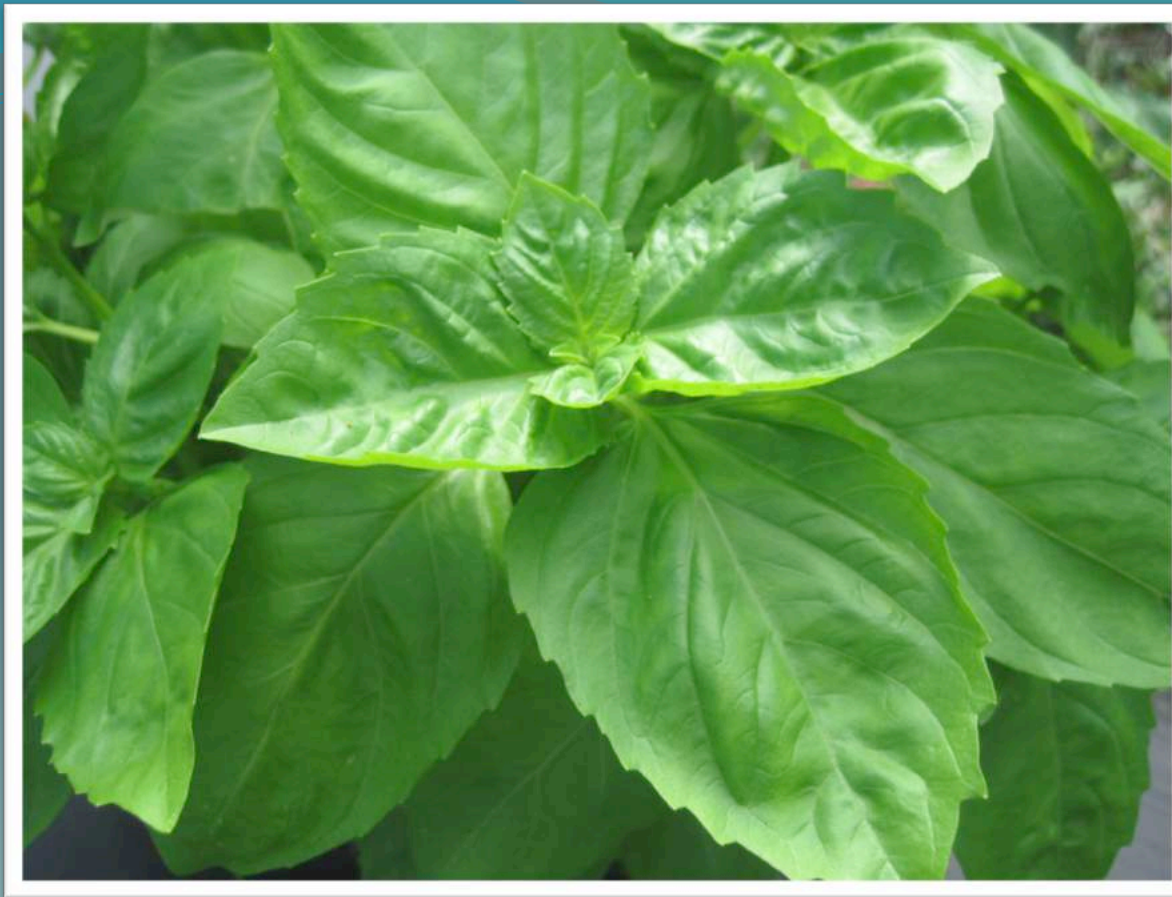


Review Basil Downy Mildew and New
Results
Stemphylium and Possible Controls

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Basil SWAT Team Developed by **Dean Sylvia Yuen**; University of Hawaii at Manoa

College of Tropical Agriculture and Human Resources
Department of Plant and Environmental Protection Sciences
October 2011 **Jari Sugano, Jensen Uyeda, Michael Kawate,
Julie Coughlin, James Kam, Chris Kadooka and Janice
Uchida**

Basil was worth over 6.8 million per year





Basil Downy Mildew
Peronospora belbahrii
Symptoms started...1/28/11

Jari and Jensen immediately educated the growers:

- Prepare for the wet season (October –February)
 - Low temperatures
 - High rainfall
 - High humidity
 - Increasing windy periods
- Monitor fields for symptoms
 - Yellowing/ discoloring –top side of leaves
 - Black spores-under side of leaves
 - Dieback

Emphasis on Educating Growers



Observing the enemy



***Pernospora* was tiny, abundant, grew fast, killed quickly and made more spores. Spores blew in the wind for miles.**



Basil Downy Mildew

Approved Fungicides

- Fungicides approved for basil downy mildew include Fungi-Phite®, Fosphite®, and Actinovate® AG. These products are licensed for sale in Hawai‘i.
- ProPhyt® and K-Phite®, are not licensed for sale in Hawai‘i, but they have the same active ingredient as Fungiphite and Fosphite.
- Dithane ® is NOT approved for use on basil
- Quadris®, a systemic fungicide, is approved for use in Hawai‘i and can also be applied to basil.
- Quadris® requires rotation due to resistance issues
- Note the limitations on applications per crop season and pre harvest interval requirements

Employ a spreader/ sticker

- Utilize a good sticker and/or spreader to obtain good spray coverage.
- Be careful of phyto-toxicity issues.
- Apply new material to a small area first.
- Assess spray coverage and phyto-toxicity issues before making large area applications.



Field Sanitation:

- Remove infected leaves, including those that have fallen to the ground, and burn them or bury them to a depth of at least a foot.

Case Study:

Waianae Grower's Approach: 1/2011

Prune back - leaving lower infected leaves attached. Worked but a lot of time for field clean up.

Some growers destroyed plants and replanted.



Case Study

UH Approach-Kahuku: March 2011

Implemented grower practices

 Cut back top infected leaves

Pruned back all infected leaves

Applied approved fungicides with spreader/sticker

Implemented field sanitation program

Results:

Over pruning killed some plants (Fusarium disease developed)

Re-growth on fungicide plots – good control

Disease pressure dropped (field was dry and warm)

Trial was suspended (March 2011)

What can I do to Manage DM (downy mildew)

- ✓ Prepare for the wet winter season
- ✓ Monitor fields on a routine basis
- ✓ Increase airflow
- ✓ Minimize humidity issues
- ✓ Apply approved preventative fungicides
- ✓ Use a spreader or sticker to increase spray efficacy
- ✓ Target fungicide sprays to undersides of leaves
- ✓ Follow good field sanitation practices
- ✓ Ensure good soil and plant nutrition
- ✓ Avoid using infected planting materials
- ✓ Clean your tools and equipment

- **Field test in Waimanalo:**

- **Treatments**

- Control
- Quadris
- Rampart
- Trilogy
- Regalia
- Rotation

- **Results**

- Lots of Downy Mildew
- Greatly decreased amount
- Greatly decreased
- Mildew present (like control)
- Mildew present (like control)
- Low level of Mildew

(Q, Ram, Tri, Ram, Reg.)



Control plot
December 14, 2012



Quadris
December 14 2012



Summary
December 14, 2012

Control

Water, water, water, water



Quadris

Quadris, quadris, rampart, quadris



Rampart

Rampart, ramp, N/T, ramp, N/T,
ramp



Trilogy

Trilogy, trilogy, trilogy, trilogy



Regalia

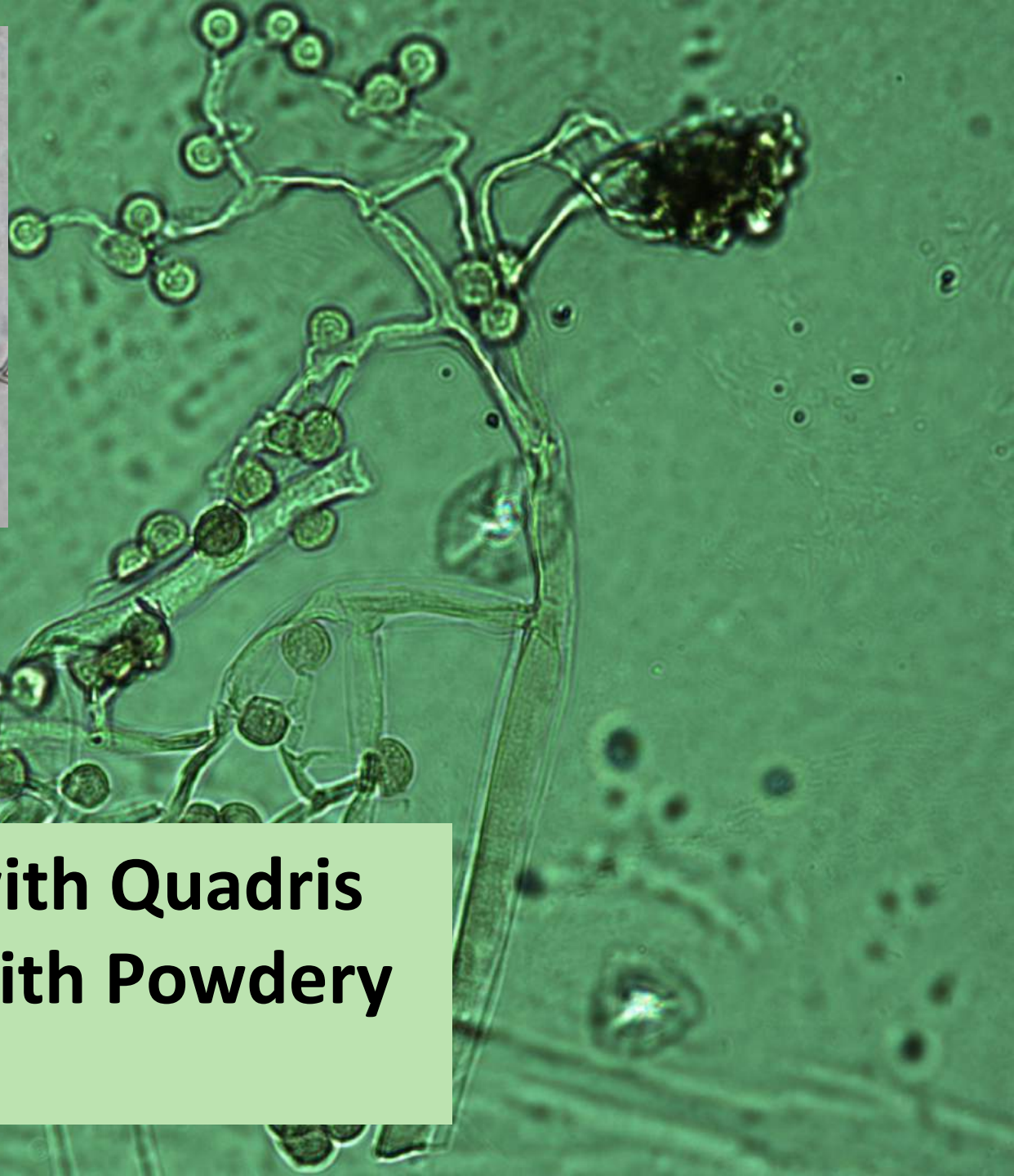
Regalia, regalia, regalia, regalia



Rotation

Quadris, Rampart, Trilogy, Ramp, Regalia





**Leaf sprayed with Quadris
and infected with Powdery
Mildew**

- Rotation:
- Quadris, Ramparat, Revus, Quadris, Ramparat, Revus;
- Rampart, Revus, Ramparat, Revus, Rampart;

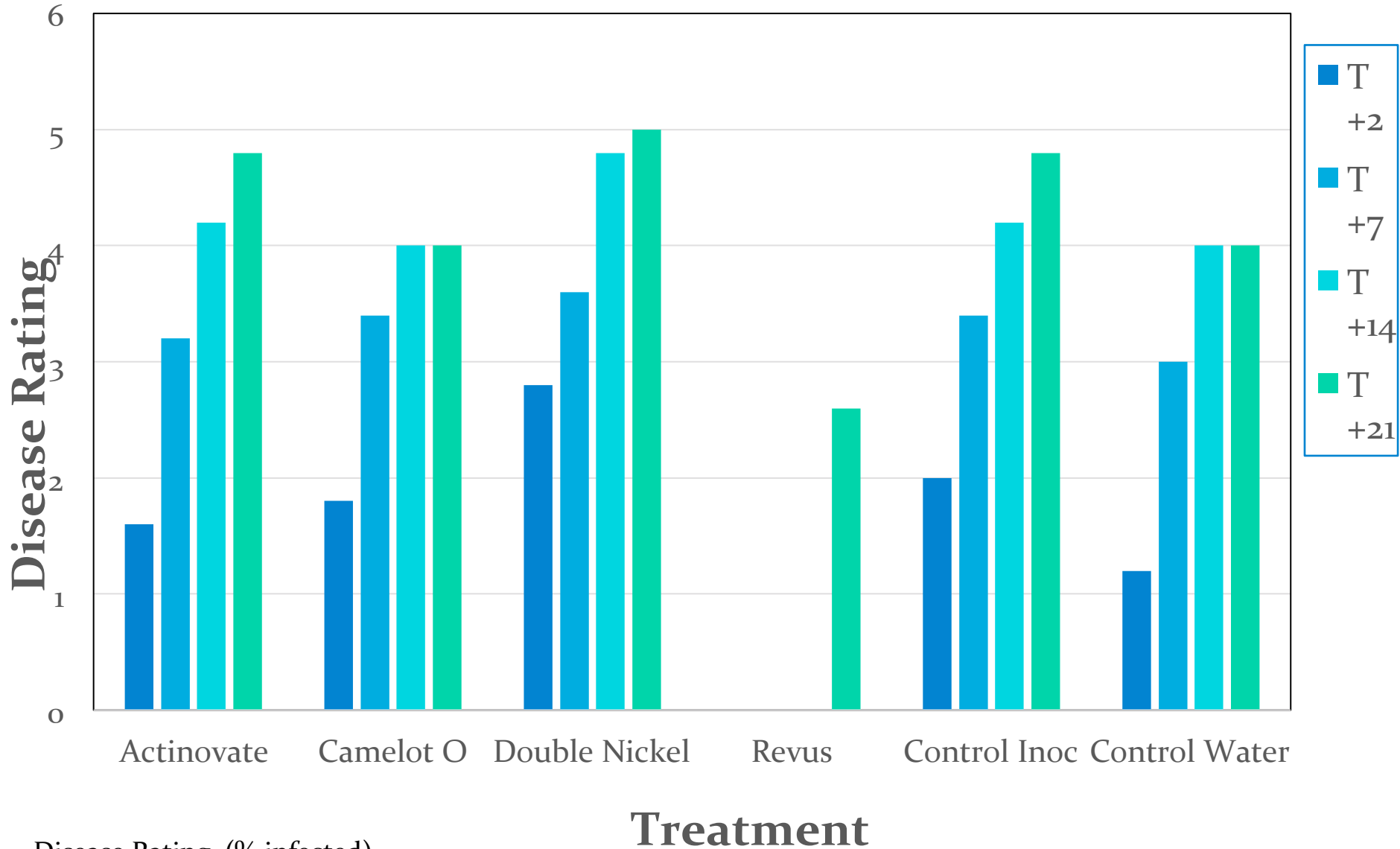
Basil Greenhouse Test

Fungicides for Downy Mildew Control

- Actinovate (*Streptomyces lydicus*) OMRI
- Camelot O (Copper octanoate) OMIR
- Double Nickel (*Bacillus amylolique-
faciens*) OMRI
- Revus (Mandipropamid)

Compound	1-26-16	2-2-16	2-9-16	2-16-16
Actinovate	Actinovate	Inoculate w/DM	Read	Read
Camelot	Camelot	Inoculate w/DM	Read	Read
Revus	Revus	Inoculate w/DM	Read	Read
Double Nickle	Double Nickle	Inoculate w/DM	Read	Read
Inoc. Control	Water	Inoculate w/DM	Read	Read
H₂O Control	Water	Water	Read	Read

Basil Fungicide Efficacy Greenhouse Test#3



Disease Rating (% infected)

0 = 0%, 1 = 1-10%, 2 = 11-35%, 3 = 36-65%, 4 = 66-90%, 5 = 91-100%

Thank you!



Some early trials did not work as well.

