fluxapyroxad 14.3% Pyraclostrobin 28.6%	Priaxor	4.0 - 8.0	G	VG	VG	E	VG	VG	G	NL	Feekes 10.5
	Propiconazole 11.7% Azoxystrobin 13.5%	Quilt Xcel 2.2 SE ⁴	10.5 - 14.0	VG	VG	VG	VG	E	E	VG	NL	Feekes 10.5
	Prothioconazole 10.8% Trifloxystrobin 32.3%	Stratego YLD	4.0	G	VG	VG	VG	VG	VG	VG	NL	Feekes 10.5 35 days
	Cyproconazole 7.17% Picoxystrobin 17.94%	Aproach Prima SC	3.4-6.8	VG	--	VG	VG	E	VG	--	NR	45 days

¹Efficacy categories: NL=Not Labeled; NR=Not Recommended; P=Poor; F=Fair; G=Good; VG=Very Good; E=Excellent; -- = Insufficient data to make statement about efficacy of this product.

² Product efficacy may be reduced in areas with fungal populations that are resistant to strobilurin fungicides.

³Efficacy may be significantly reduced if solo strobilurin products are applied after stripe rust infection has occurred.

⁴Multiple generic products containing the same active ingredients also may be labeled in some states. Products including tebuconazole include: Embrace, Monsoon, Muscle 3.6 F, Onset, Orius 3.6 F, Tebucon 3.6 F, Tebustar 3.6 F, Tebuzol 3.6 F, Tegrol, and Toledo. Products containing propiconazole include: Bumper 41.8 EC, Fitness, Propiconazole E-AG, and PropiMax 3.6 EC. Products containing propiconazole + azoxystrobin include: Aframe Plus, Avaris 2XS.

⁵Products with mixed modes of action generally combine triazole and strobilurin active ingredients. Priaxor is an exception to this general statement and combines carboxamide and strobilurin active ingredients.