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# PENNSYLVANIA VEGETABLE MARKETING & RESEARCH PROGRAM

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# Pennsylvania Vegetable IPM Weekly Update

*July 10, 2019*

*The information supplied in these Updates is from Penn State Extension Specialists and Educators.*
*These Updates are a service of the Pennsylvania Vegetable Marketing and Research Program which, in cooperation with the Pennsylvania Vegetable Growers Association, supports vegetable research at Penn State University and other institutions.*

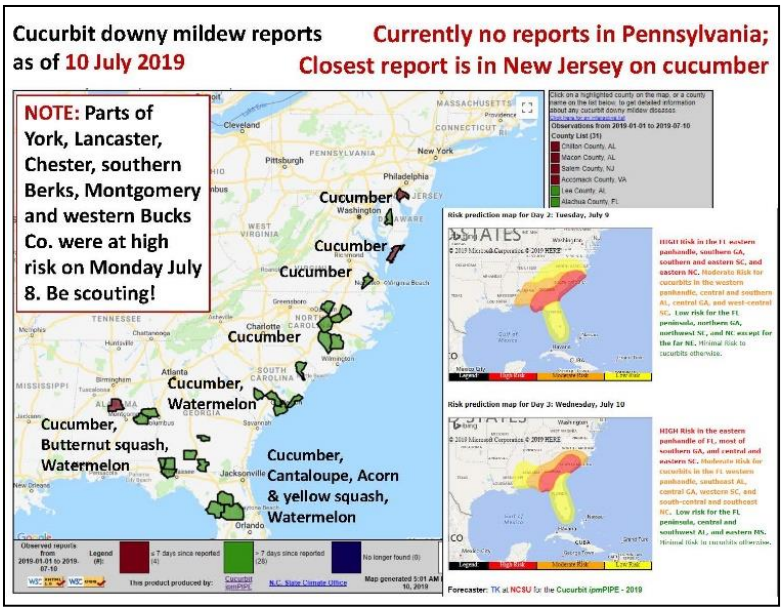
## Vegetable Disease Updates

*Dr. Beth Guginio, Extension Vegetable Pathologist, Penn State University*

### General updates:

- There continue to be **no reports of late blight** on tomato or potato in the region. If you suspect late blight on your farm please let me know either by email at bkgugino@psu.edu or by phone at 814-865-7328 or contact your local Extension Office.

- **Cucurbit downy mildew** was most recently confirmed on cucumber in southern New Jersey. It is important for growers to be scouting cucumber fields especially in the southeastern part of the state. Currently consider using a protectant spray program on cucumber at the very least. We are actively monitoring for this disease so please either contact me (information above) or your local Extension office for confirmation. All reports aid in our ability to successfully forecast disease risk.




### Distinguishing Cucurbit Downy Mildew From Other Foliar Cucurbit Diseases

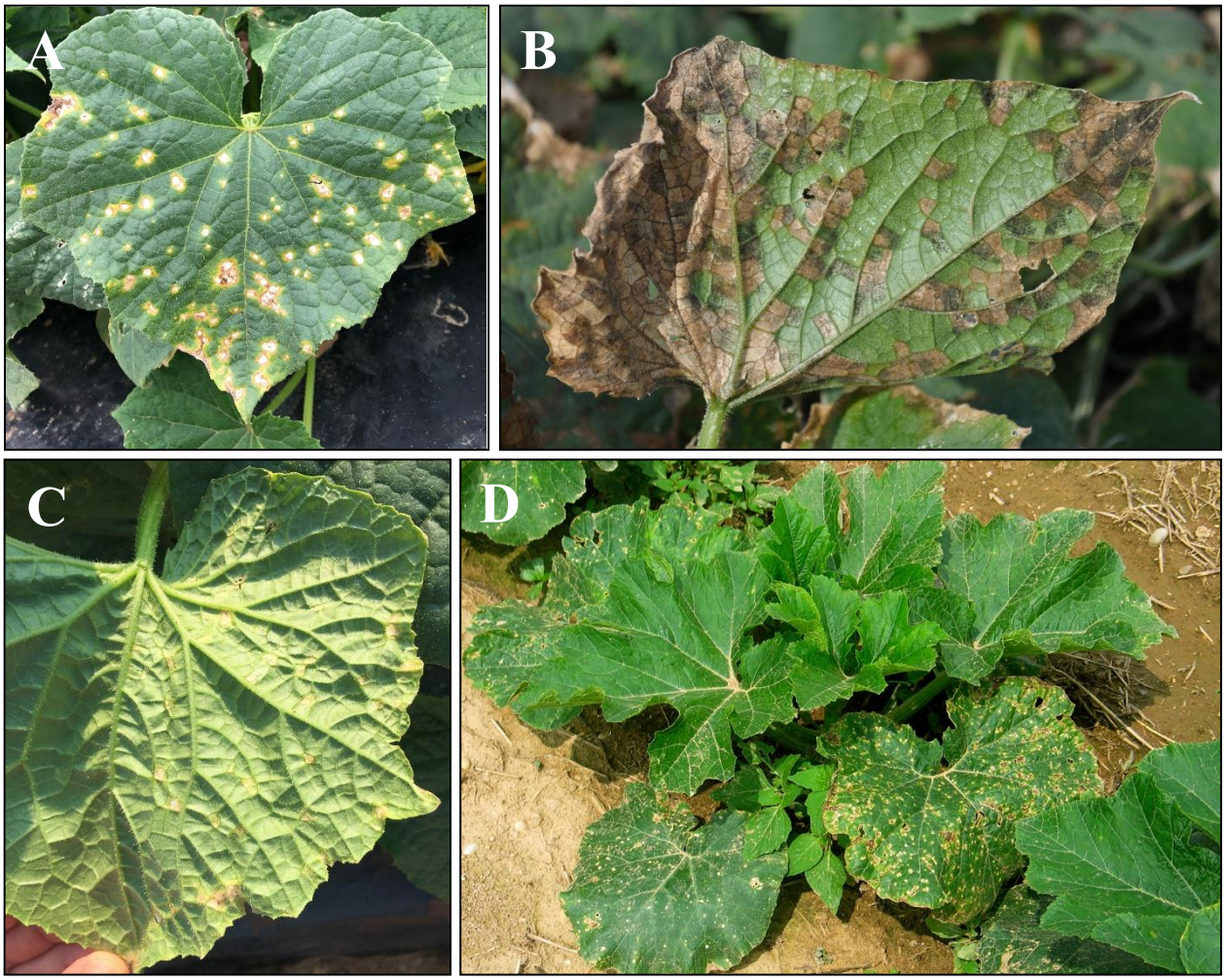
There are several other foliar diseases that affect cucurbits could potentially be confused with cucurbit downy mildew. These include angular leaf spot, bacterial leaf blight and anthracnose with angular leaf spot being the most likely look-alike. Also keep in mind that these diseases are not mutually exclusive so more than one disease could be affecting the plants.

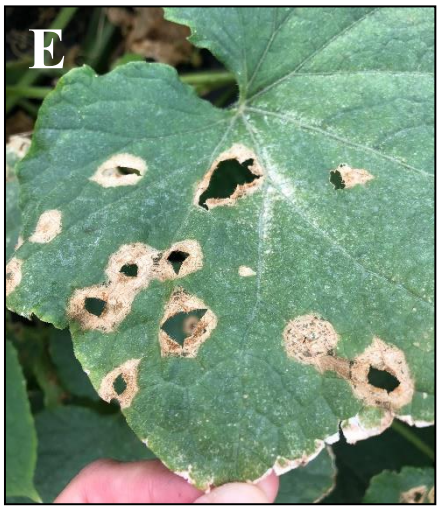
**Angular leaf spot (ALS)**, is a bacterial disease with symptoms very similar to downy mildew. The vein -limited lesions are initially water-soaked in appearance before turning tan to brown in color that depending on the cultivar can be surrounded by a yellow halo/border. The lesions will often dry and drop out, leaving irregular shaped holes in the leaves. The difference is that ALS will not produce the purplish spores on the underside of the leaf because the disease is caused by a bacterium and not a fungus. Even after placing the leaves in a sealed bag overnight, spores' characteristic of downy mildew will not form.

**Bacterial leaf spot (BLS)**, is also a bacterial disease caused by a different pathogen than ALS. It is also different from the pathogen that causes bacterial leaf spot on tomato. BLS lesions start as small water-soaked lesions similar to angular leaf spot. They tend to be smaller on pumpkin and winter squash compared to cucumber and again

surrounded by a yellow halo. Both diseases are favored by warm and wet conditions and spread via rain splash. The pathogens can be seedborne and often affect the older leaves first before being splashed up onto the younger leaves and fruit. It is not uncommon for the plants to outgrow the foliar symptoms when conditions become less favorable (dry).

**Anthracnose** is a fungal disease that results in larger tan circular lesions that are ¼ to ½ inch in diameter on cucumber and muskmelon leaves. On watermelon, lesions are more irregular and turn dark brown to black in color. As the lesions dry up, they crack creating a shot-hole appearance. Cantaloupe, squash and pumpkin tend to be less susceptible. Stem lesions can girdle vines causing them to wilt and collapse.




*Tan lesions with chlorotic borders characteristic of angular leaf spot on cucumber on the upper leaf surface (A) and lower leaf surface (B). Downy mildew has similar lesions but there will be purplish sporulation on the underside (C). Bacterial leaf spot lesions tend to be much smaller and less angular is shape on pumpkin (D). Large tan circular to irregular shaped lesions characteristic of anthracnose on cucumber (Photo credit: A, B, C, E Beth Gugino A, B, C, E and D Meg McGrath,*

## Physiological Leaf Curl on Tomato

With the recent hot and dry weather, physiological leaf curl is showing up in both high tunnel and field tomatoes. It starts with an upward cupping of the leaves that progress to an inward rolling of the leaves. Typically, the lower leaves are affected first and then the symptoms progress up the plant. In some cases when the environmental stress is alleviated the plants will recover. Other times the leaves will become rough and leathery. The severity of the symptoms can vary by cultivar with high yielding cultivars being more susceptible as well as indeterminate cultivars. Leaf roll can be caused by a number of conditions including: 1) heavy pruning during dry soil conditions; 2) high transpiration conditions that cause the leaves to roll to reduce water loss through the leaves; 3) high yielding cultivars being grown under high nitrogen fertility programs; and 4) sometimes excess soil moisture conditions during extended periods of high temperatures. Since leaf curl does not typically impact yield, in-season management is not required. However, reducing environmental stress through maintaining consistent soil moisture content and optimal fertility will help.

*Differing severity of physiological leaf curl on two tomato cultivars. Photos taken on the same day in early July (Photo credit: Beth Gugino).*

# Sweet Corn Insect Pest Monitoring

*Dr. Shelby Fleischer, Extension Vegetable Entomologist, Penn State University*

**Corn Earworm** is present throughout the state.

**Corn earworm (CEW) counts have been stable in PA but increased significantly in Delaware.** Most sites in PA stayed below spray thresholds, except for sites in Lycoming and Mifflin counties, which ran at about a 5-6-day spray threshold. However, the upward trend in Delaware looks like the emergence of a new generation. We can expect that to happen within about a week to 10 days in PA. Plantings in fresh silk will be most attractive.
**European corn borer (ECB)** counts are low, with an exception of a site in Susquehanna county.
**Fall armyworm (FAW)** counts are low.
**In summary**, although CEW counts have been stable, there is an increase in Delaware that looks like the emergence of a new generation, which we can anticipate happening in PA in a week to 10 days. A few sites are exceeding a 5-6 day spray threshold.

**European corn borer** feeding.

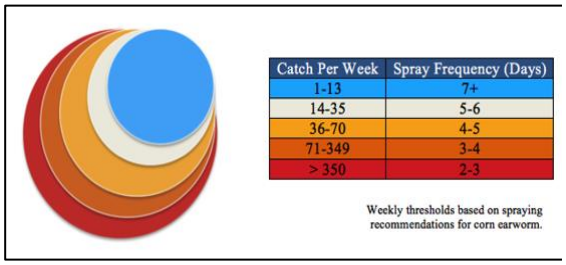
## THRESHOLDS

Reproductive (tassel/silk) and late vegetative corn attracts moths. Shorten spray schedules when populations increase. If CEW is not a problem, then consider ECB.

| CEW Threshold | | | | ECB Thresholds | | |
|---|---|---|---|---|---|---|
| | Catch Per Week | Spray Frequency | | | Catch Per Week | Spray Frequency |
| Almost absent | 1-13 | 7+ | | | | |
| Very low | 14-35 | 5-6 | | Almost absent | < 14 | 7+ |
| Low | 36-70 | 4-5 | | Very low | 15-35 | 6 |
| Moderate | 71-349 | 3-4 | | Low | 36-70 | 5 |
| High | > 350 | 2-3 | | Moderate | > 70 | 4 |

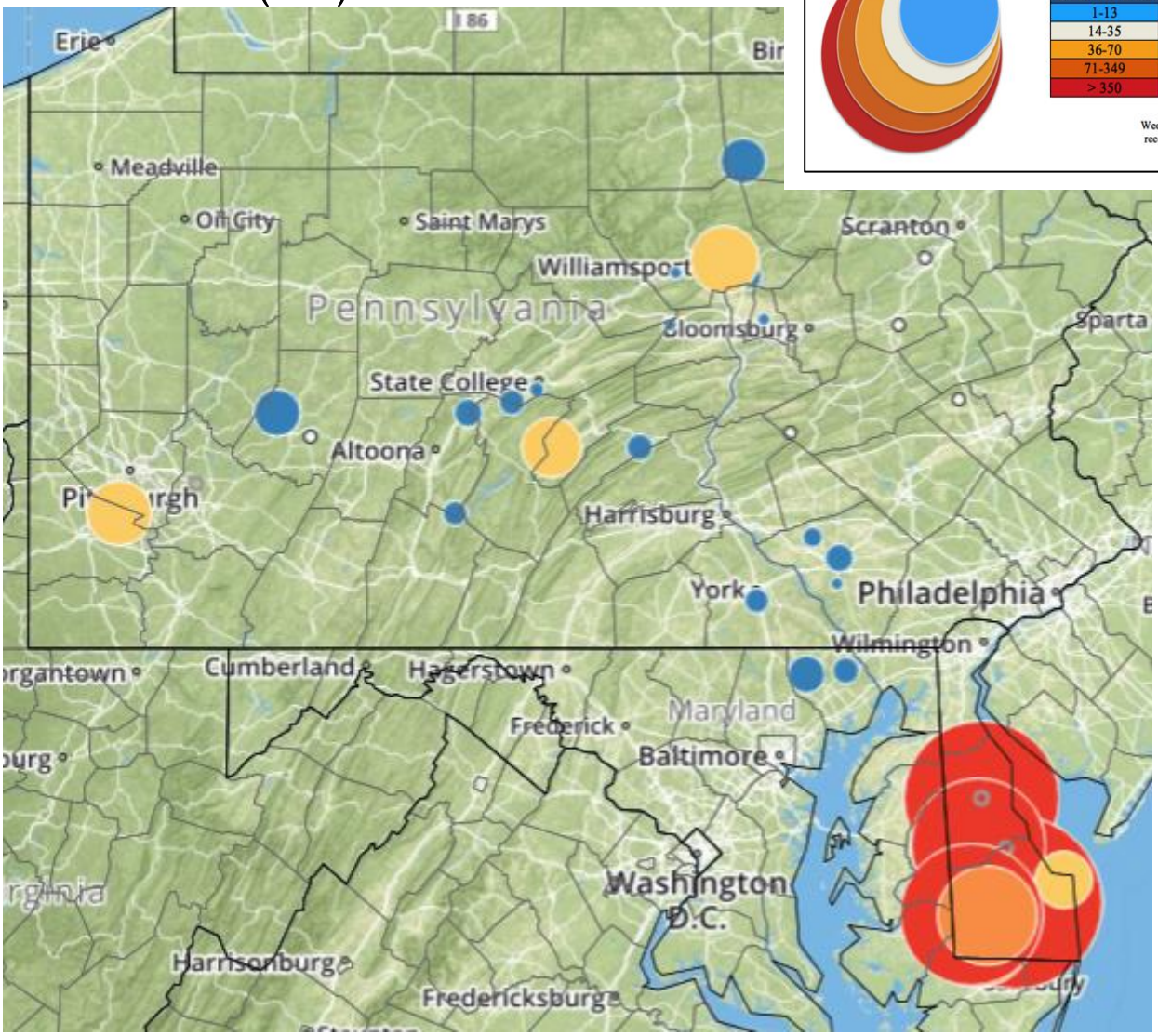
# CURRENT TRAP COUNTS

## CORN EARWORM (CEW)



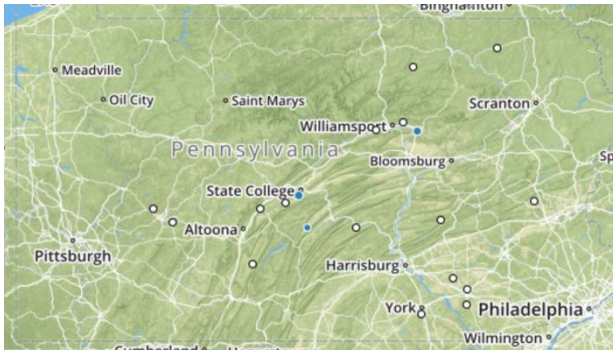
| Catch Per Week | Spray Frequency (Days) |
|---|---|
| 1-13 | 7+ |
| 14-35 | 5-6 |
| 36-70 | 4-5 |
| 71-349 | 3-4 |
| > 350 | 2-3 |

Weekly thresholds based on spraying recommendations for corn earworm.




## EUROPEAN CORN BORER (ECB)


## FALL ARMYWORM (FAW)



**Average weekly catch –** a moving average for the last 7 days. The average catch per night (catch, divided by the number of nights trapping), divided by the number of nights where data exist, multiplied by 7. Weeks where all the average-catch-per-night values are nulls are treated as if no data exist for that week.

| County | Town/Farm | CEW | | | ECB | | | FAW | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Jun 26 | Jul 3 | Jul 10 | Jun 26 | Jul 3 | Jul 10 | Jun 26 | Jul 3 | Jul 10 |
| Blair | Curryville | null | 5.4 | 3 | null | 0 | 0 | null | 0 | 0 |
| Blair | Tyrone | 3.1 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bradford | Sechrist Farm | null | null | 10.5 | null | null | 1.2 | null | null | 0 |
| Centre | State College | 0 | 0 | 1.2 | 1 | 1 | 2.3 | 0 | 5 | 1.2 |
| Centre | Rock Springs | 2.6 | 2 | 3.3 | 1 | 1 | 1.8 | 1 | 0 | 0 |
| Clinton | Loganton | 0 | .9 | 1 | 9.1 | 0 | 0 | | | |
| Indiana | Brush Valley | null | null | 0 | | | | null | null | 0 |
| Indiana | Creekside | 13 | null | 11 | 0 | null | 0 | 1 | null | 0 |
| Juniata | Brummer | null | 2.5 | 3.5 | | | | null | 0 | 0 |
| Lancaster | Landisville | null | 0 | 2 | null | 0 | 2 | null | 0 | 0 |
| Lancaster | Neffsville | null | 0 | 4 | null | 0 | 3 | null | 0 | 0 |
| Lancaster | New Danville | null | 13 | 1 | null | 0 | 0 | null | 0 | 0 |
| Lehigh | Germansville | 0 | 0 | 0 | 5.3 | null | 0 | 0 | 0 | 0 |
| Luzerne | Drums | 0 | 0 | 0 | 8 | 2 | 0 | | | |
| Luzerne | Plains | null | 2 | 0 | null | 4 | 0 | | | |
| Lycoming | Linden | 0 | 1 | 1 | | | | 0 | 0 | 0 |
| Lycoming | Montoursville | 9 | 44 | 20 | | | | 0 | 0 | 0 |
| Lycoming | Muncy | 4 | 12 | 2 | | | | 1 | 2 | 1 |
| Mifflin | Belleville | 7.5 | 32 | 18 | | | | 0 | 0 | 1 |
| Montour | Washingtonville | 4 | 1 | null | 7 | 2 | null | | | |
| Schuylkill | Tower City | null | null | 0 | null | null | 0 | null | null | 0 |
| Susquehanna | Montrose | null | 2 | 1 | null | null | 8 | null | 0 | 0 |
| Washington | Venetia | 24 | 26 | 21 | | | | | | |
| Westmoreland | Jeannette | null | 12.7 | null | null | 0 | null | | | |
| York | York | 2 | 4 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |

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