UNIVERSITY OF MARYLAND EXTENSION

Greenhouse TPM/IPM Report

Central Maryland Research and Education Center
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From: Stanton Gill, Extension Specialist – IPM for Greenhouse and Nurseries, Central Maryland Research and Education Center, University of Maryland Extension
Karen Rane, Plant Pathologist, Director of the Plant Diagnostic Clinic, University of Maryland Extension
Andrew Ristvey, Extension Specialist, Wye Research and Education Center, University of Maryland Extension
Suzanne Klick, Technician, CMREC, University of Maryland Extension

Poinsettia Crop

By: Stanton Gill

We have been visiting several greenhouses over the last two weeks to look at the poinsettia crop. In 2022, we are seeing the lowest population of whitefly in the last 10 years. This is great news. Many people are using Mainspring drenches early in the season and obtaining good levels of control.

Heights on poinsettias look good so far. Many growers are telling me that they only applied Cycocel and B-Nine once this season. Also, there are several shorter cultivars of poinsettia on the market that remain short without growth regulators. One grower said these cultivars did NOT need growth regulators this season, but he DID pinch them: any in the Christmas Feelings series, 'Ice Crystal', and 'Marbella'.

Continue to monitor for insects to avoid late season problems.

This year has been a good growing season so far. Once the poinsettias are out the door, you can pat yourself on the back.

Tropical Houseplants – The Hot Wave

By: Stanton Gill

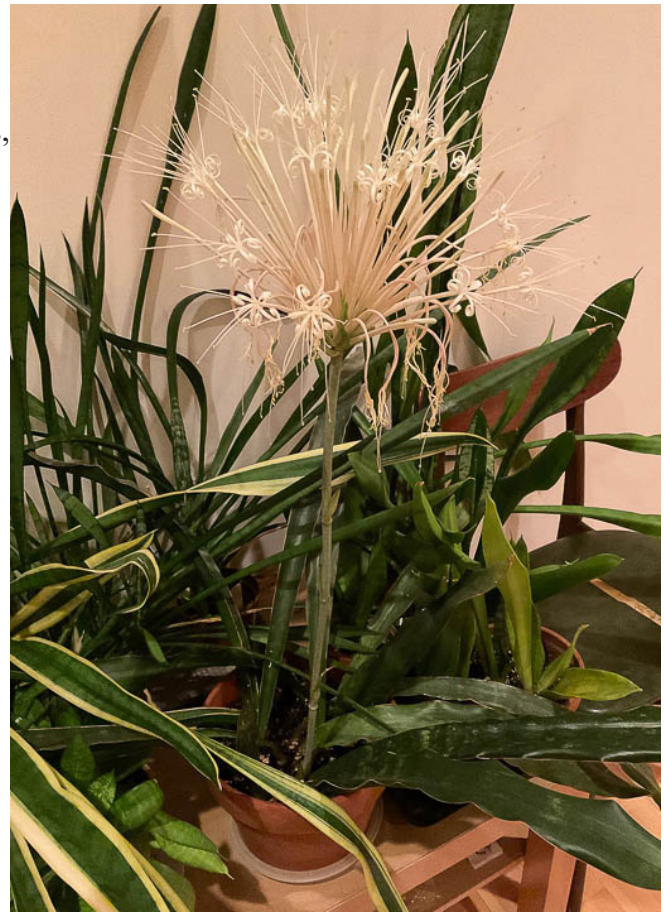
Many greenhouse operations have been jumping on the "wave" of interest in tropical houseplants. Many of the plants do not have patents, so it is easy money to propagate and sell them into the marketplace. One very popular plant, that I could not have remotely thought would be a big hit is Sansevieria. This is a plant my grandmother used to grow and propagate. It has resurged as a hot new plant.

In one of the web posts, it is described this way "This plant is also desired for its upright and erect leaf habit which fits into almost all locations in the home from both traditional to modern decor." Everyone, including myself, thought this plant is bullet proof.

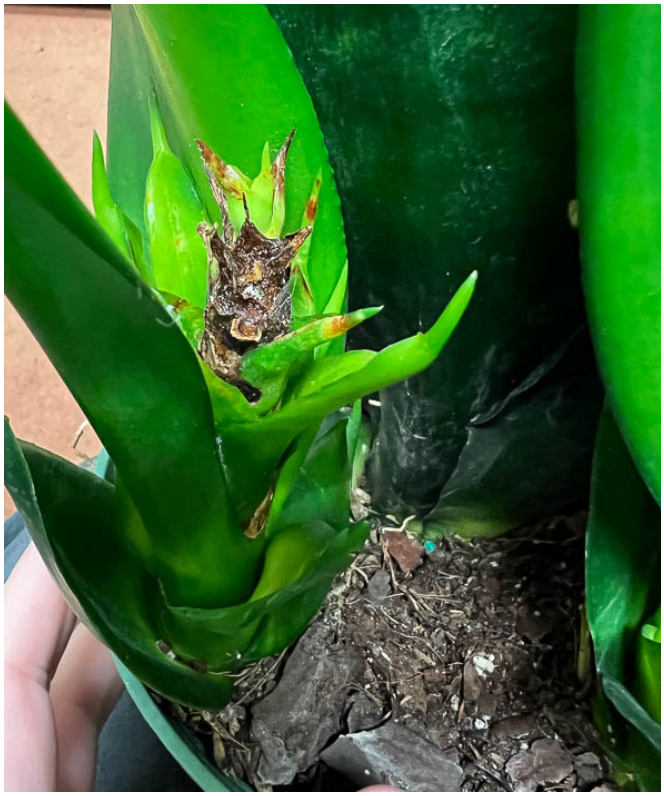
Sheena O'Donnell, technician at CMREC brought in a Sansevieria with distorted tip growth. When we examined it under the dissecting scope, we found a thriving colony of tarsonemid mites. She had recently

purchased the plants so the supplying greenhouse obviously has a mite problem. If you are growing this plant in your greenhouse, examine the tip growth to see if it is distorted. You are welcome to send in sample to us at the CMREC labs, 11975 Homewood Road, Ellicott City, MD 21042.

Sanmite or Hexygon would be two good miticides to control this mite.



Sansevieria is not a plant known to have problems.
Photo: Wanda MacLachlan, UME



Tarsonemid mites feeding on an unexpected plant - Sanseveieria.
Photos: Sheena O'Donnell, UME

Poinsettias and Irrigation Systems

By: Andrew Ristvey, UME

This is a reprint of an article I wrote in 2020. Since we are in the production season for poinsettia, I thought I would pull this one out again and add a little more information from some new published research. Our poinsettia research dealt with near deficit irrigation and pathogen susceptibility, in particular, *Pythium*. I have added some recent information regarding the effects of irrigation on fungal communities and the pathogens in those experiments. Originally, we were interested in how managing moisture content in substrates, growing poinsettia may affect the incidence of *Pythium* infection. Our question was; does the implementation of near-deficit irrigation predispose poinsettia to *Pythium* infection?

First, a little about deficit irrigation. Some of you are dry growers, some of you are wet growers and some of you may be "in-betweeners". If you purposefully or not, replace less water in the pot than the plant uses on a daily basis, you are deficit irrigating. This is actually a stressful scenario for a plant, but there are some advantages to using deficit irrigation in agriculture. Viticulture often utilizes this strategy to limit vegetative growth and apply stress to the plant to get a higher quality of fruit. I have heard some in-ground growers doing this to hold back plant growth. Without the use of instrumentation to measure parameters like evapotranspiration or soil moisture content, the irrigation manager really needs to know what is happening with the weather each day to make irrigation decisions. I would think of deficit irrigation as an art.

Imposing deficit irrigation on plants in containers is another matter entirely. Porous substrates with limited water holding capacity can easily and quickly dry out. It happens more than you think. Very hot and dry periods, like what we have had in the past few days means difficulty in getting the plants in each irrigation range well-watered so that you can move on the next irrigation range. Maybe you don't have the capacity to irrigate so much all at once. Maybe you have little water to work with not unlike California where water can be scarce. Sometimes "deficit irrigation" is not intentional and it cannot be helped. In our study, we wanted to understand how this situation could affect plants that are susceptible to pathogens when stressed with a dry-down.

In our study (Del Castillo Múnera et al., 2019) we had three treatments imposed on established 10-week old poinsettia plants. In each treatment we relied on moisture sensor-controlled irrigation to maintain a specific volumetric water content (VWC). The first treatment level was our control at a very well-watered 45% VWC. This matched a partner grower's irrigation schedule. The other two levels were 35% and 25% VWC. Before initiating irrigation treatments, half the study plants were inoculated with *Pythium aphanidermatum*. An additional treatment of Companion (*Bacillus subtilus*) to inoculate half the plants would determine the effects of a plant growth promoter. The poinsettia plants were monitored for 56 days and rated weekly for abiotic stress and pathogen-induced decline.

At the end of the 56-day study, plants were harvested for biomass accumulation and disease analyses. Our results showed that reducing the VWC, reduced shoot dry mass. The low VWC also enhanced disease effects by reducing root size, which was not seen in non-inoculated plants. The use of Companion did seem to increase the root size of inoculated plants under the high VWC treatment, but not the low VWC treatment. We did not see much in the line of true root rot in any of the inoculated treatments, and we think this is due to the use of a heavy fungicide treatment before we got the plants, which may have suppressed *Pythium* activity, but not all together killed the pathogen. We also think that with the established plants, *Pythium* had less of a detrimental effect. However we also think that if the plants had been smaller or not well established, they may have been more susceptible to the *Pythium* and the low VWC treatment. We also acknowledge that we used a pathogen that has greater effects on seedlings and young, unestablished plants. Younger plants should be managed differently and with more care, recognizing that they may be more susceptible to drying roots and *Pythium* disease. Other researchers note that *Phytophthora* tends to affect older plants, especially when roots are damaged from dry-downs or when over-saturated. Had we had used that pathogen in our studies, there may

have been greater treatment effects. Conversely, these pathogens are called “water molds” because they have a motile spore-stage which relies on free soil moisture.

A recent publication (Del Castillo Múnera et al., 2022) characterized the influence of irrigation and substrate volumetric water content (VWC) on the fungal communities within the containers and around the poinsettia roots. We know that reducing irrigation volumes applied can increase development risk of disease in roots. But what about the other fungal microorganisms? Also, can irrigation have an effect on organisms that interact with pathogens?

The authors found that fungal communities (diversity) are not effected by slight decreases in irrigation (VWC). They suggested these fungal organisms may be able to access water in the substrate not available to plants, and that the duration of the dry environment may not be long enough to negatively affect those fungal communities. Interestingly, ectomycorrhizal fungi were only found in the low VWC treatment which could suggests that the water stress may increase host recruitment. Pathogen suppressive fungi were also increased by lowering irrigation volumes and VWC, although in the same genera of these disease suppressors, there are pathogens of other plants. The final takeaway message is that lowering irrigation volumes to as low as 35% VWC does not seem to promote disease in poinsettia production and this is good news. If water supply is an issue for the operation. The authors suggest that growers opt for plant varieties more tolerant of pathogens, and exercising better cultural and sanitation practices to reduce risk, especially if employing water saving management practices.

For more information, feel free to contact me at aristvey@umd.edu.