e-GRO Alert

Rosa E. Raudales
rosa@uconn.edu

Volume 7 Number 31 May 2018

Sanitation:

Start clean, stay clean!

We start the season with a clean greenhouse. As the season moves forward and there is no time to spare, we lose track of sanitation. Proper sanitation can help us prevent disease, spread pests, and safety hazards.

A proactive sanitation approach is less expensive than a reactive one.

A continuous sanitation program helps us create a more efficient and safe greenhouse environment.

We hope that after reading this Alert, you will take some time to sanitize your greenhouse.

Figure 1. Example of a greenhouse with high sanitation standards.

Five Steps to Maintain a Clean Greenhouse:

1. **Discard unhealthy plants.** In a time when space is money, don't keep any plants that you will not sell. Plants that have non-treatable infectious diseases or have passed their prime have poor marketable traits (Figure 2) and it is unlikely that customers will buy them. Therefore, remove these plants from the greenhouse. Unhealthy plants are more vulnerable to disease and attract insect pests. These plants represent more a risk than an opportunity.

Fig. 2 Pansies passed their prime on a cart. These plants should be remove from the greenhouse.

2. **Remove plant debris or organic matter from the surfaces.** Organic debris, from plants or peat, can harbor plant pathogens including active and dormant spores. Researchers from Oregon State University identified that *Phytophthora sp.* spores can splash from the organic debris on the floor to the plants on the benches.

   Organic matter can also interact with chemical sanitizers (e.g. chlorine) and reduce its efficacy. **The golden rule of surface sanitation is "clean first, then sanitize".**

   Don't forget to clean the footbaths, which harbor high levels and diversity of organisms.

3. **Control weeds.** Weeds can be a reservoir of insects, including aphids, whiteflies and thrips. Viruses can also infect weeds. In some cases the weeds might not show clear symptoms of disease. In other words, weeds are not just an aesthetic problem, they can be a serious source of insects and disease.

   For more information on weed control go to: https://e-gro.org/pdf/2015_414.pdf

4. **Manage algae.** The greenhouse is a perfect environment for algae growth (Figure 3). We do not know exactly what is the source of algae spores, we simply assume that algae spores are omnipresent in greenhouses. Algae on walking areas can be a trip hazard for workers. Algae also accumulates on the surface of growing media. Fungus gnats (which serve as vectors of *Pythium* spores) feed on algae.

   For more information on the efficacy of algaecides, go to: **https://gpnmag.com/article/update-on-algae-control-on-ornamentals/**

Fig. 3 Algae on the wall of a greenhouse.

5. **Take care of the irrigation lines.** Water and irrigation systems can be a dispersal mechanism for pathogens. Use clean water to irrigate your crops. Inject a sanitizer continuously at a low rate during the growing season or flush at higher rates when the greenhouse is empty. Always hang your hose, don't let the nozzle come in contact with the floor.

Rosa E. Raudales is an assistant professor at the University of Connecticut (rosa.raudales@uconn.edu) with a M.S. in Plant Pathology and a Ph.D. in Horticulture.

Acknowledgements. This project is supported, in part, by the USDA National Institute of Food and Agriculture, Hatch Multistate Accession Number 1004968, project number #CONS00944; and Foundational-CARE Accession Number 1009179.

e-GRO Alert

www.e-gro.org

CONTRIBUTORS

Dr. Nora Catlin
Floriculture Specialist
Cornell Cooperative Extension
Suffolk County
nora.catlin@cornell.edu

Dr. Chris Currey
Assistant Professor of Floriculture
Iowa State University
ccurrey@iastate.edu

Dr. Ryan Dickson
Extension Specialist for Greenhouse Management & Technologies
University of New Hampshire
ryan.dickson@unh.edu

Thomas Ford
Commercial Horticulture Educator
Penn State Extension
tgf2@psu.edu

Dan Gilrein
Entomology Specialist
Cornell Cooperative Extension
Suffolk County
dog1@cornell.edu

Dr. Joyce Latimer
Floriculture Extension & Research
Virginia Tech
jlatime@vt.edu

Heidi Lindberg
Floriculture Extension Educator
Michigan State University
wolleage@anr.msu.edu

Dr. Roberto Lopez
Floriculture Extension & Research
Michigan State University
rglopez@msu.edu

Dr. Neil Mattson
Greenhouse Research & Extension
Cornell University
neil.mattson@cornell.edu

Dr. W. Garrett Owen
Floriculture Outreach Specialist
Michigan State University
wgowen@msu.edu

Dr. Rosa E. Raudales
Greenhouse Extension Specialist
University of Connecticut
rosa.raudales@uconn.edu

Dr. Beth Scheckelhoff
Extension Educator – Greenhouse Systems
The Ohio State University
scheckelhoff.11@osu.edu

Lee Stivers
Extension Educator – Horticulture
Penn State Extension
Washington County
ljs32@psu.edu

Dr. Paul Thomas
Floriculture Extension & Research
University of Georgia
pathomas@uga.edu

Dr. Ariana Torres-Bravo
Horticulture/ Ag. Economics
Purdue University
torres2@purdue.edu

Dr. Brian Whipker
Floriculture Extension & Research
NC State University
bwhipker@ncsu.edu

Cooperating Universities

Cornell University
Cornell Cooperative Extension Suffolk County
University of New Hampshire Cooperative Extension
PennState Cooperative Extension College of Agricultural Sciences
Virginia Tech
Michigan State University
UConn
Purdue University
The University of Georgia
The Ohio State University
NC State University
Iowa State University

In cooperation with our local and state greenhouse organizations

Maumee Valley Growers — Choose the Very Best.
Metro Detroit Flower Growers Association
NC Flower Power
Western Michigan Greenhouse Association
Connecticut Greenhouse Growers Association
Indiana Flower Growers Association
lifga
New Hampshire Plant Growers — Quality Garden Centers & Growers
Virginia Flower Growers Association
Michigan Greenhouse Growers Council