



WEEKLY CROP UPDATE

UNIVERSITY OF DELAWARE COOPERATIVE EXTENSION

Volume 24, Issue 25

September 9, 2016

Vegetable Crops

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

Cabbage

Continue to scout all fields for harlequin bugs, 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.

Peppers

Be sure to maintain your spray schedule for corn borer, corn earworm, beet armyworm and fall armyworm control. You should also watch for flares in aphid populations.

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.

Spinach

Continue to sample for webworm and beet armyworm larvae. Controls should be applied when worms are small and before webbing occurs.

Sweet Corn

Our last trap catches for the season will be Monday, September 12. If you have questions

about spray intervals, please call Joanne Whalen at 302-831-1303 for more information.

Heat Affects Early Lima Beans - Gordon Johnson, *Extension Vegetable & Fruit Specialist*; gcjohn@udel.edu and Emmalea Ernest, *Associate Scientist - Vegetable Crops*; emmalea@udel.edu

We are seeing heat effects on pod set in lima beans again in 2016. Affected plantings have heavy bud, flower, and pod drop. In some instances a split set is also present because favorable conditions for pod set were interrupted by high temperatures, which are unfavorable for pod set. Pod drop may also be caused by feeding from piercing/sucking insects (i.e. stink bugs) which damage developing seeds. This type of insect feeding can also cause misshapen pods and irregular, dimpled, or misshapen seed. Larger pods, beyond the pin pod stage, are generally not aborted because of heat stress but may be aborted due to drought stress or insect feeding.

Research by Emmalea Ernest has shown that pollen production is reduced under high night temperature conditions in the lima bean varieties that we currently grow. Among the genetically diverse varieties that have been tested, those which produce more pollen under heat stress, produce a higher yield under heat stress. The aim of current lima bean breeding activities at the University of Delaware is to select for greater pollen production, and thereby better yield, under high temperatures.

Harlequin Bugs and Blister Beetles
Damaging Late Summer Vegetables - Jerry
Brust, IPM Vegetable Specialist, University of
Maryland; jbrust@umd.edu

This has been a tough growing season for most of our vegetable crops. Some crops were planted late and had problems setting fruit later on in the summer heat while others that were planted on time were 2-3 weeks ahead of harvest schedule. Some crops have done OK and a few have done well, but most others have suffered due to the weather. Late summer/early fall crops are not fairing much better. I have received several reports of mysterious feeding on plantings of tomatoes and carrots, and reports of damage by pests that were easily seen, because there were so many of them. In many of the cases it was probably two common late summer pests: the blister beetle and Harlequin bugs.

Blister Beetles (family Meloidae)

Blister beetles are commonly seen in fields starting in late June going through the fall. There seems to be a great deal of them this year feeding on just about every new and even old vegetable planting. Adult blister beetles vary in color and size. Most are one-half to one inch long with long, soft bodies and wide heads. The area between the head and the body is narrow and looks like a neck. The wing covers are leathery with the abdomen often times extending beyond the end of the wings (Fig. 1). The legs are relatively long for the body size. The beetles come in a variety of dark or bright colors that are variegated, striped or flat. Striped blister beetles are shades of gray and brown with yellow stripes running lengthwise on its wing covers. Others are gray to black with a gray or white margin around each wing (Fig. 1).

Adults begin laying eggs in the spring and continue through most of the season. Females will lay one to two hundred very small eggs just beneath the soil surface. White larvae hatch from these eggs in about two weeks and have relatively long legs which they use to find their main prey--grasshopper eggs (so the larvae are beneficial, while the adults are a pain). Most larvae will go through 4-5 instars but some go through 6-7. Adults emerge from the pupae stage after ten days.

If you look up blister beetles most of the literature deals with the beetles as a threat to horses and livestock. The beetles secrete and contain within them a blistering chemical called catharidin. Catharidin is toxic if ingested and it persists in dead beetles long after the hay they infested was dried and baled. Horses are particularly susceptible to the poisoning. Humans who ingest the beetle can suffer severe damage to the urinary tract and gastrointestinal lining.

Blister beetles will feed on just about any plant: tomato, potato, eggplant, peppers and other solanaceous vegetables as well leafy greens. Often times in late summer, they arrive in swarms, seemingly overnight and can feed heavily on plants and then just as suddenly disappear -- often leaving growers perplexed as to what came in and did the feeding damage. A beetle will feed for a time and then usually move on to another spot not causing a great deal of damage unless there are a significant number of them or they stay in one place for an extended period of time. Covering plants with a row cover or with kaolin clay (product called *Surround*) BEFORE the beetles start to feed has worked pretty well, but the row cover or clay must be applied before they start to feed. If applied after they are found feeding it is not as effective. Pyrethroids also will work well if beetles are directly contacted.



Figure 1. Two adult Margined blister beetles
Epicauta funebris

Harlequin Bugs (*Murgantia histrionica*)

Adult harlequin bugs are red- or orange-and-black-spotted bugs about 3/8 of an inch long, with flat, shield-shaped bodies (Fig. 2). Nymphs

are similar in general color and shape to the adults (Fig. 3). The eggs of harlequin bugs are distinctive and look like no other stink bug eggs—or anything else. The eggs look like tiny white barrels standing on end, typically in a double row (Fig. 4). Twelve to eighteen eggs are usually laid together in one batch on the underside of the leaves of the host plant. Each egg is marked by two broad black stripes near the ends of the “barrel” (egg) with one black spot in the middle of the egg and a black mark on top of each egg. Harlequin bugs over winter as adults (rarely large nymphs) in old cabbage stalks or any other crop debris.



Figure 2. Harlequin bug adult



Figure 3. Harlequin bug nymph and damage—white spots

Plants commonly attacked by harlequin bugs include crucifers such as horseradish, cabbage, forage radish, collards, mustard, Brussels sprouts, turnip, kohlrabi and radish. If these are

not available hungry bugs will feed on tomato, potato, eggplant, okra, bean, asparagus, beet, weeds, and even fruit trees and field crops. The harlequin bug feeds by injecting salivary secretions into plants that liquefy plant tissue so they can ingest it. This feeding at first results in white spots (Fig. 3) and then progresses to browning, wilting and eventual death of the plant. New plantings of crucifers can be heavily attacked in the spring but more commonly in the fall and this is what I have heard about and seen happening in several areas of Maryland. As with blister beetles, harlequin bugs can be managed by using a row cover or kaolin clay BEFORE they show up and start feeding. Once they start feeding these two controls do not work very well. Pyrethroids will reduce the damage, but there is often a 7-day pre-harvest interval (phi) with many of the chemicals depending on what the crop is. So be sure to check the label to find the correct phi for the product you are using on the particular crucifer you are using it on.



Figure 4. Harlequin bug eggs

Project to Sample for Presence of *Dickeya dianthicola* in Soil and Water - Nathan Kleczewski, Extension Specialist - Plant Pathology; nkleczew@udel.edu

Dickeya dianthicola is a bacterium that causes a blackleg-like disease, being different from traditional blackleg in that the disease can spread more rapidly with less initial inoculum in the soil. Research from Europe indicates that unlike *Pectobacterium*, the bacterium we typically associate with true blackleg, *Dickeya* do not overwinter in the absence of a host. However, with the recent issues associated with *Dickeya* associated with certain seed production areas, growers have a right to know if additional rotational considerations need to be considered to help manage this disease. To help address this question, we are collaborating with plant

pathologists familiar with *Dickeya* to ascertain if *Dickeya* can be detected in DE fields and water. This information will not only provide you, the grower, with valuable piece of mind, but will also help provide useful information that will ultimately help improve potato producer productivity.

If you are interested in participating in the work, please contact Phillip Sylvester (phillip@udel.edu or 302-730-4000). All results will be kept confidential.

Agronomic Crops

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

Alfalfa and Grass Hay

Continue to watch for defoliators in grass hay crops and alfalfa including earworm, webworms and all armyworm species. If a field was cut recently and has started to regrow be sure to also watch for damage to the re-growth. In addition to checking labels for rates and pre-harvest interval (time needed between last application and harvest), be sure to check for all restrictions including, but not limited to, comments on control under high populations and size of larvae; days to harvest and forage/silage restrictions. No thresholds are available; however, controls should be applied before significant defoliation occurs in a field.

Soybeans

Corn Earworm - We have received reports of an increase in corn earworm larval levels in a few areas this past week, with some fields approaching and/or at threshold levels. This is mainly occurring in late planted fields and in fields planted behind vegetables. With the sustained trap catches, it will be important to continue to watch these fields since they still have susceptible pods that are at risk from pod damage.

Defoliators - If economic levels are present, you will need to consider the maturity of the crop as well as the health of the leaf canopy to make a treatment decision. In an article printed in back 2010 by southern entomologists and agronomists, they provided the following guidance regarding late season defoliation:

"If economic levels of defoliation are present, fields will need to be protected as long as the pods are still green and until the lower leaves are just beginning to yellow. This should correspond, more or less, with the R6.5 stage (10 days after R6.0 = full green seed). If leaves are beginning to yellow up the stem from the maturity process, and there are any pods on the plant that are beginning to yellow, the field should be safe, that is no need to treat. You will also have to determine the health of the leaf canopy: is it robust, average, or thin. Each can tolerate different amounts of leaf loss before reducing yield potential. Robust fields (mid chest or higher) can tolerate a lot of feeding. Average fields (upper thigh to mid chest) can tolerate normal amounts of feeding. Thin canopy fields (mid thigh or below) cannot tolerate additional leaf loss. Also you need to estimate defoliation. Be sure to look at the entire canopy from top to bottom not just the more affected top leaves to come up with an overall average. "

Stinkbugs - You should continue scouting until the latest planted fields reach the mid R-6 stage, when beans should no longer be susceptible to direct loss from stink bug feeding. Once soybeans reach mid R-6 to R-7 (beginning seed maturity) , studies from the south say that scouting may still be needed to avoid quality damage from stinkbugs which can include underdeveloped or aborted seeds, green stem syndrome, reductions in seed vigor and viability, and a reduction in the storage stability of harvested seeds

Pod Scarring - You also need to consider the potential for grasshoppers and bean leaf beetles to feed on pods. During the last wet fall, we did see significant pod scarring from bean leaf beetles late in the season that resulted in moldy beans. The following link from Purdue provides information on decision making regarding the number of bean leaf beetles per sweep, percent pod injury and when you need to consider a treatment.

<http://extension.entm.purdue.edu/fieldcropsipm/insects/bean-leaf-beetle.php>

Reminder -- If you do need to treat for any of the above insects, be sure to check the label for the pre-harvest interval (time needed

between last application and harvest) as well as other restrictions, including rotational restrictions.

Dectes Stem Borer in Soybeans – Joanne Whalen, Extension IPM Specialist; jwhalen@udel.edu, Bill Cissel, Extension IPM Agent; bcissel@udel.edu and Phillip Sylvester, Kent County Agricultural Extension Agent; phillip@udel.edu

In Delaware, Dectes stem borer has been a pest of soybeans since the early 1980s. From all of the work done in Delaware, Kansas and Nebraska over the last 30 plus years, we do know that the most severe losses occur in fields that are not rotated i.e. continuous soybean production. Since the fall of 2013, we have seen an increase in lodging losses from Dectes stem borer larvae (Figure 1). Although some have asked if we are seeing an expansion in the range of infestation in the Mid-Atlantic, we feel it is more related to a combination of the following factors: (a) an increase in full season soybean acres, (b) producer's inability to harvest in a timely manner, (c) a return to continuous soybeans, and (d) no-till crop production. In many cases, adult beetles can be found at varying levels in many fields but in certain years, especially under drought stress and with delayed fall harvest, we see and hear about more lodging losses. Although losses have been most common and severe in full season soybeans, we can see lodging in double crop soybeans, especially in soybeans planted behind barley.

Since the early 1980s, there has been a great deal of work in Delaware and Kansas on the management of this insect pest. In Delaware, we have worked on numerous management strategies including at planting insecticides, timing of foliar insecticides, evaluation of row spacing, and timing of harvest and variety selection. Due to the long egg laying period of this insect (late June through August), timing a **single foliar** spray has been difficult and has not always resulted in a reduction in lodging losses. The only developmental stage that can be targeted for control is the adult beetle. Reductions in beetle populations can be achieved with insecticide applications; however,

because adult emergence occurs over a large window, fields can be quickly re-infested. Although multiple applications have looked promising in some years, research results in Delaware and other areas of the US have shown mixed results with multiple insecticide applications. Research from Kansas has indicated that adult control is not always highly correlated with levels of larval infestation at the end of the season.



Figure 1. Stem Lodging

In 2015, Delaware's IPM program worked with one grower to time insecticide applications and using two application approach we did see some

promising results. In 2016, the Delaware Soybean Board is again supporting work on *Dectes* stem borer. As a team, we are once again looking at the use of foliar sprays. We are evaluating 3 timings reported in replicated research trials and the popular literature so we will have more information this winter. We have surveyed 15 fields in Kent and Sussex counties, some with treated and untreated areas. As is typical with this insect, we saw different patterns of adult emergence and will begin stem sampling in late September so we will keep you posted on the results.

So what is currently happening with *Dectes* stem borer in soybeans?

We have seen in some of our survey fields and have been receiving reports of flagging of trifoliate leaves/petioles (Figures 2 and 3). This is an indication that female beetles have already laid their eggs into the petiole and larvae hatching from these eggs have already damaged the petiole (Figure 4) and started to move to the main stems (Figure 5). Therefore, insecticide applications at this time will not be effective. Your main option for control at this time would be early harvest. It will be important to start checking your fields for plants with stem infestations (Figure 5) and if you find larvae in the stems, plan to harvest those fields first.



Figure 2. Wilted Leaves/Petiole



Figure 3. Wilted Leaves/Petiole



Figure 4. Damaged Petiole



Figure 5. Infested Stem

For more information on the identification and biology of *Dectes* Stem Borer as well as possible cultural control strategies please see the following links:

<http://extension.udel.edu/factsheets/dectes-stem-borer-management-in-soybeans/>

<http://www.ksre.ksu.edu/bookstore/pubs/MF2581.pdf>

Late Season Management of Palmer Amaranth or Texas Panicum - Mark VanGessel, *Extension Weed Specialist*; mjv@udel.edu

With corn harvest underway, a few things to keep in mind about Palmer amaranth and Texas panicum. A combine is a very efficient tool for spreading Palmer amaranth seeds. Take measures to prevent spreading seeds within a field, and from one field to another. Late-season management of Palmer amaranth or Texas panicum to reduce or prevent seed production is not easy or convenient, but it will pay dividends in the future. In particular, where infestations are light. The key is not to simply pull or mow plants that have seeds, but to remove the seed from the field. Removing the plants prior to harvest will reduce the spread of the seed within the field and from field to field. Furthermore, Palmer amaranth plants hold onto their seeds more than most other species, so pulling up the plants will not result in the plants dropping all their seeds.

If a single Palmer amaranth plant can produce 500,000 seeds; spread over an acre that is 10 seeds per square foot. You can quickly see how eliminating seed production and preventing the spread of seed with equipment is a tremendous help.

After corn harvest, some fields with late emerging plants or light infestations may need to be mowed or sprayed with Gramoxone/paraquat for Palmer amaranth, or glyphosate for Texas panicum to prevent late-season seed production.

Weed Control Options in Oil-Seed Rape are Limited - Mark VanGessel, *Extension Weed Specialist*; mjv@udel.edu

The topic of weed control for oil-seed rape has come up in the past few weeks. The labeled options are very limited. Treflan is labeled for pre-plant incorporated application. There are no herbicides labeled for application after planting or for no-till production. If you are inclined to try no-till, be cautious of what you include with your burndown herbicides. Sharpen and 2,4-D are often used as tankmixtures with glyphosate to broaden the control with no-till burndown.

But Sharpen can injure oil-seed rape if used as burndown application; it is used in some areas to manage volunteer canola/rapeseed. Dr. Curran at Penn State examined 2,4-D ester before planting canola and found significant injury if canola was planted within 1 to 2 days of application, but no injury if the herbicide application was made 14 days before planting.

Postemergence options include Stinger for broadleaf weeds and Assure II, Poast, or Select for grasses. Be sure to read the Stinger label for rotational restrictions (minimum of 10.5 months to nonlabeled crops, including soybeans).

If growing oil-seed rape for the first time, select a field with a low density of winter annual weeds since you are very limited in herbicide options.

General

Fall Control of Perennial Weeds - Mark VanGessel, *Extension Weed Specialist*; mjv@udel.edu

Fall is often the best time and the most convenient 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 have the greatest benefit. 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 next spring. Fall applications of glyphosate is the most flexible treatment for most perennial weeds such as 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). Dicamba (Banvel) at 2 to 4 pints is also labeled for artichoke, bindweeds, dock, hemp dogbane, horsenettle, milkweeds, pokeweed or Canada thistle. 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. It is best to spray prior to mowing the corn stalks and allow plants to

recover after harvest. Allow 10 to 14 days after treatment before disturbing the treated plants. If fall applications are delayed, remember 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.

Announcements

Free Webinars in September, Sponsored by the Mid-Atlantic Women in Agriculture

9/14: Optimizing your Website for Google - Learn quick tips to optimize your website or blog so that it ranks higher, and therefore more visible in Google searches and other search engines!

9/28: SARE Farmer Grower Grants - The goal of the USDA Northeast Sustainable Agriculture Research & Education (SARE) Farmer Grant program is to help farmers explore sustainable and innovative production and marketing practices, often through an experiment, trial, or on-farm demonstration. SARE defines sustainable practices as those that are profitable, environmentally sound, and beneficial to the wider farm community. This unique grant program funds a wide variety of on-farm projects, and has a simple application process geared towards farmers. This webinar will provide insight into this specific grant program including proposal guidelines, how to apply and tips on writing a good proposal. Note: Proposal deadlines are November 29 with awards announced in March. <http://www.nesare.org/Grants/Get-a-Grant/Farmer-Grant>

To register:

<http://www.eventbrite.com/e/wednesday-webinars-registration-11452674257>

Webinars begin at noon EST. Duration is approximately 1 hour. For optimal performance we suggest using Internet Explorer as your web browser and connecting via Ethernet connection instead of wireless (wireless will work, but a hard line is more stable)

See website for more information and other upcoming topics: <https://extension.umd.edu/womeninag/webinars>

If you do not have access to high speed internet and would like to participate in one of the above webinars, contact Tracy Wootten at wootten@udel.edu.

Farm Transfer Communication Webinar The Farm Whisperer by David Specht

Tuesday, November 29, 2016 7:00 p.m.

More details to follow.

For more information - contact Dan Severson – severson@udel.edu or Laurie Wolinski – lgw@udel.edu.

Cover Crops Workshop & Field Day

Thursday, September 29 8:30 a.m. - 3:00 p.m.

DSU Outreach and Research Center
884 Smyrna-Leipsic Rd., Smyrna, DE

Guest Speaker: Steve Groff

Steve Groff grows 200 acres of grain crops, 30 acres of pumpkins, and two acres of high tunnel heirloom tomatoes in Lancaster County, PA. Each year, he oversees hundreds of replicated research plots, focusing on the economics and nutritional influence of cover crops. He is a cover crop innovator who, along with Dr. Ray Weil, was instrumental in developing the Tillage Radish® over a 10-year period.

Topics:

- How to choose the right varieties to achieve your goals
- Strategies to take cover crops to the next level
- Chance to see summer cover crops
- Information for all farmers; vegetable and grain
- Cover Cropping as part of a nutrient management plan
- And much more...

Credits: 4 CEU credits for Certified Crop Advisors

For more information, assistance due to disabilities, or to register for this free DSU Cooperative Extension workshop, which includes lunch contact Jason Challandes: jchallandes@desu.edu, 302.388.2241

Delaware Beekeepers Association's Open Hive Event

Saturday, September 17, 2016 8:30 a.m.-noon
Delaware State University Outreach and Research Center
884 Smyrna-Leipsic Road Smyrna, DE 19977

(Rain Date September 24, 2016)

Please join us for educational lectures, demonstrations and a first-hand look inside a real honeybee hive. Get your first exposure to these important and fascinating insects!

RSVP to Kathy Hossler, DBA President,
dbapresidenthossler@gmail.com

Or for more information about DSU's beekeeping program, contact: Jason Challandes,
jchallandes@desu.edu or 302-388-2241

Sponsored by Delaware Beekeepers Association,
Delaware State University and Northeast SARE

Weather Summary

Carvel Research and Education Center Georgetown, DE

Week of September 1 to September 7, 2016

Readings Taken from Midnight to Midnight

Rainfall:

0.66 inch: September 1
0.21 inch: September 3

Air Temperature:

Highs ranged from 88°F on September 7 to 74°F on September 3.

Lows ranged from 70°F on September 1 to 59°F on September 5

Soil Temperature:

75.0°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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