UNIVERSITY OF MARYLAND EXTENSION

Greenhouse TPM/IPM Report

Central Maryland Research and Education Center
Ellicott City, Maryland

April 27, 2021

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Improving Your Diagnostic Skills Through IPM Scout Training coming up in June

By: Stanton Gill

Whether you are doing in-house IPM Scouting or if you are thinking of becoming a professional IPM Scout, the upcoming lunchtime training sessions that the University of Maryland Extension is holding will help sharpen your diagnostic skills. Karen Rane, Director of the Plant Diagnostic Lab, David Clement, Plant Pathologist, Andrew Ristvey, Water and Plant Nutrition Specialist, and Stanton Gill, IPM and Entomology Specialist, will work with you at each of these 4 lunchtime sessions via Zoom.

- **June 2** - The Diagnostic Process: Figuring Out What is Wrong with a Greenhouse or Nursery Plant. **Speakers: Karen Rane, David Clement, Stanton Gill**

- **June 9** - Detecting Disease at an Early Stage: Detection methods, on-site testing kits, what type of samples you need to diagnose the problem, and solution options for dealing with the disease.
  Speakers: Karen Rane, David Clement

- **June 16** - Nutrient and Water Management: What monitoring practices should you employ when checking for root zone health? What is an irrigation audit? What is the latest plant nutrition research telling us about our phosphorus rates?
  Speaker: Andrew Ristvey

- **June 23** - Insects and Biological Control: How do you monitor for key insects in the greenhouse and nursery? What are some of the biological and low risk chemical control options? How do you collect a sample to submit for ID?
  Speaker: Stanton Gill

Registration is open! The cost to register is $10 and covers a certificate that will be presented to each registrant at the end of the series after June 23rd. Registration closes on May 28th (*No refunds after May 28th*).
View the program brochure.

Field Trials for 2021

Downy Mildew on Basil – Stanton Gill and David Clement: We are working with a pathologist and plant breeder at Rutgers University in expanding the trial we conducted over the last 2 years to evaluate downy mildew resistant basil cultivars. Rutgers has released several new promising cultivars that will be included in this field trial. We will have multiple planting sites in Maryland.

Root Aphid Control – Stanton Gill and Brian Kunkel: In April and May of 2021, we will be a evaluating several low risk pesticides for root aphids on two ornamental grasses. Brian Kunkel, Entomology Specialist with University of Delaware Extension, and I will be the lead investigators. Chuck Schuster, Ginny Rosenkranz, and Heather Zindash will assist us with this field trial.

Disinfecting a Greenhouse

By: Stanton Gill

There are several products on the market for cleaning and disinfecting floors, benches, and greenhouse flats. Controlling algae has always been a major issue in greenhouses but is an important activity for several reasons.

Over the years some companies have brought products to the market for cleaning, disinfecting, and algae management. In general, the cleaners combine sulfuric acid or caustic soda (lye) plus detergents and wetting agents. The disinfectants and algaecides utilize quaternary ammonia compounds or hydrogen peroxide plus peroxyacetic acid (H2O2 +PAA), or a stabilized hydrogen peroxide. These products seem to be fairly effective in cleaning and disinfecting greenhouse floors and walkways. Products such as SaniDate 5.0, GreenClean PRO, Strip-It PRO, and Kleengrow are often used by growers to clean, disinfect, and kill algae in greenhouses.

Keep in mind that none of these products are labeled for insect control. Such use would be in violation of EPA registration rules. Also note that disinfectants are classified as pesticides and must be registered with the EPA. However, the steps of cleaning to remove visible soil followed by use of an effective algaecide and/or disinfectant can impact pest populations by removing hiding places and food sources.

Gretchen Pettis, PhD, Principal Entomologist for BioSafe Systems provided the following comments on facility cleaning and disinfection:

“BioSafe Systems has not pursued an insecticidal label for GreenClean PRO even though we often see significant reductions in insect pests such as thrips, fungus gnats, and shore flies after use. Instead, we choose to discuss this product as the algaecide/fungicide/bactericide that it is. We emphasize to clients how cleaning and disinfection play a significant role in the reduction of food and harborage for pests, thereby reducing insect populations. For complete disinfection of the greenhouse and all its surfaces we recommend a two-step process: GreenClean Alkaline Cleaner to emulsify and remove organic matter (seen and unseen), followed by the no rinse SaniDate 5.0 application. GreenClean PRO, a granular product, can be spread on floors for almost instant algae control if you don’t have the time or ability to follow the two-step process.”

PRODUCT NAME	ACTIVE INGREDIENT(S)	PRODUCT TYPE	FORMULATION	MADE BY
GreenClean PRO	Stabilized hydrogen peroxide (sodium carbonate peroxyhydrate)	Broad spectrum algaecide, fungicide and bactericide	granular	Biosafe
GreenClean Alkaline Cleaner	Caustic soda (lye) plus detergent(s)	Heavy-duty alkaline cleaner	liquid	
SaniDate 5.0	Hydrogen peroxide and peroxyacetic acid	Sanitizer/ Disinfectant/ Virucide	liquid	
Kleengrow	Quaternary ammonia	Algicide/fungicide/ bactericide/ disinfectant/virucide	liguid	Pace
Strip-it PRO	Sulfuric acid plus detergent(s)	Heavy-duty acid cleaner	liquid	

Black Root Rot Strikes Again

By: Karen Rane, UMD

We've had several samples of annual vinca (*Catharanthus*) suffering from black root rot submitted to the UMD Plant Diagnostic Lab over the past few weeks. Black root rot is caused by the fungus *Berkleyomyces basicola* (formerly called *Thielaviopsis basicola*), which infects roots of a number of herbaceous and woody ornamental crops. Annual vinca, pansy, petunia, calibrachoa, poinsettia and holly are common hosts. Infected plants show yellowing foliage and stunted growth (Fig. 1). Roots develop dark brown/black lesions and root tips (Fig.2), due to the proliferation of dark, thick-walled spores of the pathogen within root tissue (Fig. 3). Although the foliar symptoms of this disease might resemble a nutritional problem, black root rot usually occurs on random plants within a plug tray, pot or bench, while nutritional disorders occur more uniformly throughout a crop. The fungus survives crop to crop in infected plant debris and contaminated soil or potting mix, and sanitation is critical to disease management. Re-using trays and pots without thorough washing and sanitizing is an all-too-common way that this disease can spread and cause significant losses. It is best to use only new plug trays and pots for highly susceptible crops like pansy and vinca to avoid the disease. Examine new plants or plugs for tell-tale symptoms of black root rot, and do not plant those with poor root systems or black root lesions. Black root rot is more severe under alkaline conditions, so using acidifying fertilizers and keeping growing medium pH at 5.6 or lower can help reduce disease severity. There are a number of fungicides that can help protect plants from black root rot infection- thiophanate methyl is very effective, and triflumizole, fludioxonil, and polyoxin-D can also provide some control.

Fig. 1. Stunted, chlorotic annual vinca plant infected with *Berkleyomyces basicola* (right), compared to healthy plant (left).
Photo: K. Rane

Fig. 2. Vinca root system showing blackened root tips due to black root rot infection.
Photo: K. Rane

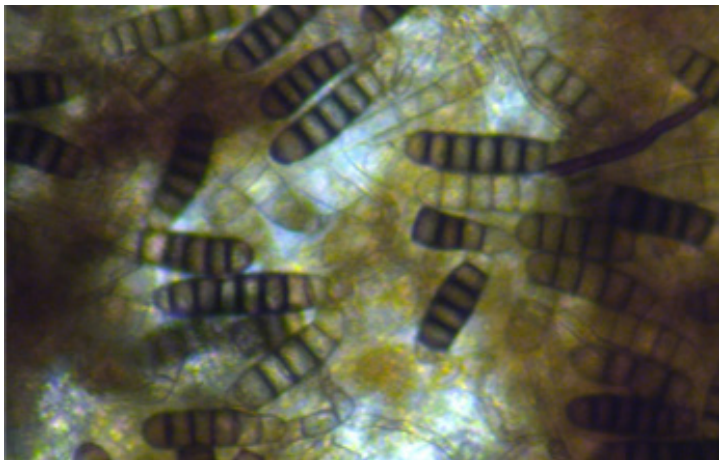

Fig. 3. Infected root tissue viewed under a microscope, showing dark, multi-celled spores of the black root rot fungus *Berkleyomyces basicola*.
Photo: K. Rane

For Woody Cut Flower Growers

By: Stanton Gill

Several years ago, Richard Uva of Seaberry Farm introduced me to the native beach plum, *Prunus maritima*. We have been growing it at our orchard for the last 16 years. Over the years when we prune the trees in March, we put aside branches in buckets of water and hold them in our cooler. We take the branches out and put them in large vases and force out the flowers. They are spectacular. They are a late blooming plum, blooming in the field long after oriental and European plums come into flower. The white flowers are small and delicate but very prolific. I would suggest that cut flower growers should consider growing this woody plant for cutting dormant stems to force into flowering later in the season. When the branches have their small fruit forming in September, they could again be marketed as floral display items.

Thanks, Richard for introducing this beautiful, potential cut woody plant into the Maryland marketplace.

Beach plums can be forced to sell as a woody cut stem
Photos: Stanton Gill

Is the Cold Weather Getting You Down?

By: Andrew Ristvey

Cold weather got you down? It is possible your fertilizer might also feel the same way? If you have been experiencing slow growth or your plant leaves seem a little discolored and chlorotic, it may be due to your slow release fertilizer not releasing, especially if you have top dressed this winter. Most slow-release fertilizers (SRF), sometimes called "controlled-release fertilizers", even though there is nothing controlled about them, are activated by heat. The higher the temperatures to which they are exposed, the faster they will release. Since this spring has been consistently cool, they may not be releasing as fast as the plants need, creating a potential nutrient deficits. Many of your plants may not be keen on nutrient uptake, even if you are applying soluble nutrients.

Plants are taking up slow release fertilizers much more slowly during the recent cold weather
Photo: Andrew Ristvey

This week's and next week's forecast is for very warm temperatures, so plants should be more actively taking up nutrients and coloring up. Of course, by the time the hot weather comes, those SRF fertilizers will be releasing quite quickly…so keep monitoring! Monitor for electrical conductivity by pour through or saturated media extract. Look for ranges of between .5 and 2.0 dS/m (taking account of your irrigation water EC) for both monitoring methods. Anything higher than 2.5 dS/m, you should be irrigating.

For more information, please contact Andrew Ristvey at 410-827-8056 x 113

New IPM Website

The new website for Extension went live earlier this month so our urls for IPMnet have changed. To quickly get to the new site, use https://go.umd.edu/ipmnet. It has links to the IPM alerts and conferences etc. It's still a work in progress at the moment and more information will be added throughout the spring and summer.