WEEKLY CROP UPDATE
UNIVERSITY OF DELAWARE COOPERATIVE EXTENSION

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Vegetable Crops

Stressful May Leads to Snap Bean Quality Problems and Yield Reduction

– *Gordon Johnson, Extension Vegetable & Fruit Specialist;* gcjohn@udel.edu

Snap beans are very susceptible to quality reductions and yield losses when under stress during flowering and early pod development. This is a common problem in hot weather where pollination is affected leading to split sets. We are currently evaluating varieties of snap beans for heat tolerance at the University of Delaware's research farm at Georgetown with early May and mid-June plantings.

May snap bean plantings commonly avoid hot weather and produce high yields with good quality. However, in 2017, cold, wet weather after planting and high incidence of root rot in our trials has resulted in reduced plant vigor, shorter plants, reduced yield, and poor pod quality.

Early season stress is not uncommon and typically we recommend the use of seed already treated with an approved seed treatment with a fungicide for Rhizoctonia and Fusarium control such as Maxim 4FS, a second fungicide for Pythium control such as Apron XL LS and an improved insecticide for seed corn maggot control. It is also recommended that April and early May snap bean plantings go into in lighter soils with good drainage.

'Caprice' snap beans, an industry standard. Note the small plant size in early-May planted beans

Yellow stunted snap bean variety due to Fusarium root rot and cold stress in May.

Poor pod quality in harvested snap beans due to stressful May conditions.

Timings for Late Summer and Fall Harvested Vegetables Revisited

– *Gordon Johnson, Extension Vegetable & Fruit Specialist;* gcjohn@udel.edu

Plantings for fall harvested vegetables are underway and will continue through August. Timing these plantings can be a challenge, especially where multiple harvests are needed. Plantings from early July through the beginning of September may be made, with cutoff dates depending on the crop, variety, and season extension methods such as row covers, low tunnels, and high tunnels.

These plantings can be divided into 2 groups: 1) warm season vegetables for harvest up to a killing frost and 2) cool season vegetables for extended harvest in the fall.

The three main factors influencing crop growth and performance in the fall are daylength, heat units, and frost or freeze events. A few days difference in planting date in the summer can make a big difference in days to maturity in the fall.

Warm season vegetables for fall harvest include snap beans, squash, and cucumbers. July plantings of sweet corn can also be successful to extend seasons for farm stands. Mid-July plantings of tomatoes and peppers also are made for late harvests, particularly in high tunnels.

Cool season vegetables for fall harvest include cabbage, broccoli, and cauliflower; the cole crop greens, kale and collards; mustard and turnip greens; turnips for roots; spinach; beets; lettuce; leeks; green onions; and radishes.

To extend harvest in the fall, successive plantings are an option. However, days between plantings will need to be compressed. One day difference in early August planting for a crop like beans can mean a difference of several days in harvest date.

Another option to extend harvest in the fall is by planting varieties that have different days to maturity at the same time. This is particularly successful with crops such as broccoli and cabbage where maturity differences of more than 30 days can be found between varieties.

Another way to get later harvests is to use row covers or protecting structures (high tunnels). This can allow for more heat accumulation and will aid with protection against frost and freezes. Decisions on what type or combination of covers/protection to use and when to apply the protection will influence fall vegetable maturation and duration of harvest. In general, plantings of cool season crops can be made 30-45 days later in high tunnels than in outside production.

A final factor for summer planting for fall production is on planting cutoff dates. For example, a crop such as cucumber may produce well with an August 2 planting but poorly with an August 8 planting; broccoli has a wider planting window than cauliflower; turnip greens have a wider planting window than kale.

Planting Window for Fall Harvested Warm Season Vegetables
(harvest September through Frost)

Snap Beans: July 10 through August 10

Lima Beans: June 15 through July 20

Cucumbers: July 10 through August 7 (high tunnel transplanted up to September 1)

Peppers: Transplant up to July 10 (high tunnel up to July 30)

Pumpkins and Winter Squash: Direct seed through June 30, transplant up to July 7

Summer Squash: Direct seed July 15 through August 15 (high tunnel up to September 1)

Sweet Corn: Direct seed July 1 through July 30

Tomatoes: Transplant up to July 10 (high tunnel up to July 30)

Planting Window for Fall Harvested Cool Season Vegetables
(harvest September – December)
For transplants, seed 3-6 weeks prior to desired planting date (8 weeks for leeks and onions).

Beets: Direct seed July 1 through August 10

Swiss Chard: Direct seed July 15 through August 20 (high tunnel up to September 30)

Broccoli: Transplants July 15 – August 20

Brussels Sprouts: Transplants through July 10

Cabbage: Transplants July 1 – August 10

Cauliflower: Transplants July 20 through August 15

Kale: Transplants July 15 through August 30

Kale: Direct seed July 1 through August 15 (high tunnel up to September 30)

Collards: Direct seed July 15 through August 15

Carrots: Direct seed through July 10 (high tunnel up to August 30)

Turnip Greens: August 1 through September 10 (high tunnel up to September 30)

Turnip Roots: August 1 through August 30 (high tunnel up to September 20)

Mustard Greens: August 1 through September 10 (high tunnel up to September 30)

Leeks: Transplant July 20 through August 10

Lettuce (full head stage): Direct seeded August 1 through August 20

Lettuce (full head stage): Transplants August 10 through August 30

Lettuce (baby stage and cut salad mix): Direct seed August 1 through September 15 (high tunnel up to October 15)

Onion (green bunching): Direct seed July 1 through August 30 (high tunnel through September 30)

Parsley: direct seed July 15 through August 15 (high tunnel through September 15)

Radishes (salad): Direct seed August 1 through September 30 (high tunnel through November 30)

Radishes (Daikon): Direct seed August 1 through September 10 (high tunnel up to September 30)

Spinach: Direct seed August 10 through August 30 (high tunnel up to September 30)

Cucumber Downy Mildew Reported in Additional Locations in our Region

– *Kate Everts, Vegetable Pathologist, University of Delaware and University of Maryland*; keverts@umd.edu

Last week I reported that downy mildew on cucumber was confirmed in Dorchester County, MD. Since that time it has been found in Bridgeville, DE and Caroline County MD. Yesterday it was also reported in Salem County, New Jersey on cucumber. All cucumbers grown in Delaware are at risk and preventative fungicides should be applied.

Pumpkin Foliar Disease and Fruit Rot Management Considerations - 2017

– *Kate Everts, Vegetable Pathologist, University of Delaware and University of Maryland*; keverts@umd.edu

Pumpkins are attacked by many diseases, which makes designing a spray program very difficult. Below are some guiding ideas for management of pumpkins.

There are three areas that growers should address; 1) a general 'backbone' program, 2) diseases such as downy mildew and Phytophthora crown and fruit rot, which are not always present, and 3) fruit rots.

A **backbone program** should begin at the time that the vines begin to run or at the first sign of disease. This program targets many diseases such as anthracnose, white fleck Plectosporium (white speck), black rot, angular leaf spot and bacterial leaf spot. Below is a possible backbone program that can be modified to fit your situation:

Mancozeb + copper/A (sprays 1 and 2)

Once powdery mildew is present, a DMI fungicide (such as Rhyme, Rally, Procure, Proline, etc.) plus chlorothalonil (sprays 3, 5, and 7)

A powdery mildew specific fungicide such as Quintec, Vivando, or Torino, plus chlorothalonil plus copper (sprays 4, 8)

Microthiol Disperss 8 lbs/A (sprays 6)

Note: Sulfur can cause phytotoxicity, so use caution and read the label. Remember that coverage of foliage is important for optimum results.

Downy mildew and Phytophthora crown and fruit rot are also challenges and the timing management sprays differ. Downy mildew should be sprayed for preventatively, but does not always occur in our area. To avoid unnecessary sprays, scout fields, keep informed of downy mildew sightings in your area and follow the ipmPIPE for cucurbits (http://cdm.ipmpipe.org/).

There are many foliar fungicides that are available for downy mildew on pumpkin. They include Orondis, Ranman, Presidio, Revus, and others (see http://extension.udel.edu/ag/vegetable-fruit-resources/commercial-vegetable-production-recommendations/). This publication also has information on Phytophthora blight, which is managed with alternated sprays of Revus or Ranman and Presidio, Forum or Tanos. If you are planting into a field that has had Phytophthora in the past, a mefenoxam application (Ridomil Gold or Ultra Flourish) should have been applied pre-plant. In addition, foliar applications of Revus or Ranman in alternation with Presidio, Forum or Tanos may reduce disease.

Managing Fruit Rot

Because many different fungi cause fruit rots, no single strategy will be sufficient to manage them. However the following are good practices that, when used together, can minimize damage.

• Select well-drained fields for pumpkin production.

• Select cultivars (varieties) that are less susceptible to fruit rot. For example, there are some cultivar differences in susceptibility to white speck.

• Grow pumpkins on a no-till cover crop. No-till pumpkin production reduces several fruit rots and the reduction in rot is related to the amount of soil coverage that the cover crop provides. A hairy-vetch and rye mixture would provide nutrient benefits and improve fruit quality by reducing rot and edema.

• Follow a good fungicide management program in the field. The same fungi that cause white speck, black rot and anthracnose also cause lesions on the leaves. If the leaves are protected from disease, the fruit will be less likely to become diseased.

• A good fungicide program also will maintain foliage health and keep sunscald at a minimum.

• Bacterial spot on fruit can be controlled with copper fungicide applications that begin when

fruit are softball size and continue through fruit set.

• Harvest mature fruit as soon as possible.

• Discard damaged and diseased fruit.

• Avoid wounding the fruit during harvest and transport.

• Store fruit in a cool, shaded and dry location.

One question that I often get is "*What about washing fruit?*" Because many fungi infect fruit in the field (preharvest) or are seed borne (Fusarium fruit rot), a good field fungicide program will be more effective than washing fruit in reducing fruit rot. However if you do wash fruit, remember that untreated wash water is an excellent way to spread the pathogen from fruit to fruit. A solution of 150 ppm sodium hypochlorite, which is approximately 1/3 oz. household bleach per gallon water will minimize fruit to fruit spread. Fruit should be dried following the wash and stored properly.

Agronomic Crops

Agronomic Crop Insects – *Bill Cissel, Extension Agent – Integrated Pest Management*; bcissel@udel.edu

Scout Alfalfa for Potato Leafhoppers
Continue to sample alfalfa for potato leafhoppers. Sample weekly starting seven days after the first cutting until final harvest. Ten sweep net samples should be taken in 10 random locations throughout the field when the alfalfa is dry. The threshold for alfalfa 3" or less is 20 leafhoppers per 100 sweeps, 4-6" tall is 50 per 100 sweeps, 7-10" tall is 100 per 100 sweeps and greater than 11" is 150 per 100 sweeps. If the field is more than 60 percent bud stage or if it has experienced "hopper burn", the alfalfa should be cut instead of sprayed.

For more information on the identification, biology, and management of potato leafhoppers, please review our fact sheet: http://extension.udel.edu/factsheets/potato-leafhopper-control-in-alfalfa/

Here is a link to our Insect Control in Alfalfa Recommendations (pure stands only): https://cdn.extension.udel.edu/wp-content/uploads/2012/05/18063238/Insect-Control-in-Alfalfa-final-for-2017.pdf

Here is a YouTube video discussing how to sample for potato leafhoppers: **https://youtu.be/7ybclcNu2rA**

Soybeans
Continue to sample soybeans for defoliating insects including green clover worms, grasshoppers, silver spotted skippers, bean leaf beetles, and Japanese beetles. During vegetative growth stages, the threshold for defoliating insects is 30% defoliation. Once the plants begin blooming and during pod fill, the threshold is 15% defoliation. When several defoliating insect pests are present, combine the damage from all the pests when determining if your field is at threshold. To estimate the percentage of defoliation, randomly look at leaves from the whole plant, not just the new leaves.

Silver Spotted Skipper (last week's Guess the Pest)

Green Clover Worm

Japanese Beetles

Here is a link to our Soybean Insect Management Recommendations for chemical control options: https://cdn.extension.udel.edu/wp-content/uploads/2012/05/18063934/Insect-Control-in-Soybeans-2017-final.pdf

Scout Field Corn for Japanese Beetles Clipping Silks

– *Bill Cissel, Extension Agent – Integrated Pest Management*; bcissel@udel.edu

As field corn begins pollinating, watch for silk clipping from Japanese beetles. This past week, I have seen an increase of Japanese beetles in soybeans. What does this have to do with corn? Well, Japanese beetles also damage corn by clipping silks prior to and during pollination. With the earliest fields starting to silk, watch for Japanese beetle populations moving into corn and clipping silks.

Sample 10 plants in 10 locations throughout the field to determine the stage of pollination, number of beetles per ear, and the percentage of plants with silks clipped to less than ½ inch. As a general rule, treatment may be necessary if silks are clipped to less than ½ inch and less than 50% of the plants have been pollinated and 3 or more Japanese beetles per ear are actively feeding (information from Purdue University, https://extension.entm.purdue.edu/fieldcropsipm/insects/corn-japanese-beetles.php). Japanese beetle populations will typically be most concentrated on field edges so make sure you are also scouting the interior portions of the field when determining if a spray is necessary.

How can you tell when an ear has been pollinated?

Pollen shed for an individual tassel usually takes 2-7 days and 1-2 weeks for an entire field. So how can you determine when you have reached 50% pollination?

Here is an informative Youtube video by Dr. Bob Nielsen demonstrating how to perform an ear shake test to determine corn pollination progress: https://www.youtube.com/watch?v=K7DiwD4N0T0&feature=youtu.be

Please refer to our Field Corn Insecticide Recommendations if a control measure is necessary: https://cdn.extension.udel.edu/wp-content/uploads/2012/05/13055805/Insect-Management-In-Field-Corn-final-20171.pdf

Agronomy Position Announcement – *Michelle Rodgers, Extension Director;* mrodgers@udel.edu

Mark Rieger, Dean of the College of Agriculture and Natural Resources is pleased to announce the appointment of Dr. Jarrod Miller as an Agronomy Faculty member in the Department of Plant and Soil Sciences. Jarrod will have a 65% Extension, 20% research, and 15% teaching appointment and will be based at the Carvel Research and Education Center.

Jarrod is currently an Extension Agent in the lower Eastern shore of Maryland. Agriculture in this region is largely centered on poultry and field crop production and has needs similar to southern Delaware. Jarrod has addressed classic agronomic issues such as pest management, soil fertility, and technological advances. His educational efforts have included addressing environmental quality and regulatory issues with consideration for profitability. Jarrod has taught soils workshops and partnered with UD on precision ag programming this winter. He has also been involved in the Mid-Atlantic Crop Management School.

Jarrod received his Ph.D. from the University of Kentucky in Soil Science. He received his M.S in Crop and Soil Environmental Science and his B.S. in Environmental Science from Virginia Polytechnic Institute and State University.

We look forward to welcoming Jarrod on September 1, 2017. We also extend our gratitude to the search committee: Co-chairs Mark VanGessel and Amy Shober; and Committee members Angelia Seyfferth, Bruce Vasilas, Phillip Sylvester and Mark Isaacs.

Palmer Amaranth Control in Soybeans – *Mark VanGessel, Extension Weed Specialist*; mjv@udel.edu

In my opinion, successful management of Palmer amaranth is more about when you treat it, rather than what you use. Timing is important, and plants visible above the soybean canopy will not be controlled. Sure you can burn those plants with herbicides, even burn off all the leaves; but that is not controlling them. Controlling Palmer amaranth means the plant is dead, not just injured. Consistently killing plants over 3 inches tall is difficult; killing those plants above the soybean canopy means you got lucky. So does that mean you shouldn't spray fields with large Palmer amaranth plants? No, because if there are large plants, it usually means there are smaller plants that maybe effectively controlled. But, those fields with large Palmer amaranth plants need to be walked to pull and remove those surviving plants from the field.

Dicamba Resistant Soybeans– *Mark VanGessel, Extension Weed Specialist*; mjv@udel.edu

There have been reports from Arkansas and Missouri of dicamba injury to sensitive plants. The new formulations of dicamba were developed to reduce volatility and the labels/websites have guidelines on application techniques to minimize drift. However, none of these strategies will eliminate all potential off-target movement. If you are considering use of dicamba be sure to read and follow the label; and most importantly use common sense. Don't just consider "can I spray it" but give serious thought to "should I spray it".

General

Guess the Pest! – *Bill Cissel, Extension Agent – Integrated Pest Management*; bcissel@udel.edu

Congratulations to Lisa Coven for identifying the insect in this past week's Guess the Pest and for being selected to be entered into the end of season raffle for $100 not once but five times. Everyone else who guessed correctly will also have their name entered into the raffle. Lisa will also receive a FREE copy of A Farmer's Guide to Corn Diseases. Click on the Guess the Pest logo below to participate in this week's Guess the Pest! For Guess the Pest # 13, we will also be giving away A Farmer's Guide To Corn Diseases ($29.95 value) to one lucky participant.

http://www.plantmanagementnetwork.org/book/cornfarmersguide/

Guess the Pest Week #12
Answer is….. Silver Spotted Skipper

Silver spotted skippers rarely cause economic losses in soybeans by themselves but their feeding does add to that being caused by other defoliators. Small silver spotted skipper caterpillars will cut two small slits in a leaf, fold it over, and stitch it together with silk forming a shelter. Larger caterpillars will fold a leaf in half and stitch it together or stitch a couple leaves together.

Conditions must be favoring silver spotted skippers this year because they seem to be more abundant. The threshold for defoliating insects in soybeans during vegetative growth stages is 30% and during bloom-pod fill: 15%. The threshold is based on a whole plant sample, not just the newest growth and includes damage from all insect causing defoliation. To accurately estimate the percentage of defoliation, randomly collect leaves from the entire plant, estimate the percentage of defoliation from each leaf, total from all leaves sampled and average to calculate the percent defoliation.

Guess the Pest Week #13

What insect caused this damage?

To submit your guess click the Guess the Pest logo below or go to: https://docs.google.com/forms/d/e/1FAIpQLSfUPYLZnTRsol46hXmgqj8fvt5f8-JI0eEUHb3QJaNDLG_4kg/viewform?c=0&w=1

Announcements

2017 Dickeya and Pectobacterium Summit
November 9, 2017

University of Maine staff are working to address Dickeya, a recent and potentially "devastating bacterial disease in Maine seed potatoes." Projects are being conducted in Maine and in collaboration with colleagues in other states. We have been successful in pursuing funding opportunities and hope to have news soon on additional pending grants.

Some of the efforts include:

- Chemical control of Enterobacteria
- Identifying seed lots with Enterobacteria

• Enterobacteria spread and epidemiological studies
• Enterobacteria identification
• Enterobacteria pathogenicity
• Enterobacteria levels in a seed lots related to stand loss
• Movement of Enterobacteria in a seed system
• Postharvest test for the presence of • Enterobacteria

Results from these studies will be presented at the 2017 Dickeya and Pectobacterium Summit November 9, 2017. The summit will be your chance to hear about improvements in the dormant tuber post-harvest test, among other topics.

For interest, please see a bulletin #482 entitled: "Factors Affecting Potato Blackleg and Seed Piece Decay."

The Introduction has this sentence:

"State potato seed certification officials discriminate against the presence of blackleg and many buyers refuse to purchase seed stocks known to have even a small percentage of the disease."

By the way, the bulletin was from 67 years ago, May 1950.

To register for this meeting and for additional information go to: https://extension.umaine.edu/agriculture/programs/dickeya-and-pectobacterium-summit/

Cover Crops, Soil Health and On Farm Research

Thursday, August 10

Two Educational Programs are scheduled for August 10. In the morning there will be program on cover crops and soil health sponsored by the Sussex County Conservation District with University of Delaware and Delaware State University. In the afternoon, there will be a session on conducting on-farm research. More details will be provide in future newsletters, but this early notice is provided so you can mark your calendars.

Whole Farm Revenue Protection (WFRP) Workshop

Tuesday, August 22, 2017 9:00 a.m.-12:00 noon
University of Delaware
Carvel Research & Education Center
16483 County Seat Highway, Georgetown, DE

An emerging insurance product, Whole Farm Revenue Protection (WRFP), is now available throughout the U.S. In many cases, **WFRP can provide more actual income protection at a reduced premium cost**.

This workshop will include an introduction to WFRP. Every farm family should have someone in attendance to get an overview of how the Whole Farm coverage concept works.

Details are still being arranged. Save the date and watch future Weekly Crop Updates for further details. In the meantime, contact Laurie Wolinski at 302-831-258 or LGW@udel.edu.

Cut Flower Tour on the Eastern Shore

Tuesday, September 12, 2017

Save the Date! Details coming later this summer.

Organized by University of Maryland

Weather Summary

Carvel Research and Education Center Georgetown, DE

Week of June 22 to June 28, 2017

Readings Taken from Midnight to Midnight

Rainfall:

0.17 inch: June 23
0.10 inch: June 24
0.02 inch: June 27

Air Temperature:

Highs ranged from 87°F on June 22, 23 and 24 to 80˚F on June 28.

Lows ranged from 72˚F on June 23 to 55˚F on June 28.

Soil Temperature:

79.1˚F average

Additional Delaware weather data is available at http://deos.udel.edu/

Weekly Crop Update is compiled and edited by Emmalea Ernest, Associate Scientist – Vegetable Crops with assistance from Don Seifrit.