VEGETABLE CROPS HOTLINE

A newsletter for commercial vegetable growers prepared by the Purdue University Cooperative Extension Service

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In This Issue

Phytophthora Fruit Rot of Watermelon

(Dan Egel, egel@purdue.edu, (812) 886-0198)

This disease is more likely to develop during periods of heavy rains in relatively poorly drained soils. June started out dry for many areas of Indiana, however recent rains increase the likelihood of Phytophthora diseases.

Phytophthora fruit rot of watermelon causes large, soft areas to develop on mature watermelon fruit. These lesions can be several inches across and are often covered with a white mold. The lesions usually form first on the bottom of the fruit, close to where the fruit comes into contact with the soil. Further development of the disease often results in lesions on the top of the fruit as well.

The first application of a systemic fungicide for this disease should occur when watermelon are about softball stage. Since Phytophthora does not usually affect the foliage of watermelon, there is no need to apply fungicides for this disease until fruit are present. Applications to small fruit may include Forum® or one of the products with phosphorous acid as an active ingredient (e.g., Agri-Phos®, Phostrol®, Kphite®). If conditions are conducive to disease, subsequent applications may include Presidio® which can be alternated with Revus®. A newer product, Zampro®, has also proven effective. An earlier article describes the product Orondis® that should be effective during conducive conditions.

Phytophthora diseases can affect several vegetable crops. This article is primarily aimed at early applications of systemic fungicides to watermelon. Later articles will cover other facets of this disease. More information about Phytophthora fruit rot of watermelon can be found here https://vegcropshotline.org/article/phytophthora-fruit-rot-of-watermelon/. More information about the fungicide Oronids can be found here https://vegcropshotline.org/article/new-fungicide-for-vegetables-3/.

Hornworms

(Rick Foster, fosterre@purdue.edu, (765) 494-9572)

Hornworms can be pests of tomato and pepper in field grown crops, but for some reason seem to be

Figure 1. Hornworm feeding on tomato leaves in a high tunnel (photo by Wenjing Guan).

particularly severe in high tunnels. Hornworms are very large caterpillars, measuring up to 4 inches long (Figure 1), and they can consume large quantities of foliage and will also feed on green fruit (Figure 2). In fields, hornworm damage is usually localized and tolerable, although treatment is sometimes required. In high tunnels, hornworm damage, particularly to tomato, is often severe (Figure 3) and will require several applications of insecticides. In field situations, the treatment threshold is one hornworm per two plants. Since the infestations are often localized, it may not be necessary to treat the entire field. In high tunnels, there is no established threshold, so my recommendation would be to treat as soon as you seen caterpillars or their damage. The good news is that hornworms are fairly easy to control. The list of recommended insecticides can be found on pages 137-8 of the *Midwest Vegetable Production Guide* which can be found at https://ag.purdue.edu/btny/midwest-vegetable-guide/Pages/default.aspx. Not all of these products can be used in high tunnels. See page 42 of the guide for the list of insecticides allowed for use in high tunnels.

Figure 2. Green tomato fruit damaged by hornworm (photo by Wenjing Guan)

Figure 3. Severe hornworm damage on tomatoes in a high tunnel (photo by Wenjing Guan)

Corn Earworm

(Rick Foster, fosterre@purdue.edu, (765) 494-9572)

Pheromone trap catches of corn earworms have been relatively low in most areas of the state, with northern Indiana having the highest counts. Counts from the Purdue research farms can be seen at https://extension.entm.purdue.edu/cornearworm/index.php. Remember that as the field corn surrounding your sweet corn begins to silk and be attractive to the earworm moths for egg laying, the threshold for treatment in your sweet corn rises from 1 moth per night to 10 moths per night. I would like to express one note of caution about using thresholds. We recently had one trap that on seven consecutive nights caught 9, 7, 5, 9, 6, 7, and 7 moths. On none of these nights was the threshold of 10 moths reached. However, on two night 9 moths were caught and at least 5 were caught on every night. I think it is reasonable to assume that the accumulation of eggs laid during this period would be sufficient to justify spraying insecticides. My point is that a threshold is not a magic number. It is an estimation of when sufficient eggs would be laid to economically justify a spray or sprays. In a scenario like I described here, the common sense and prudent response would be to apply insecticides.

Southern Blight of Tomato

(Dan Egel, egel@purdue.edu, (812) 886-0198)

Southern blight of tomato thrives under hot, dry conditions. Usually, such conditions are more common in August than early July. However, 2016 has been relatively hot and dry in southwest Indiana. Perhaps for this reason, I have observed this disease in my own tomato plots. This article will discuss the symptoms, biology and management of southern blight of tomato.

Southern blight has a wide host range affecting many vegetable, field and ornamental crops. Tomato is the most important host. The disease is caused by the fungus *Sclerotium rolfsii*. This fungus is related to the one that causes white mold.

The first symptom one is likely to observe of southern blight is plant wilt. At the base of the plant, one is likely to notice a canker with sclerotia that may be as large as a sesame seed (Figure 1). These sclerotia are survival structures for the fungus and allow the disease to occur in the same location years later. The sclerotia for southern blight are round, about the size of a sesame seed and usually occur near the base of the plant. Sclerotia of white mold are irregular in shape, are pea-size and may occur several feet up the plant. The fungus that causes southern blight also lives off of organic matter without being parasitic (saprophytic).

Figure 1. The white fungal growth and sesame-sized sclerotia in a canker at the base of tomato plants is characteristic of southern blight of tomato.

Control of this disease can be difficult. The best crops for rotation are grass plants such as corn and small grains. Deep plowing the residue may help reduce the severity of the disease. Fungicides are not available to manage this disease. The use of high calcium levels and ammonium type fertilizers has been reported to help in management.

Considerations and Suppliers for Biological Control

(Laura Ingwell, lingwell@purdue.edu)

There is a variety of commercial suppliers to choose from when purchasing predatory insects and parasitoids for biological control. Some of them rear the insects themselves and others are distributors for some of the larger rearing facilities in Europe and Canada. There are some key things to consider when choosing a supplier. The first of which may be shipping dates and ordering deadlines. Depending on the predators being purchased, they typically ship one day a week (multiple for organisms such as predatory mites) and therefore there are strict ordering deadlines the week prior.

In general biological control needs to be implemented when pests are first detected, and at low levels, through active scouting efforts. If pests are already at damaging or outbreak levels alternative interventions (insecticidal soap or chemical application) to knock back the populations may be necessary prior to releasing predators for long-term control. Either way, it is important to contact multiple suppliers and record their ordering/shipping deadlines at the beginning of each season.

Cost in another important consideration. This varies depending on life stage and quantity of the agent being purchased. For some, such as green lacewings, there is not a lot of variation between suppliers, but for others you may see large variation. This may reflect the quality or origin of the agent (which rearing facility it is originating from). Explore the options to find the best fit for you and your farm.

Customer service is the last thing that I would urge you to consider. Some suppliers have done their own research with the agents they sell and can offer advice based on their own experiences. I have enjoyed working with companies that follow up on orders that I have placed or those that are prompt at answering the phone, returning emails and providing tracking information for shipments. Almost all of them supply their own recommendations for release rates, and depending on pest densities and acceptable damage levels, this is something that is not well established for high tunnel production.

Below is a list of suppliers that I have worked with. For a more extensive list please see this publication prepared by Jen White and Doug Johnson at the University of Kentucky:

https://entomology.ca.uky.edu/ef125

Arbico, Inc; PO Box 8910, Tucson, AZ 85738; (800) 827-2847; www.arbico.com

Beneficial Insectary, Inc.; 9664 Tanqueray Ct., Redding, CA 96003; (800) 477-3715; www.insectary.com

Evergreen Growers Supply; 15822 SE 114th Ave, Clackamas, OR 97015; (503) 908-1946

International Greenhouse Company; 70 Eastgate Dr., Danville, IL 61832; (217) 443-0600; www.greenhousemegastore.com

IPM Laboratories, Inc.; Locke, New York; (315) 497-2063; www.ipmlabs.com

Koppert Biological Systems, Inc.; 28465 Beverly Rd., Romulus, MI 48174; (734) 641-3763; www.koppertonline.com

Planet Natural; 1612 Gold Ave., Bozeman, MT 59715; (800) 289-6656; www.planetnatural.com

Plant Products Co. Ltd.; 314 Orenda Rd., Brampton, Ontario L6T 1G1 Canada; (905) 793-7000; www.plantprod.com

Rincon-Vitova Insectaries, Inc.; PO Box 1555, Ventura, CA 93002-1555; (800) 248-2847; www.rinconvitova.com

Upcoming Events

(Wenjing Guan, guan40@purdue.edu, (812) 886-0198)

Pickin' and Packin': 2016 Postharvest Produce Workshop

Date: July 12, 2016, 9:00 AM – 12:30 PM (EDT)

Location: Purdue University, Nelson Hall of Food Science, Rm 1195, 745 Agriculture Mall Dr. West Lafayette, IN 47906

Workshops will be offered for updating produce growers on the Food Safety Modernization Act Produce Rule and other food safety issues. It will also provide practical advice for postharvest handling of produce. The workshop is free. Participants are asked to pre-register at http://bit.ly/2016PostharvestWorkshop. For more information please contact Scott Monroe at (812) 886-0198 or jsmonroe@purdue.edu.

Beginning Farmer Tours

July 14, 2016: Melon Acres, Oaktown. Community-supported agriculture and agritourism.

Sept. 29, 2016: River Ridge Farm, Roann. Four-season vegetable farming, operating an on-farm store, and farm-to-school programs.

The tours are free, but registration is required. Registration at https://mdc.itap.purdue.edu/wk_group.asp?wk_group=BeginFarmer

For more information about the Beginning Farmer and Rancher program, or the farm tour schedule, contact Kevin Gibson at (765) 496-2161 or kgibson@purdue.edu.

Illinois Pumpkin Field Day

Date: August 31, 2016

Location: Ewing Demonstration Center, 16132 N. Ewing Rd; Ewing, IL 62836

For more information, contact Nathan Johanning at (618) 687-1727 or njohann@illinois.edu

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