

# Cultivating Cumberland

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## Tobacco Streak Virus (TSV) found on tomato in New Jersey

Plant & Pest Advisory - July 7, 2025 - Andy Wyenandt

Tobacco Streak Virus (TSV) was found on fresh-market tomato this past week in southern New Jersey. TSV has a host range of close to 200 species, including cranberry, tobacco, tomato, pepper, asparagus, bean, soybean, mustard, radish, a number of ornamental hosts as well as weeds such as thistle, field bindweed, and jimsonweed. Like Tomato Spotted Wilt Virus (TSWV), the Tobacco Streak Virus is also vectored by thrips. TSV can be seed-borne (reported in some hosts), spread via pollen, and mechanically transmitted. Symptoms can vary significantly depending on the host. Infected plants may have downward leaf curling, show black streaks on leaves and stems, chlorosis, stunted growth, deformed growing tips, ring spots, and flower drop. There is no genetic resistance to TSV in tomato and management should focus on keeping thrips populations as low as possible, scouting, removing infected plants, and knowing your weed population (as a potential source). The only method to correctly identify TSV is through serological tests such as ELISA.

## Diagnosing Southern Blight and White Mold in Tomato and Pepper

Plant & Pest Advisory - July 13, 2025 - Andy Wyenandt

There have been a few reports of Southern blight (*Sclerotinia rolfsii*) and White mold (*Sclerotinia sclerotiorum*) on tomato and pepper in New Jersey. Southern blight is much more common in vegetable areas south of the state where summer temperatures remain hotter (above 90°F) for longer periods of time. Like white mold, it can survive in the soil for many years. Symptoms of Southern blight include infection at the base of the stem at the soil line. The resulting infection will girdle the plant causing wilt and death. The fungus will produce white, cottony mycelium and very small, spherical sclerotia which are often have a tannish, brown color.

White mold is more common than Southern blight in New Jersey, and like Southern blight, once introduced into a field or high tunnel it can very difficult to control. The pathogen produces large black sclerotia on the surface and inside infected stems. If sclerotia of either pathogen make their way back into the soil, both can survive for years causing significant problems. All infected plants need to be removed immediately and disposed of properly to help reduce the chances of sclerotia returning to the soil.

For more information on chemical control please see the 2024/2025 mid-Atlantic Commercial Vegetable Production Recommendations Guide.

## Attachments

- Rutgers Cover Crops Field Day

## Recognizing Angular Leaf Spot in Cucurbits

Plant & Pest Advisory - July 23, 2025 - Andy Wyenandt

Angular leaf spot, caused by the bacterium (*Pseudomonas syringae* pv. *lachrymans*), is common in New Jersey and the region. Although it often shows up during cooler, wet weather; it can show up almost anytime during the production season with favorable weather conditions for its development. Angular leaf spot will first appear in 'hot spots' as, small water-soaked lesions which will expand until they reach a larger leaf vein resulting in the angular looking symptoms on leaves. Under heavy disease pressure, the bacteria will infect fruit causing small, water-soaked circular spots. In many cases once weather conditions become dry again, infected tissue in leaves will die and fall out leaving the characteristic 'shot hole' symptoms. Control of angular leaf spot begins with scouting your fields, particularly in areas that may get shaded and remain wet after heavy rainfalls. Application of labeled rates of fixed copper plus mancozeb to help suppress the spread of the disease until hot, dry weather returns.

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## Important Fungal Diseases in Asparagus During the Summer Months

Plant & Pest Advisory - July 23, 2025 - Andy Wyenandt

Asparagus growers should consider scouting their fields regularly during the summer months for foliar disease development. Important pathogens that growers need to scout for on a regular basis include Purple spot, *Cercospora*, and Rust. These pathogens are easily diagnosed by the characteristic symptoms they produce on infected plants. Purple spot lesions can appear on the spears during the harvest season and reduce quality, as well as, on fern growth later in the summer months.

Characteristic symptoms of Purple spot include small (1 to 2 mm) slightly, sunken elliptical reddish-purple lesions on spears and ferns. *Cercospora* produces small tan lesions with darker margins on ferns and stems. Damage to ferns can cause premature defoliation which will reduce carbohydrate flow and reduce yield for the next growing season. Chopping the fern and incorporating the debris in the fall after the fern senesces can help destroy overwintering sources of the inoculum, however these practices may also lead to *Fusarium* infection. Once fern stalks are full-size and/or disease is detected, fungicide applications of chlorothalonil (FRAC code M5) in rotation with azoxystrobin (FRAC code 11) should be repeated every two to four weeks until frost.

Rust is another important pathogen of asparagus. Rust can easily be diagnosed in the field early in the season by the cream-colored oval lesions (6 to 19 mm) it produces. A few weeks later these lesions will appear reddish-brown. These reddish-brown lesions can produce spores which can cause more infections leading to further disease development. Control of asparagus rust is extremely important and necessary in one and two year old beds, even with rust resistant varieties. Growers need to scout for symptom development in cutting and non-cutting beds and, if not already started, apply fungicides if necessary. Fungicide applications of chlorothalonil (M05), Folicur (tebuconazole, 3), mancozeb (M03), or Rally (myclobutanil, 3) rotated on a 7 to 10 day schedule will help control rust.

For more information on controlling these important diseases please see the 2024/2025 Mid-Atlantic Commercial Vegetable Production Guide.

## Diagnosing Pith Necrosis in Tomato

Plant & Pest Advisory - July 27, 2025 - Andy Wyenandt

Symptoms usually begin to appear on random plants throughout the field as green fruit begins to mature. The bacterium (*Pseudomonas corrugata*) is ubiquitous to soils and develops when weather conditions (cooler nights/very hot, humid days) and cultural practices (i.e., excess heavy N use) lead to favorable conditions for disease development. Symptoms include the development of irregular greasy (at first), brown lesions on main stems and branches. Late pruning (i.e., suckering) can provide entry points for the bacterial disease. Internally, stems will become chocolate brown and mushy. High humidity is necessary for disease development. High nitrogen and lower night temperatures are associated with Pith Necrosis development, where it has been reported around the state this past week. Control begins with cultural practices such as avoiding working in fields with wet foliage, avoiding late pruning, tying when plants are wet, and watching the amount of N applied to plantings. Infected plants can be rouged from field and most often it does not spread to nearby uninfected plants.

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## Controlling Phomopsis Fruit Rot in Eggplant

Plant & Pest Advisory - July 12, 2025 - Andy Wyenandt

Phomopsis blight is caused by the fungal pathogen, *Phomopsis vexans*. It survives between seasons in the soil on infested plant debris. Although the pathogen can infect stems and older leaves, fruit infections are most prominent. Cankers that develop on stems and branches can cause the entire plant to collapse and die. Circular, grayish spots may develop on infected leaves. On fruit, the pathogen causes brownish-black spots that can quickly enlarge causing flat spots that can produce black pycnidia (e.g., fruiting bodies) that produce masses of conidia (spores) which are rain dispersed onto healthy plants and fruit. Phomopsis blight is favored by hot, wet weather (85 – 90 F). Spores germinate in free water on leaves and fruit causing infections. The pathogen can survive on solanaceous weeds such as nightshade, so good weed control is necessary. Crop rotations of 3 to 4 years are recommended. If possible, infected fruit should be harvested and removed from the field to help reduce to inoculum and the spread of the disease. Fields should be scouted on a regular basis, especially fields with a history of Phomopsis blight. Fungicide applications include Quadris Top (difenoconazole + azoxystrobin, 7 +11) or Priaxor (fluxapyroxad +pyraclostrobin, 7 +11) rotated with chlorothalonil every 7 to 10 days. For more information please see the 2024/2025 Mid-Atlantic Commercial Vegetable Production Recommendations Guide.

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## Diagnosing Verticillium Wilt in Eggplant

Plant & Pest Advisory - July 12, 2025 - Andy Wyenandt

Verticillium wilt has been reported in eggplant this summer. It is a common soil-borne fungal pathogen that once it has infested soil can remain for a very long time. Verticillium wilt is caused by either *Verticillium albo-atrum* or *Verticillium dahlia* and has a wide host range(over 200 plant species). Both pathogens can survive (overwinter) as microsclerotia in the soil. Verticillium wilt prefers cooler weather and drier soils and can be more severe in neutral to alkaline soils. Solanaceous weeds such as Nightshade may harbor the pathogen.

Symptoms can vary between hosts, but on eggplant the leaves of infected plants will typically become lopsided where one side of the leaf will wilt and stop expanding while the other side continues to develop. Vascular tissue near the soil line will become discolored. Eventually the entire plant will collapse as the vascular tissue becomes more infected(clogged) and water movement up the plant stops.

There is no resistance to verticillium wilt in eggplant and no effective fungicide control options so long crop rotations with non-susceptible crops are critically important. Some cultivars, such as 'Classic' and 'Epic' may maintain yield in infested fields.

## Controlling Phytophthora Blight in Cucurbit Plantings in 2025

Plant & Pest Advisory - July 11, 2025 - Andy Wyenandt

As the summer heats up in New Jersey, the control of Phytophthora blight in cucurbit plantings can be extremely difficult (even with the use of fungicides) as hot, wet weather has set in these past few weeks. Mitigating losses to Phytophthora blight in cucurbit crops begins with long crop rotations, where recommendations suggest crop rotations longer than 5 years if possible. Other cultural practices include avoid planting in low areas of the field where water may persist after rain or overhead irrigation, roguing out infected plants as soon as possible, cutting the plastic to help dry out the soil, proper weed control, and proper preventative fungicide programs.

### Searching for sources of resistance to Phytophthora blight in cucurbit crops

Research is continually ongoing for discovering and introducing phytophthora-resistance into cucurbit crops; where resistance has been identified and used breeding programs in crops such as bell pepper for decades now. In cucurbit crops, no to genic, or age-related resistance, to the fruit rot phase of Phytophthora blight has been identified; however, its onset differs by crop. Where summer squash, zucchini, and melon fruit remain susceptible over time; developing fruit of acorn, butternut, some cucumber, and pumpkin become less susceptible to *P. capsici* as they age (i.e., mature) (Perla et al., 2023). Pumpkin fruit with hard, gourd-like rinds are less susceptible to Phytophthora fruit rot than pumpkins producing conventional (e.g., softer) rinds (Sanogo et al., 2023). Research for introducing phytophthora blight resistance into squash is ongoing (LaPlant et al., 2020). Watermelon germ plasm with resistance Phytophthora blight has been identified and used in breeding programs in the past few years, unfortunately, its been difficult to bring this resistance to market (Sanogo et al., 2023). Recently, the USDA has developed and released five resistant germ plasm lines which should prove useful for developing watermelon cultivars with broad resistance to *P.capsici* (Kousik et al., 2022).

### Fungicides for controlling Phytophthora blight in cucurbit crops

Over the past few years a number of new fungicides, with new active ingredients, have become commercially-available for use on cucurbit and other crops for Phytophthora control. Mefenoxam or metalaxyl, both once widely-used to effectively control Phytophthora blight has been hit by resistance issues around much of Southern New Jersey the past decade. Growers with a known history of mefenoxam-insensitivity on their farm should use Presidio, Previcur Flex, or Ranman plus a Phosphite fungicide in rotation in their drip application programs. Importantly, if mefenoxam has not been used in particular fields on any crop for a number of years (more than 5+) the fungus may revert back to being mefenoxam-sensitive and control with these products may return. Mefenoxam, metalaxyl, Previcur Flex, and the phosphites are the most systemic of the group and should readily be taken up the by plant via drip application. Presidio has locally systemic and has trans laminar activity and should offer some protection of the root system via drip. Ranman has protectant activity and thus will offer some root protection where it comes into contact with roots in the soil. Orondis Gold (oxathiapiprolin + mefenoxam, 49 +4) is the newest fungicide available with a new active ingredient in a new FRAC group. Additionally, in past research trials, mefenoxam, Orondis Gold, Presidio, Previcur Flex, Ranman, Revus and the phosphites in rotation and/or tank mixes have offered very good control of the fruit rot phase of phytophthora blight.

*Continued on page 5*

**Controlling Phytophthora Blight...Continued from page 4****Fungicide control recommendations**

mefenoxam –1.0 pt Ridomil Gold 4SL/A or 1.0 qt Ultra Flourish 2E/A or metalaxyl (MetaStar) – 4.0-8.0 pt 2E/A at transplanting via drip and 30 days later.

Orondis Gold (oxathiapiprolin + mefenoxam, 49 +4) at 4.8 to 9.6 fl oz/A 1.67S at transplanting and 30 days after. If applied as drip application it can not be applied as a foliar.

Presidio (fluopicolide, 43) at 3.0-4.0 fl. oz 4SC/A at transplanting via drip and in rotation.

Ranman (cyazofamid, 21) at 2.75 fl oz 400SC at transplanting via drip and in rotation.(Ranman can be added to transplant water, see label for specific crop uses)

Previcur Flex (propamocarb HCL, 28) at 1.2 pt/A 6F at transplanting via drip or directed spray at base of plant. (Previcur Flex can be added to transplant water, see label for specific crop uses).  
Use in rotation.

Phosphite materials (FRAC code 33) such as Rampart, ProPhyt, or K-Khite may also be tank mixed with one of the above to help suppress Phytophthora blight.

If mefenoxam-insensitivity is present, only use Presidio, Previcur Flex, Ranman, Revus, and/or phosphite fungicides.

For more information on these fungicides and specific crop use please see the 2024/2025 Mid-Atlantic Commercial Vegetable Production Recommendations Guide.

**References:**

Kousik, C.S., Ikerd, J.L., Wechter, W.P., Branham, S., Turechek, W. 2022. Broad resistance to post-harvest fruit rot in USVL watermelon germ plasm lines to isolates of *Phytophthora capsici* across the United States. *Plant Dis.* 106:711-719.

LaPlant, K.E., Vogel, G., Reeves, E., Smart, C.D., and Mazourek, M. 2020. Performance and resistance to phytophthora crown and rot in squash lines. *Hort Technology* 30:608-618.  
<[doi.org/10.21273/HORTTECH04636-20](https://doi.org/10.21273/HORTTECH04636-20)>

Perla, D.E., Hayden, Z.D., and Hausbeck, M. 2023. Commercial hard squash cultivars exhibit differences in susceptibility to *Phytophthora* crown rot. *Plant Health Progress: First Look* (online) 4 May 2023 <[doi.org/10.1094/PHP-01-23-0009-RS](https://doi.org/10.1094/PHP-01-23-0009-RS)>

Sanogo et al., 2023. *Phytophthora capsici*, 100 years later: research mile markers from 1922 to 2022. *Phytopathology: First Look* (online) <[doi.org/10.1094/PHYTO-08-22-0297-RVW](https://doi.org/10.1094/PHYTO-08-22-0297-RVW)>

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**New Addendums for the USDA Harmonized and Harmonized Plus Audits**

Plant & Pest Advisory - July 9, 2025

On July 3, 2025, the USDA Agricultural Marketing Service released 3 new addenda to the Harmonized and Harmonized GAP Plus+ Standards: Warehouse, Food Defense, and Integrated Pest Management. All of which will require additional records. Requirements in the existing Harmonized and Harmonized GAP Plus+ standards have not changed. These new standards, versions 3.1 and 5.1 respectively, are effective July 3, 2025. Growers do not need to have these addendums audited unless a buyer requests one or all. Go to USDA Harmonized Audits to review the additions here <https://www.ams.usda.gov/services/auditing/gap-ghp/harmonized>.

## **New Jersey Now Accepting Applications for 2026 Program Offerings**

The United States Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) in New Jersey is now accepting FY2026 applications for the Environmental Quality Incentives Program (EQIP), the Agricultural Management Assistance (AMA) program and the Conservation Stewardship Program (CSP).

While NRCS accepts applications year-round, New Jersey producers and landowners should apply by October 17, 2025 to be considered for funding in the current cycle.

### **Environmental Quality Incentives Program (EQIP)**

Through EQIP, NRCS provides agricultural producers with one-on-one help and financial assistance to plan and implement conservation practices to address a variety of issues such as water quality degradation, soil erosion, soil quality degradation and inadequate habitat for fish and wildlife.

Special initiatives include:

- Working Lands for Wildlife (WLFW) - Golden Winged-Warbler
- The National Water Quality Initiative (NWQI) and
- The New Jersey Pine Barrens Joint Chiefs' Landscape Restoration Partnership
  - o Forest landowners can verify their land is located within the target area by entering their address into the Pinelands Commission Interactive Map <https://tinyurl.com/3u7386re>

### **Agricultural Management Assistance (AMA) Program**

AMA is a voluntary conservation program available to beginning and limited resource farmers, small farms, and producers who have had limited participation in other USDA financial assistance programs. Producers eligible for AMA can apply for financial and technical assistance to voluntarily address resource issues such as water management, water quality, and erosion control by incorporating conservation into their farming operations.

### **Conservation Stewardship Program (CSP)**

Agricultural producers and forest landowners looking to build on conservation efforts while strengthening their operation can apply for technical and financial assistance through CSP. CSP is for working lands including cropland, pastureland, and nonindustrial private forest land. Participating farmers will further address priority resource concerns related to soil quality, water quality, air quality, and plant health. On-farm benefits include increased crop yields, decreased inputs, wildlife population improvements, and better resilience to weather variables. For producers who are already taking steps to improve the condition of their land, CSP can help them find ways to meet their goals.

Applications are available through your local USDA Service Center and online at <https://www.nrcs.usda.gov/getting-assistance/get-started-with-nrcs>

While NRCS accepts applications year-round, if you apply after the program ranking date, your application will automatically be considered during future funding cycles

USDA Service Center  
Serving Atlantic, Cape May & Cumberland Counties  
1318 S. Main Rd. Bldg. 5A  
Vineland, NJ 08360  
Phone: 856-205-1225

## Phytophthora and Pythium Control during Wet Weather

Plant & Pest Advisory - July 10, 2025 - Andy Wyenandt

Most of New Jersey has been wet making current conditions ideal for pathogens such as Phytophthora and Pythium. Unfortunately, Pythium cottony leak and Phytophthora blight can be found on most farms in the southern part of the state. Poor crop rotations with susceptible hosts only make matters worse. The Phytophthora pathogen has an increasing host range that now includes snap and lima beans; and all crops, other than a few resistant bell pepper cultivars, lack any resistance to the pathogen. Under ideal conditions (hot, humid, and wet) Pythium cottony leak can develop on infected fruit.

Control of Phytophthora blight and Pythium are extremely difficult (even with the use of fungicides) in the wet weather conditions. In the past few years a number of new fungicides, with new active ingredients, have become commercially-available for use on multiple crops. Mefenoxam or metalaxyl, both once widely-used to effectively control Phytophthora blight has been hit by resistance issues around much of Southern New Jersey the past decade. Growers with a known history of mefenoxam-insensitivity on their farm should use Presidio, Previcur Flex, or Ranman plus a Phosphite fungicide in rotation in their drip application programs. Importantly, if mefenoxam has not been used in particular fields on any crop for a number of years (more than 5+) the fungus may revert back to being mefenoxam-sensitive and control with these products may return. Mefenoxam, metalaxyl, Previcur Flex, and the phosphites are the most systemic of the group and should readily be taken up by the plant via application through the drip. Presidio has locally systemic and has translaminar activity and should offer some protection of the root system via drip. Ranman has protectant activity and thus will offer some root protection where it comes into contact with. Orondis Gold (oxathiapiprolin + mefenoxam, 49 +4) is the newest fungicide available with a new active ingredient in a new FRAC group. Additionally, in past research trials, mefenoxam, Orondis Gold, Presidio, Previcur Flex, Ranman, Revus and the phosphites in rotation and/or tank mixes have offered very good control of the fruit rot phase of phytophthora blight.

### Recommendations

mefenoxam –1.0 pt Ridomil Gold 4SL/A or 1.0 qt Ultra Flourish 2E/A or metalaxyl (MetaStar) – 4.0-8.0 pt 2E/A at transplanting via drip and 30 days later.

Orondis Gold (oxathiapiprolin + mefenoxam, 49 +4) at 4.8 to 9.6 fl oz/A 1.67S at transplanting and 30 days after. If applied as drip application it can not be applied as a foliar.

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Previcur Flex (propamocarb HCL, 28) at 1.2 pt/A 6F at transplanting via drip or directed spray at base of plant. (Previcur Flex can be added to transplant water, see label for specific crop uses). Use in rotation.

Phosphite materials (FRAC code 33) such as Rampart, ProPhyt, or K-Khite may also be tank mixed with one of the above to help suppress Phytophthora blight.

If mefenoxam-insensitivity is present, only use Presidio, Previcur Flex, Ranman, Revus, and/or phosphite fungicides.

For more information on these fungicides and specific crop use please see the 2024/2025 Mid-Atlantic Commercial Vegetable Production Recommendations Guide.

### Recommendations for Organic Growers

Applications of Double Nickel (*Bacillus amyloliquefaciens*) or Regalia (Extract of *Reynoutria sachalinensis*) as drenches or via the drip system prior to the onset of disease may help suppress phytophthora and pythium development. Other bio pesticides, such as those containing *Trichoderma* spp. or *Streptomyces* spp. can also be used to help suppress these pathogens.

### Losses Become High?

If Phytophthora losses become high because of the heavy rains, pre-emptive cultural practices need to be taken immediately. Roguing out, discing under, or hitting areas with gramoxone to burn infected plants down will help slow down and reduce the spread of potential inoculum to healthier areas of the block or farm. If beds are chronically wet, plastic can be cut or completely removed to help soils dry out.

## Cucurbit Powdery Mildew Control in 2025

Plant & Pest Advisory - July 8, 2025 - Andy Wyenandt

Cucurbit powdery mildew (CPM), caused by *Podosphaera xanthii*, is one the most important diseases of cucurbit crops throughout the world. The pathogen is an obligate parasite, just like cucurbit downy mildew, meaning it needs a living host in order to survive. In northern regions that have a killing frost in the fall the pathogen will die out when the crop freezes. Not being able to overwinter, the pathogen must be re-introduced each spring or summer in the mid-Atlantic region. The pathogen accomplishes this by re-infecting cucurbit crops in the spring as they are planted up the east coast starting in Florida, then the Carolina's, Virginia, and so forth. By late May, as soon as cucurbit crops begin to germinate in the mid-Atlantic region, the potential threat for potential powdery mildew infections begin.

The first step in mitigating CPM begins with planting powdery mildew tolerant (PMT) or resistant (PMR) cultivars if they meet your needs. It is important to remember that these cultivars are not “immune” to CPM; they will become infected at some point in the growing season depending on disease pressure. Hopefully, this will occur later in the season when compared to CPM susceptible cultivars. Organic growers hoping to mitigate losses to powdery mildew should always chose CPM tolerant or resistant cucurbit cultivars first. There are a number of OMRI-approved fungicides labeled to help suppress CPM development, these should always be used in concert with CPM tolerant or resistant cultivars and a preventative fungicide program. Cultural practices such as increasing in-row plant spacing to improve air flow cultivation to keep weeds to a minimum and reduce use of overhead irrigation will help reduce disease pressure from another important pathogen, cucurbit downy mildew. Thus, growing cucurbits on a mulch with drip irrigation has its advantages, but also increases costs.

Over the past 15 years, there have been a number of new fungicides released with new modes of action (i.e., new FRAC groups) for CPM control in cucurbit crops. Unfortunately, all have a moderate to high-risk for resistance development because of their specific modes of action. The good news are these new fungicide chemistries have less effects on humans, non-target organisms, and the environment.

These fungicides offer new strategies when it comes to controlling and mitigating losses to CPM. Instead of rotating two fungicides with a moderate to high-risk for resistance development every other week (A – B – A – B), growers now have option to reduce the total number of times any single fungicide might be applied during the production season; further reducing the risk for resistance development to any one mode of action. For example, in pumpkin, a new CPM preventative fungicide program may look like this:

A – B – C – D – E – A – B – C – D – E

Where each letter above equals a fungicide from a different FRAC group.

A protectant fungicide such as chlorothalonil or mancozeb should be added to the tank mix with each high-risk fungicide to reduce selection pressure and to help control other important diseases such as anthracnose and Plectosporium blight.

In this type of CPM preventative program any one high-risk fungicide would only be applied twice per growing season and 5 weeks apart greatly reducing the risk for fungicide resistance development. Importantly, for cucurbit growers, the easiest method to mitigate the potential for fungicide resistance development are to reduce the total number of applications of any one high-risk fungicide during the production season.

Dr. Sally Miller, from The Ohio State University and Dr. Meg McGrath, from Cornell University have written excellent articles for controlling CPM in 2022. ‘Preparing for cucurbit powdery mildew’ by Dr. Sally Miller, OSU ‘Cucurbit powdery mildew’ by Dr. Meg McGrath, Cornell University

For more information on fungicide use, FRAC groups, and specific control recommendations please see the 2024/2025 Mid-Atlantic Commercial Vegetable Production Recommendation Guide.

## Preparing for Cucurbit Downy Mildew in 2025

Plant & Pest Advisory - July 11, 2025 - Andy Wyenandt

In 2004, cucurbit downy mildew re-emerged in the US with a vengeance causing significant losses in cucurbit production. In most years prior to this, concern for CDM control was minimal, since the pathogen arrived late in the growing season (in more northern regions), or the pathogen caused little damage, or never appeared. After 2004, with significant losses at stake, and with very few fungicides labeled for its proper control, CDM became a serious threat to cucurbit production. Importantly, at the time, cucumber varieties with very good levels of CDM resistance were no longer resistant, suggesting a major shift in the pathogen population. Research done over the past 19 years has led to a better understanding of the pathogen. Recent research has determined that the CDM falls into two separate clades: Clade I and Clade II.

**Some CDM (*Pseudoperonospora cubensis*) isolates fall into Clade I which predominately infect watermelon, pumpkin, and squash, where CDM isolates in Clade II predominately infect cucumber and cantaloupe. Research suggests that isolates in Clade II can quickly become resistant to specific fungicides (North Carolina State University).**

Most cucumber varieties are resistant to Clade 1 isolates, but there is no resistance currently available for Clade 2 isolates. For pickling cucumber the varieties, Citadel and Peacemaker, are tolerant to clade 2 isolates. For slicing cucumbers, the varieties SV3462CS and SV4142CL are tolerant to Clade 2 isolates. All organic and greenhouse growers are encouraged to use tolerant varieties since chemical control options are very limited (NCSU) extensive list of cucumber varieties with CDM resistance. The University of Florida has an. For the past decade, researchers from around the US have been closely monitoring and forecasting the progress of CDM through a website hosted by NCSU. The CDM pipe website is currently in the process of an upgrade and will now be hosted by Penn State University. All cucurbit growers are encouraged to sign up to the CDM pipe website to help them know what cucurbit crops are being infected (and where) and to follow the forecasting to know where the pathogen may move to next. As a note, in recent years, CDM control with certain fungicides has varied significantly depending on the cucurbit host and geographic region. This is extremely important since two clades of the pathogen are potentially present (affecting host range) as well as having a potential impact on control strategies. How do you know which clade may be present on your farm? Follow the reports. If CDM is mostly present in cucumber crops as it works its way up the east coast, then you are most likely to see it infect cucumber and cantaloupe on your farm first. Scout your fields regularly, especially if CDM is in the immediate region. Pay very close attention to symptom development and on what cucurbit crop(s) you see it on, this is especially important if you grow more than one cucurbit crop. Like cucurbit powdery mildew, once CDM arrives in the region preventative fungicide applications are necessary.

### Fungicides for CDM control

Loss of efficacy in the control of CDM has also been documented in FRAC code 4 (mefenoxam), FRAC code 11 fungicides (azoxystrobin), FRAC code 28 (propamocarb HCL), and FRAC code 43 (fluopicolide) in the mid-Atlantic region and else where. Insensitivity to fluopicolide (43) and propamocarb HCL (28) have been reported in multiple states (Thomaset al., 2018). In some cases, individual isolates of CDM were in sensitive to both chemistries. Recent research in Michigan in a three year field study using pickling cucumber determined that cyazofamid (21), (ametoctradin, 45 + dimethomorph, 40), (zoxamide, 22 + mancozeb, M03), mancozeb (M03); chlorothalonil (M05), and oxathiapiprolin (49) alone or in a premix provided the best level of control (Goldenhar & Hausbeck, 2019). In a recent study evaluating different fungicide chemistries in field trials done in different states (OH, NY, & SC) determined that propamocarb HCL (28), cymoxanil + famoxadone (27 + 11), and fluopicolide (43) were in effective in 1 or 2 states during both years of the trial (Keinath, Miller, & Smart, 2019). In one year of the study, famoxadone (11), dimethomorph (40), cymoxanil (21), and mancozeb (M03) were ineffective for CDM control (Keinath, Miller, & Smart, 2019). In bioassay studies done during this trial, cyazofamid (21), oxathiapiprolin (49) suppressed CDM >80%.

**Continued on page 10**

### ***Preparing for Cucurbit...Continued from page 9***

Most fungicides labeled for the control of CDM are at-risk for resistance development because of the specific modes of action. These include Ranman (cyazofamid, FRAC code 21), Gavel (zoxamide, 22 + mancozeb, M03), Zing! (zoxamide, 22 + chlorothalonil, M05); Curzate (cymoxanil, 27), Previcur Flex (propamocarb HCL, 28), Forum/Revus(dimethomorph, 40), Zampro (ametoctradin, 45 + dimethomorph, 40), Orondis Opti (oxathiapiprolin, 49 + chlorothalonil, M05), and Orondis Ultra (oxathiapiprolin, 49 + mandipropamid, 40). Importantly, just like with cucurbit powdery mildew control, there are a number of CDM fungicides with different modes of action from different FRAC codes to choose from. As noted in the paragraph above, the efficacy of individual fungicide chemistries may vary significantly by state or region. Thus, growers need to scout their cucurbit fields on a weekly basis, note the efficacy, or lack thereof, they are seeing in the field, and incorporate the use of as many different FRAC groups as possible to help mitigate fungicide resistance development.

### **Fungicide programs for CDM control**

An example of a fungicide program for CDM control in the mid-Atlantic region might look like this, where a CDM specific fungicide from a different FRAC group is used on weekly basis:

A – B – C – D – E

where A= Gavel (zoxamide, 22 + mancozeb, M03); B= Orondis Opti (oxathiapiprolin, 49 + chlorothalonil, M05); C= Ranman (cyazofamid, FRAC code 21); D= Orondis Ultra (oxathiapiprolin, 49 + mandipropamid, 40); E= Curzate (cymoxanil, 27)

Not all of the fungicides listed above are labeled for all cucurbit crops. Some fungicides, such as the Orondis products have limited number of applications. Growers will need to refer to local recommendations and the label for crop specifics. Remember, the label is the law.

A protectant fungicide such as chlorothalonil or mancozeb should be added (if not already included) to the tank mix with each high-risk fungicide to reduce selection pressure and to help control other important diseases such as anthracnose and plectosporium blight. All growers should follow use recommendations on labels and avoid over using one mode of action, even if it works well. If loss of efficacy is present, the grower should avoid using that particular fungicide (FRAC group) for CDM control the rest of the growing season.

Growers should remember that fungicides specifically labeled for CDM control won't control CPM, and fungicides labeled for CPM control won't control CDM. Therefore, carefully following the disease monitoring and forecasting website, choosing varieties with CD Mresistance, paying close attention to host crops, scouting fields on a regular basis, noting fungicide efficacy, and following proper fungicide resistant management guidelines remain critically important for successful CDM control.

For more information on the specific fungicides recommended for CDM control on cucurbit crops please see the 2024/2025 Mid-Atlantic Commercial Vegetable Production Recommendations.

## Fact Sheets:

FS1351: Introduction to Aquaponics Systems

<https://njaes.rutgers.edu/FS1351/>

Yergeau, S., Zemeckis, D., and VanVranken, R.

FS386: Aquatic Weed Control

<https://njaes.rutgers.edu/FS386/>

Haberland, M.

FS225: Cucumber Beetles

<https://njaes.rutgers.edu/FS225/>

Nitzsche, P.

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## Calendar of Events

- **August 12-13, 2025**  
The Garden Center Show Rosemont, IL. visit [gardendcentershow.com](http://gardendcentershow.com) to learn more.
- **August 12-14, 2025**  
Penn State Ag Progress Days  
Rt. 45, 9 miles SW of State College – [agprogressdays@psu.edu](mailto:agprogressdays@psu.edu)
- **August 26, 2025**  
UNH Coop. Ext. Webinar -Ultra Low Volume Sprayers- Are Foggers Right for You? (Calibrating & Mixing)  
6:30-8pm \$10. Contact [Jonathan.Ebba@unh.edu](mailto:Jonathan.Ebba@unh.edu) or 603.749.2529. Register at [tinyurl.com/4d4v49mn](https://tinyurl.com/4d4v49mn).
- **September 13, 2025**  
Rodale Institute Workshop: Regenerative Landscaping And Design 10am- noon. Rodale Institute Founders Farm, 2056 Minesite Rd. Allentown, PA Cost \$35 per person / \$60 for two people.  
Register at [tinurl.com/2s688n6a](https://tinurl.com/2s688n6a).
- **September 30, 2025**  
UNH Coop. Ext. Webinar: How to Choose Pesticides and Build Effective Spray Regimens 6:30-8pm  
Contact [Jonathan.Ebba@unh.edu](mailto:Jonathan.Ebba@unh.edu) [tinyurl.com/546bp4y8](https://tinyurl.com/546bp4y8).
- **October 28, 2025**  
UNH Coop. Ext. Webinar: How to Train a Employee to Water 6:30-8pm  
Contact [Jonathan.Ebba@unh.edu](mailto:Jonathan.Ebba@unh.edu) [tinyurl.com/546bp4y8](https://tinyurl.com/546bp4y8).
- **November 12-13, 2024**  
Northeast Greenhouse Conference & Expo - DoubleTree by Hilton Manchester Downtown Hotel & Expo Center, Manchester, New Hampshire <https://www.negreenhouse.org/>
- **December 1-2, 2025**  
39th Annual Convention Southeast Vegetable & Fruit Expo at the Embassy Suites by Hilton Myrtle Beach Oceanfront Resort, Myrtle Beach, South Carolina <https://fielddays.ces.ncsu.edu/event/2992638098/southeast-vegetable-fruit-expo/>

## Rutgers Cover Crops Field Day

\*The program may be rescheduled in the event of inclement weather\*

**Date:** August 5, 2025

**Time:** 3:00PM to 6:00 PM

**Where:** Snyder Research Farm, 140 Locust Grove Rd, Pittstown, NJ 08867

**Please register by calling RCE of Sussex County: 973-948-3040**

\*First 20 registrants will receive a FREE copy of the USDA SARE book:

*"Managing Cover Crops Profitably"*

This event will highlight several cover crop research projects and foster discussion and networking on drone use in agriculture and cover crop management.

Please join us for this summer event. **Registration required.**

*We will also discuss an upcoming drone pilot certification training we will be hosting this winter.*

- 3:00 PM **Registration and Welcome** – *Stephen Komar, ANR Agent /Rutgers SARE Coordinator*
- 3:15 PM **Go to the Field - Calibrating a Drone for Agricultural Applications** - *Adam Kyle, Warren Co. Com. College, Teaching Administrator, Precision Agriculture, Stephen Komar*
- 4:00 PM **Summer Cover Crop Planting Comparison: Drone vs. Drill** – *Bill Bamka, ANR Agent*
- 4:30 PM **Row Middle Cover Crops vs Herbicides for Weed Management in Vegetable Culture** – *Kate Brown, ANR Agent*
- RC&D Cover Crop Programs-** *Laura Tessieri, Executive Director, North Jersey RC&D*
- Drone Seeding Cover Crops into Pumpkins** - *Peter Nitzsche, ANR Agent, RCE*
- 5:30 PM **Update on Worker Protection Standards and Pesticide Recordkeeping** – *Michelle Infante-Casella, ANR Agent*
- 6:00 PM **Pesticide Credits and Adjourn**



*This event is sponsored by a grant awarded to Stephen Komar (Principal Investigator), Michelle Infante-Casella, and William Bamka Agricultural Agents/Professors, Rutgers Cooperative Extension, by the USDA, Sustainable Agriculture Research and Education, Professional Development Program.*



*Cooperating Agencies:* Rutgers the State University of New Jersey, U.S. Department of Agriculture, and the Board of County Commissioners. Rutgers Cooperative Extension, a unit of the Rutgers New Jersey Agricultural Experiment Station, is an equal opportunity program provider and employer.

## Regularly Scheduled Meetings

### Locations for Pesticide Recycling Containers

#### **Salem County**

Helena Chemical  
440 N. Main St.  
Woodstown, NJ  
8/22/25  
9/19/25  
10/24/25

#### **Atlantic County**

Helena Chemical  
66 Route 206  
Hammonton, NJ  
8/15/25  
9/12/25  
10/17/25

#### **Monmouth County**

Rutgers Fruit and Ornamental  
Research Extension Center  
283 Route 539  
Cream Ridge, NJ  
8/29/25  
9/26/25  
10/31/25

### Cumberland County Agriculture Development Board

Virtual Meetings Information  
can be found on the  
Public Meeting Calendar on  
[cumberlandcountynj.gov/](http://cumberlandcountynj.gov/)

Meetings are held on the 3rd  
Tuesday of each month.  
Meetings start at 6 p.m. at  
Rutgers Cooperative Extension  
291 Morton Avenue  
Millville, NJ 08332

For more information call the  
Dept. of Planning, Tourism,  
and Community Affairs  
at 856-453-2175

Chair: Al Caggiano, Jr

Commissioner Liaisons:  
Victoria Groetsch-Lods  
Antonio Romero

### Cumberland County Board of Agriculture

Meetings are held on the  
3rd Thursday,  
September - May at  
Rutgers Cooperative Extension  
291 Morton Avenue  
Millville, NJ 08332

Virtual Meeting Information  
<https://rutgers.zoom.us/my/smangia>  
Meeting ID: 529 557 9817  
Pass-code: Sal2020  
or call in at 1 (646) 558 - 8656

President: Timothy Eachus

Commissioner Liaisons:  
1. Victoria Groetsch-Lods  
2. Robert Austino

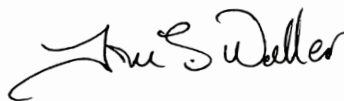
Meeting Times Vary by Month:  
September & October - 7 PM  
November, December, January,  
February, & March - 6 PM  
April & May - 7 PM

Cumberland County  
For more information call  
Timothy Eachus.

Sincerely,



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Pesticide User Responsibility: Use pesticides safely and follow instructions on labels.

The user is responsible for the proper use of pesticides, residues on crops, storage and disposal, as well as damages caused by drift.  
Use of Trade Names: Trade names are used in this publication with the understanding that no discrimination is intended and no endorsement is implied. In some instances the compound may be sold under different trade names, which may vary as to label.



**RUTGERS UNIVERSITY**  
**Cooperative Extension  
of Cumberland County**  
New Jersey Agricultural Experiment Station

Have you visited the Cumberland County website for the Present and /or past issues of “Cultivating Cumberland”?

It's a great resource for information and dates...

<https://Cumberland.njaes.rutgers.edu/>

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