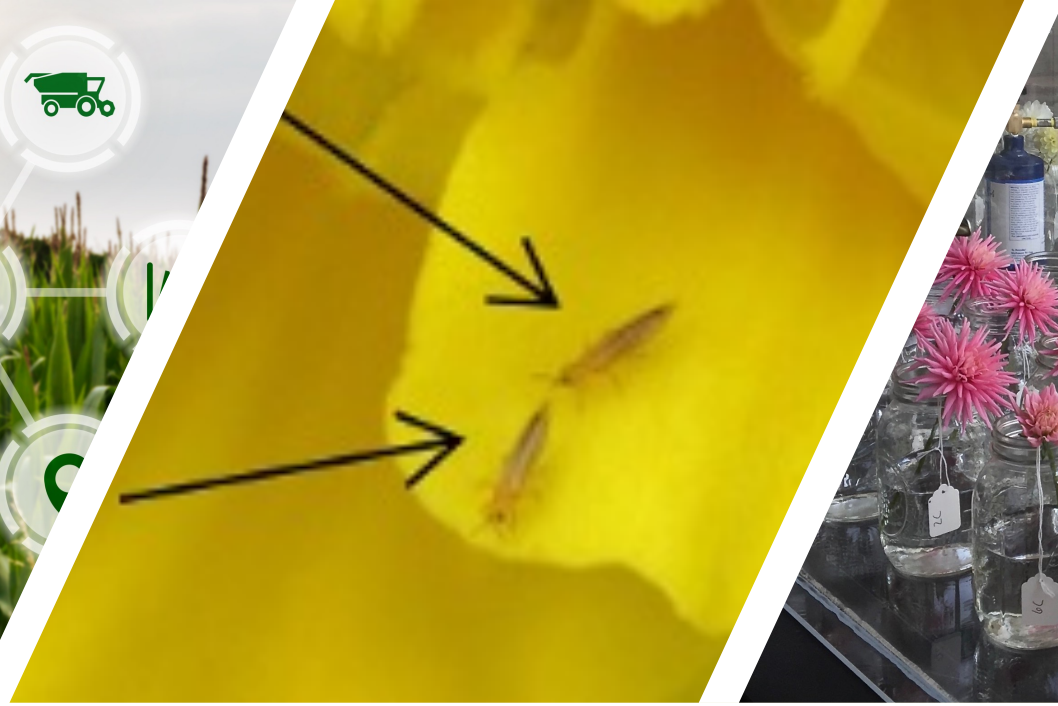

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Controlling Whitefly on Poinsettia

Dr. JC Chong, SePRO

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Where are you in the process?




Photos: Riley van Es, Todd Stassel, Dennis Bunkley, SePRO

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Here is a resource for pest and disease management during propagation …

Plant Health Secrets:
The Underground Playbook from SePRO

ADVERTORIAL

The Poinsettia Playbook

Your guide to starting a successful crop.

By Juang Horng (J.C.) Chong, Ph.D- SePRO Technical Development Manager- Ornamental

August issue of Greenhouse Management
To get a copy, go to: https://www.greenhousemag.com/article/the-poinsettia-playbook-/

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Major insect and mite pests during growing and finishing …

- Fungus gnats
- Shore flies
- Whiteflies
- Lewis mite
- Broad mite
- Mealybugs
- Thrips

Photos: Debbie Roos, NCSU; David Cappaert, Bugwood.org

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Major insect and mite pests during growing and finishing …

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- Lewis mite
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- Thrips

Photo: giaoducvieta.edu.vn

Major insect and mite pests during growing and finishing …

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Photos: JC Chong

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Photos: Rayanne Lehman, Pennsylvania Dept. of Ag, bugwood.org; Ray Cloyd, KSU

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Photos: NCSU; Ray Cloyd, KSU

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Striped mealybug

Photos: JC Chong

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- Broad mite
- Mealybugs
- Thrips

Echinothrips, a.k.a. poinsettia thrips

Photos: Lance Osborne, UF; Ray Cloyd, KSU

The *prima donna* of today!

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Distinguishing the three major whitefly species

Q1: Does the adult has zigzag pattern on the wings?

Yes

Banded winged whitefly

No

Q2. How does the adult fold its wings?

Like a tent

Sweetpotato whitefly (a.k.a. silverleaf whitefly, or B- or MEAM1 biotye)

Flat over the body

Greenhouse whitefly

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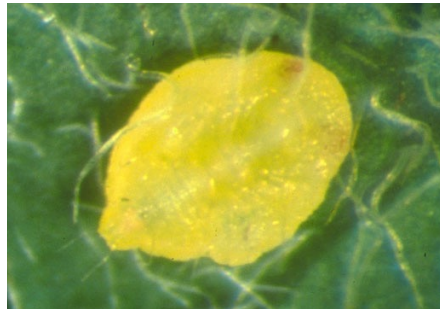
Distinguishing the three major whitefly species

Q1: Does the pupa or shed skin has vertical side?

No, sloped sided



Sweetpotato whitefly

Yes

Q2. How does the hairs on the top look?

Long and (somewhat) straight

Greenhouse whitefly

Short and curly

Banded winged whitefly

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Having problem controlling sweetpotato whitefly?

- Most whitefly incidences on poinsettia is the B-biotype, but also watch for Q-biotype (or MED or Mediterranean biotype)

- Q-biotype is resistant to many neonicotinoids and insect growth regulators

- If Q-biotype is suspected, send samples to

Dr. Cindy McKenzie
USDA-ARS US Horticultural Research Laboratory
2001 South Rock Road, Fort Pierce, FL 34945
E-mail: cindy.mckenzie@usda.gov

The key to managing whiteflies successfully in poinsettia? Start early!

- A whitefly population can complete the development of one generation in 3 to 6 weeks, depending on temperature

Nymphs:
Yellow – health
Translucent – emerged
Black or brown - parasitized

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Photos: Laurie Knight; Biobest; Univ. Florida

The key to managing whiteflies successfully in poinsettia? Start early!

- A whitefly population can start from both inside and outside sources

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Photos: Pro-Mix; Univ. Florida

Pre-plant cutting dip is a good way to start clean

- Dip cuttings in 0.1% horticultural oil
  0.5% insecticidal soap + *Beauveria bassiana* (BotaniGard WP or Velifer at label rate)
  Velifer alone (at label rate)

Photos: ONfloriculture

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Pre-plant cutting dip is a good way to start clean

- Read product labels to make sure dip application is allowed and what rate to use!
- Benefits of cutting dip:
  - Reduce the starting whitefly population – buy time
  - Enhance biological control

Phyto from BotaniGard EC, so use WP

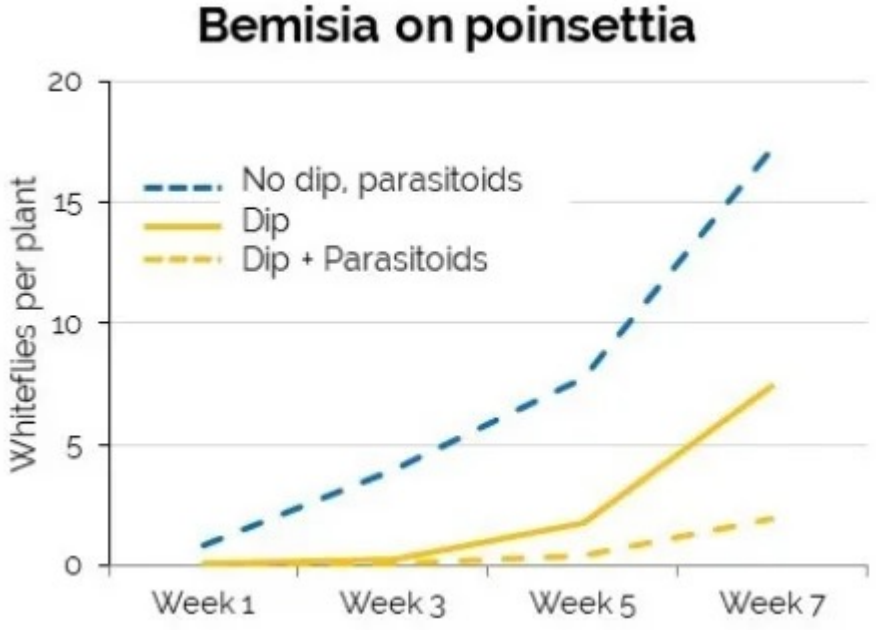

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Photo: JC Chong; Figure: ONfloriculture

Monitor whitefly presence and population build-up is critical – sticky card and inspection

Photos: Ecofilms; greenhouseipm.org

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Resources on how to use sticky cards

e-GRO Alert: https://e-gro.org/pdf/2023-12-32.pdf

PestTalks, August 2023: https://www.growertalks.com/Newsletters/View/?article=4290


e-GRO Alert

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Volume 12 Number 32 August 2023

A Sticky Subject:

Yellow Sticky Cards

In this Alert, we provide some tips for using yellow sticky cards, including proper card placement and identification, to promptly detect pest outbreaks and enhance pest management in greenhouses.

Do not miss the instructional video for proper card utilization and identification of the common insect pests caught on the sticky cards at the end of this Alert to train and re-train your staff. This video is available in English and Spanish.

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19th Edition

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What the ... ?
Yellow vs. blue sticky cards
New virus test kit
Another murder hornet
Invasive species tour
Answer to "What the ... ?"

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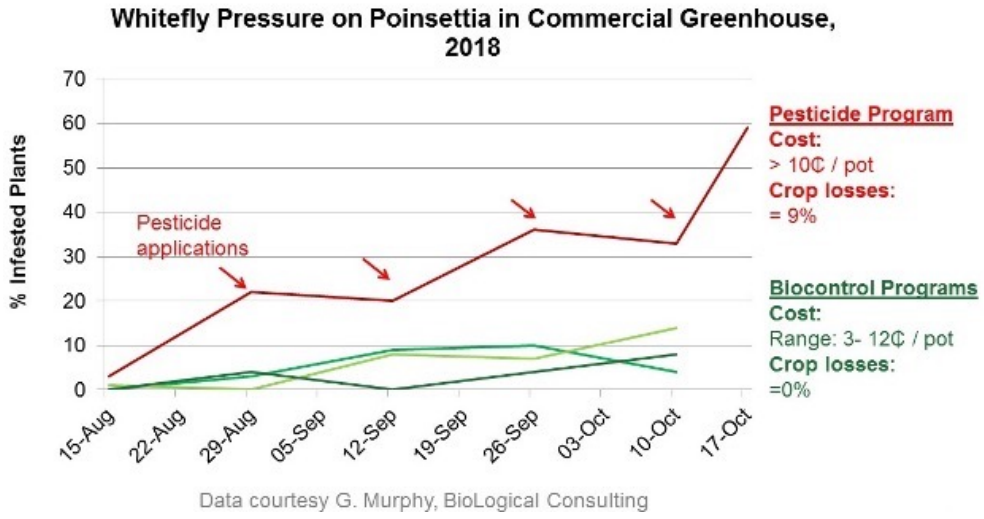
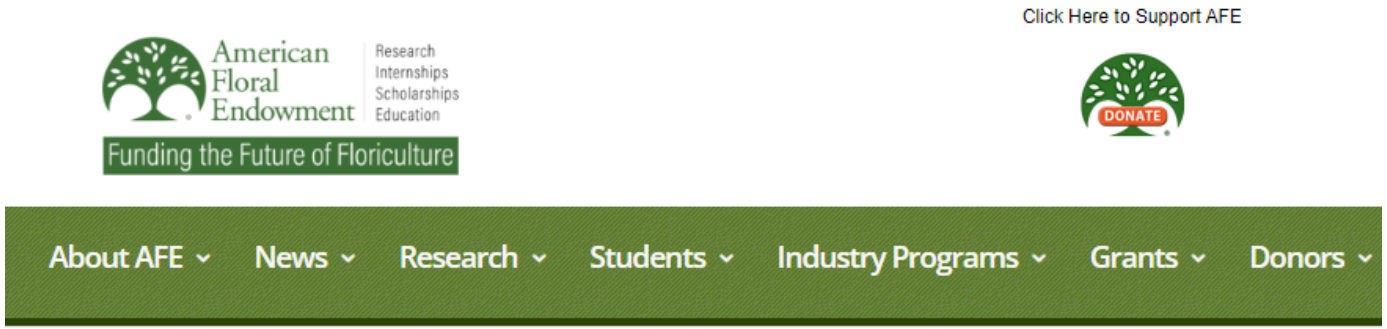
Biological control of whitefly is a success story!

- From AFE, by Dr. Rose Buitenhuis, Vineland Research and Innovation Centre, and Dr. Sarah Jandricic, Ontario Ministry of Agriculture

https://endowment.org/biocontrol-whiteflies-poinsettia-what-works-why/





Biological control of whitefly

- Commonly used biological control options:
  - *Encarsia formosa* – parasitoid
  - *Eretmocerus eremicus* – parasitoid
  - *Amblyseius swirskii* – predatory mite
  - *Delphastus catalinae* – predatory beetle
  - *Chrysoperla* spp. – green lacewing

Photos: naturalenemies.com; Koppert; Univ. Florida

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Biological control of whitefly

- When to start biological control program?
  - If you know the cuttings haven’t been treated with long residual insecticides, start soon after transplant/potting
  - If you do cutting dip, you can start soon after potting or 4-8 weeks after potting (maintain monitoring)
  - If cuttings have been treated with long residua insecticides or you don’t know what the cuttings have been treated with, start 4 weeks after potting (maintain monitoring)

Photo: daytonnursery.com

Biological control of whitefly

- What's the best biological control agent?
  - You can go with just one or both parasitoid species, but …
  - JC has seen better results with a mix-species approach that targets different life stages
    - *Amblyseius swirskii* – eggs and young nymphs
    - *Delphastus catalinae* – all life stages
    - *Eretmocerus* – young nymphs (parasitism)
    - *Encarsia* – young nymphs (parasitism) and older nymphs (pupae) (host feeding)

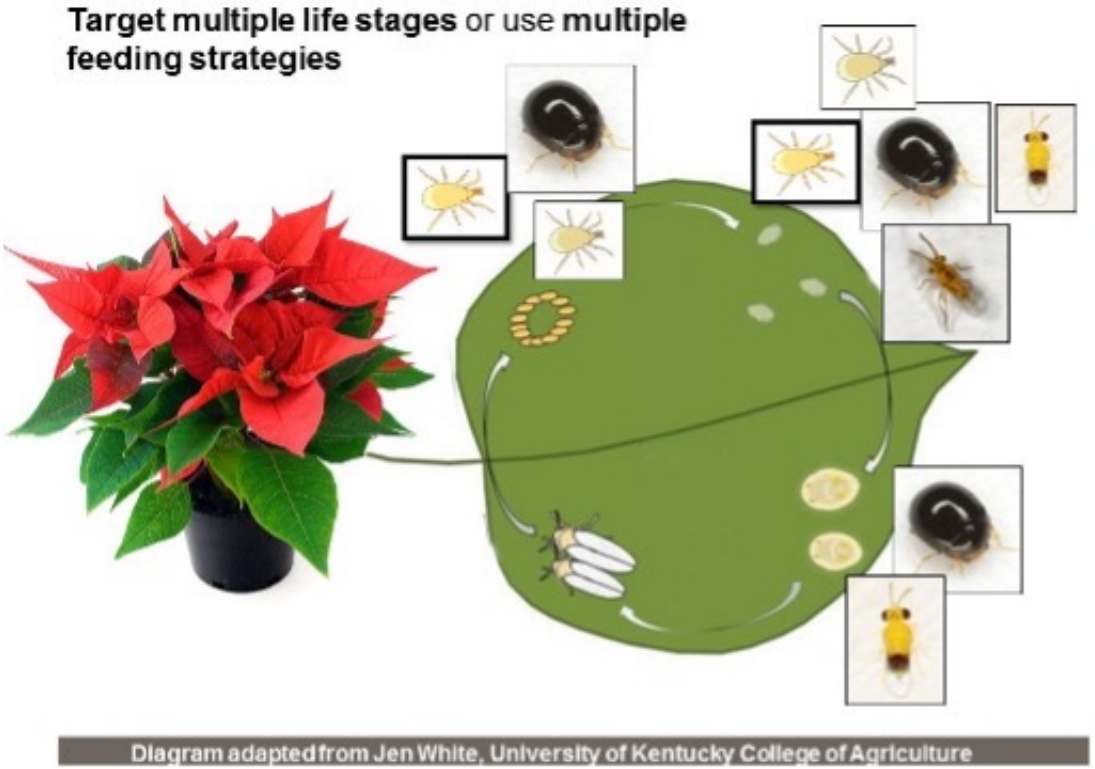

Figure: ONfloriculture

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Biological and chemical control of whitefly

- Sometimes insecticides may be needed to suppress whitefly population

Flag heavily infested plants so you can come back and compare the numbers of live/healthy adults and nymphs before AND after pesticide application.

Photo: ONfloriculture

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Compatibility of insecticides and biological control

- Lots of information and considerations to cover on this topic
  - Insecticides, biological control agents, and crops
  - Application rate, methods, timing
  - Your desirable outcome

- Consult side effect databases by Koppert and Biobest

- Your best sources of information are your biological control and insecticide suppliers

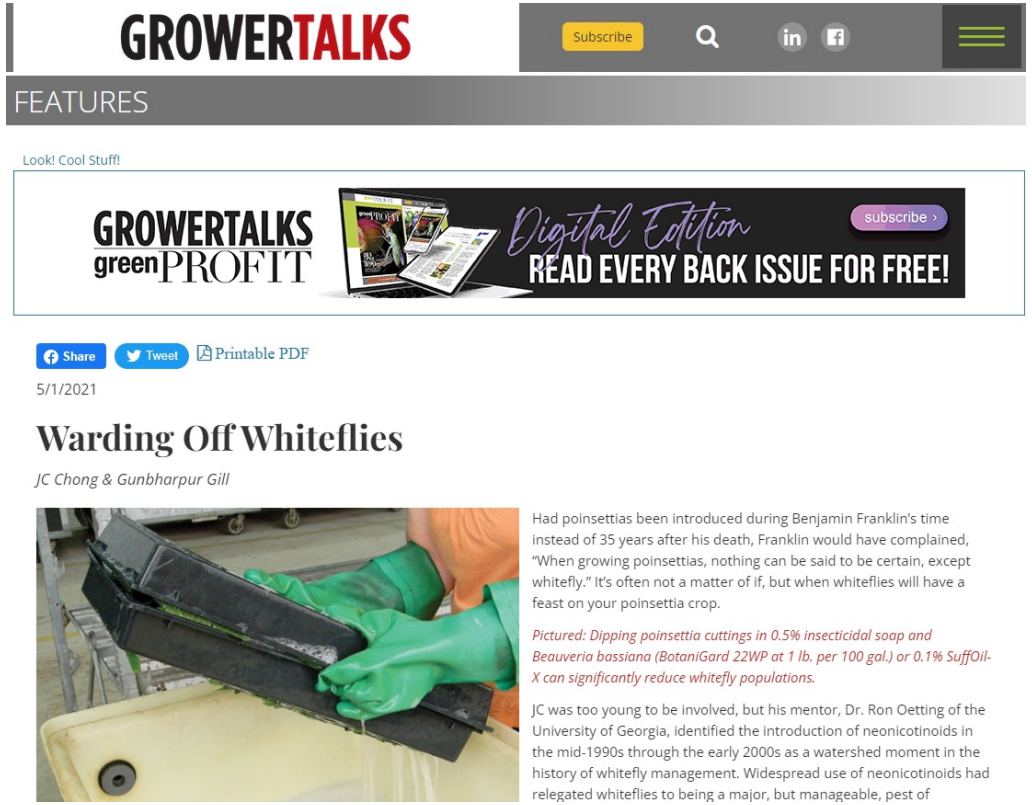
JC's "A Team" insecticides for whitefly
(IRAC number in parenthesis)

For drench and spray	For spray only
dinotefuran (4A) – Safari [x]	acetamiprid (4A) – Tristar [x]
imidacloprid (4A) – Marathon [x]	sulfoxaflor + spinetoram (4C + 5) – XXpire
thiamethoxam (4A) – Flagship [x]	abamectin (6) – Avid, Lucid, Minx, etc.
flupyradifurone (4D) – Altus	pyriproxyfen (7C) – Distance, Fulcrum [x]
spirotetramat (23) – Kontos	pyrifluquinazon (9B) – Rycar
cyantraniliprole (28) – Mainspring	afidopyropen (9D) – Ventigra
4A = neonicotinoids [x] = avoid if you have Q-biotype	buprofezin (16) – Talus [x]
	pyridaben (21A) – Sanmite
	spiromesifen (23) – Savate
	flonicamid (29) – Aria, Pradia
	horticultural oil (UC)

Read this article for efficacy of insecticides

- From GrowerTalks, May 2021:

  https://www.growertalks.com/Article/?articleid=25212



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5/1/2021

Warding Off Whiteflies

JC Chong & Gunbharpur Gill

Had poinsettias been introduced during Benjamin Franklin's time instead of 35 years after his death, Franklin would have complained, "When growing poinsettias, nothing can be said to be certain, except whitefly." It's often not a matter of if, but when whiteflies will have a feast on your poinsettia crop.

Pictured: Dipping poinsettia cuttings in 0.5% insecticidal soap and Beauveria bassiana (BotaniGard 22WP at 1 lb. per 100 gal.) or 0.1% SuffOil-X can significantly reduce whitefly populations.

JC was too young to be involved, but his mentor, Dr. Ron Oetting of the University of Georgia, identified the introduction of neonicotinoids in the mid-1990s through the early 2000s as a watershed moment in the history of whitefly management. Widespread use of neonicotinoids had relegated whiteflies to being a major, but manageable, pest of

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Insecticide rotation for whitefly

- You MUST develop an insecticide rotation program for whiteflies – Think the Q-biotype!

- Some suggestions on how to build a rotation program:
  - Rotate to an insecticide of different modes of action (MOA) for each generation
  - Okay to use the same MOA in the same generation if you need multiple applications per generation (see label for the maximum number of application allowed)
  - Include a “physical” MOA pesticide, such as soap, oil and biopesticide
  - Start the program with the most effective product and application rate
  - If drenching, do not follow with spray of the same MOA
  - If tank mixing, mix different MOA in one tank

A resource on whitefly insecticide rotation

- From AFE: https://endowment.org/wp-content/uploads/2019/06/Insecticide-rotation-and-management-for-whitefly-on-poinsettia.pdf

Insecticide rotation and management for whitefly on poinsettia

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Clemson University
Department of Plant and Environmental Sciences
Pee Dee Research and Education Center, Florence, SC
E-mail: juanghc@clemson.edu

Remember what the voice says to Kevin Costner in "Field of Dreams?" "If you build it, he will come." You could rephrase that as "if you grow poinsettias, the whiteflies will come." Poinsettia has relatively few insect and mite pests, but whitefly alone will consume all the attention and (sometimes) the entire budget for pest management during poinsettia season.

I'm not going to talk about general management against whitefly in this newsletter. You can find one of my articles on whitefly management in *GrowerTalk's* 2019-2020 Insecticide, Miticide, & Fungicide Guide (https://www.growertalks.com/pdf/2019_2020_insecticide-fungicide_Guide.pdf), where I discuss in general terms whitefly management approaches during sticking, growing and close to shipping. Lance Osborne of the University of Florida posts a handy whitefly management guide on his website (https://mrec.ifas.ufl.edu/lso/bemisia/WhiteflyManagementProgram_January%2011,%202017.pdf), from which I draw much of my information.

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Insecticide rotation for whitefly

- Drench, then spray for hot spots

  Safari (4A) (drench), then Rycar (9B) > Sanmite (21A) > Talus (16)

  Kontos (23) (drench), then Rycar (9B) > Safari (4A) > Mainspring (28)

  Mainspring (28) (drench), then Rycar (9B) > Safari (4A) > Sanmite (21A)

Insecticide rotation for whitefly

- Spray only – may be adjusted depending on biocontrol needs

  Safari (4A) > Rycar (9B) > Kontos (23) > Mainspring (28)

- Spray only – non-neonic option

  Kontos (23) > Rycar (9B) > Talus (16) > Mainspring (28)

Insecticide rotation for whitefly

- After bract formation – read the labels carefully and do small-scale tests!

  Safari (4A) > Rycar (9B) > Kontos (23) > Mainspring (28)

  (also Altus, Sanmite, Talus, and TriStar)

- Just before shipping – knocking down adults

  Rycar (9B) > Sanmite (21A) > Avid + Talstar (6 + 3A)

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Tuesday, September 19th at 1:00 PM EST

Dr. Chris Currey, Iowa State University

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