



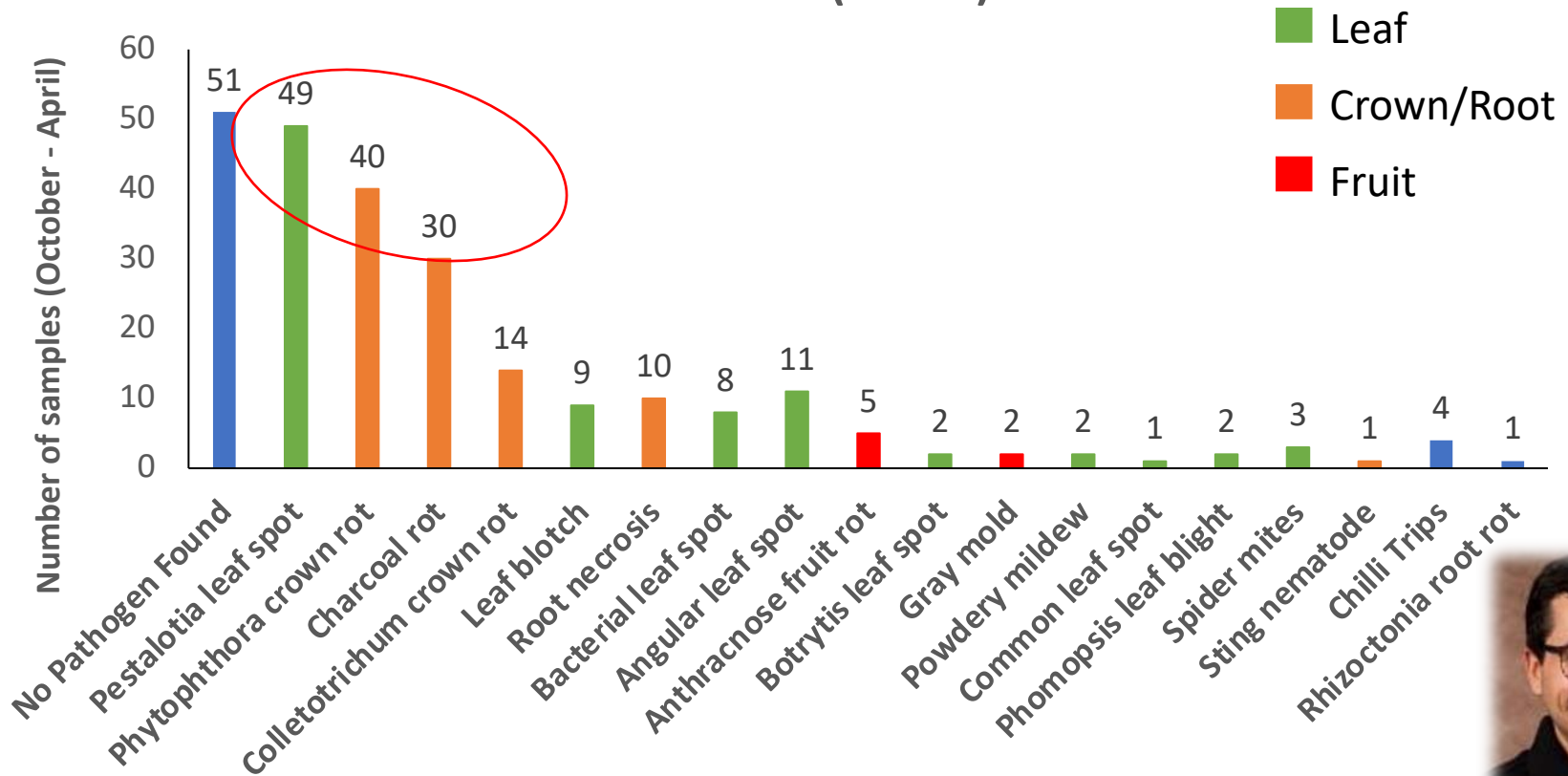
# **Strawberry Diseases Roundup: Anthracnose, Phytophthora, Macrophomina, Botrytis, ALS, Powdery Mildew...**

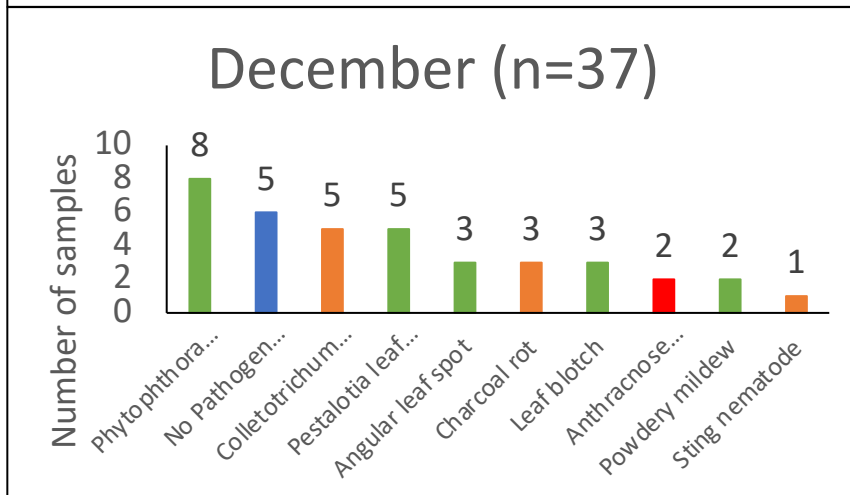
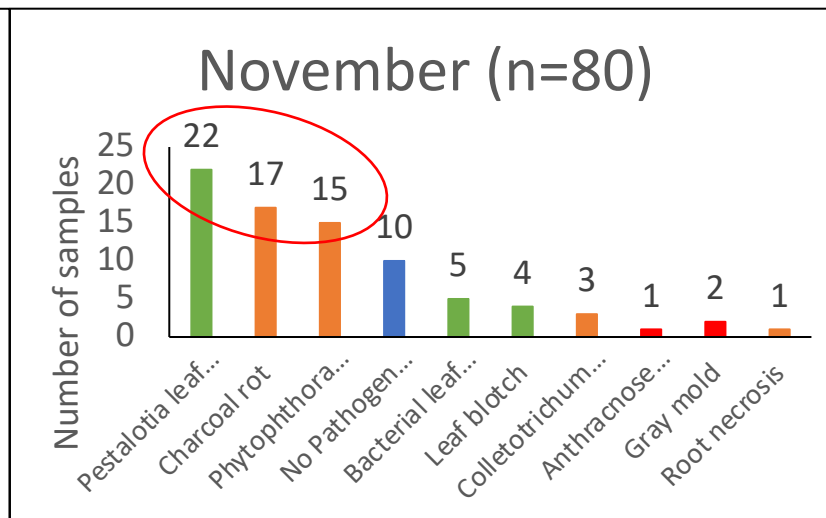
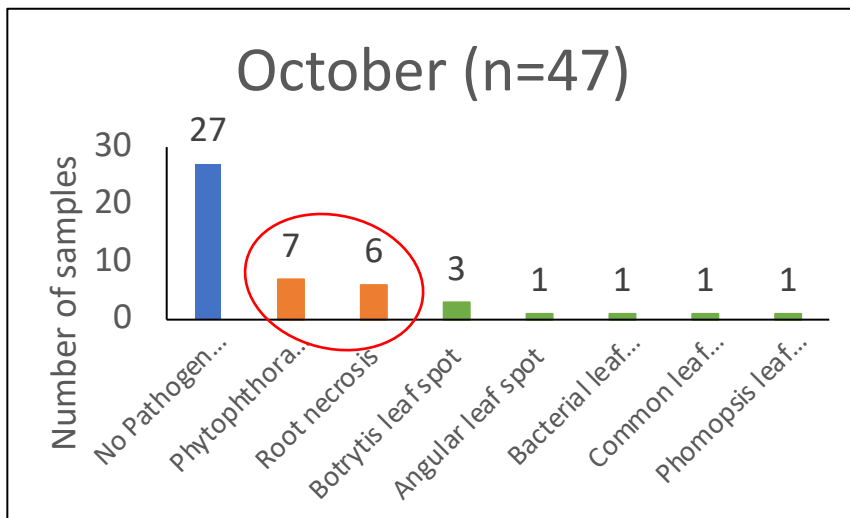
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# Diagnostic Clinic Season Summary

DIAGNOSIS (n=245)





■ Leaf    
 ■ Crown/Root    
 ■ Fruit





# Root necrosis and crown rot caused by *Colletotrichum acutatum*

- ✓ Introduced as quiescent infections from nursery plants
- ✓ Does not overwinter in FL fields





# Root necrosis and crown rot caused by *Colletotrichum acutatum*

- ✓ Florida Medallion highly susceptible
- ✓ All samples with root necrosis this season were resistant to strobilurin fungicides (Cabrio, Abound, etc..)
- ✓ Fungicide applications (foliar or drip) not effective
- ✓ Dipping transplants has worked in some cases but risky
- ✓ Proposal to look at applications in the planting hole



# Phytophthora Crown Rot



Crown rot symptoms caused by *Phytophthora cactorum* similar to those caused by *Colletotrichum gloeosporioides* or *Macrophomina phaseolina*



# 2022-23 Phytophthora trial



Treatment	Disease Incidence (%)	Yield (lb/acre)
Ridomil Gold SL 1 pt 1, 4, and 7 wks after inoculation	11.3 g	4900.8 ab
Orondis Gold 28 fl oz 1, 4, and 7 wks weeks after inoculation	11.3 g	5425.7 a
Orondis Gold 28 fl oz 1 week, Ridomil Gold 4 weeks after inoculation	13.8 g	4310.3 abcd
Curzate 60DF 5oz/A drip 6 apps at 7 days interval after inoculation	15.0 fg	4523.8 abc
OR-488 60 fl. oz/a + OR-079B 2 qt/a (1st app.) or 1 qt/a (2nd- last app).	21.3 efg	3885.1 bcde
OR-159B 2 qts/a + OR-278F 2 qts/a	25.0 defg	4440.7 abc
HM-2245 5 lb/A 21 days interval	25.0 defg	3771.4 bcdef
HM-2245 21 days + HM-2246 21 days + HM-2247 21 days	26.3 defg	4234.2 abcd
Curzate 60DF 5oz/A foliar 6 apps at 7 days interval after inoculation	27.5 cdefg	4185.2 abcd
HM-2245 21 days + HM-2246 21 days + HM-2020-46 21 days	32.5 bcdef	3676.1 bcdefg
Non-inoculated control ←	37.5 abcde	3519.5 bcdefg
HM-2245 21 days + HM-2246 2 lb/A 21 days	37.5 abcde	3333.1 cdefg
HM-2245 21 days + HM-2246 3 lb/A 21 days + HM-2020-46 8 oz/A 21 days	38.8 abcde	3050.6 defg
HM-2246 3 lb/A 21 days interval	39.3 abcde	3456.5 cdefg
HM-2245 5 lb/A 21 d + HM-2246 3 lb/A 21 days + HM-2247 1 gal/A 21 days	40.0 abcd	3321.8 cdefg
HM-2245 2.5 lb/A 21 days interval + HM-2246 1.5 lb/A 21 days interval	40.8 abcd	2729.5 efg
HM-2245 2.5 lb/A root dip + HM-2246 1.5 lb/A root dip; HM-2245 2.5 lb/A	45.0 abc	2450.4 fg
HM-2245 5 lb/A 21 days + HM-2246 3 lb/A 21 days	46.3 ab	2746.1 efg
Inoculated control ←	50.0 ab	3234.3 cdefg

# Summary Phytophthora

- ✓ Infection from nursery plants
- ✓ First application of Orondis Gold (better choice due to 30-day PHI, Ridomil resistance)
- ✓ Follow with Ridomil Gold 3-4 weeks later (time to first fruit production peak)
- ✓ Alternate Ridomil with phosphite materials
- ✓ Third application of Ridomil, if needed, should also be timed around peak production



# Charcoal Rot caused by *Macrophomina phaseolina*





# 2022-23 Macrophomina trial



Treatment (products and amount/A)	Application timing (WAI)	Yield (lb/A)	Mortality (%)
Non-inoculated control	-	7753.2a	2.3g
Exp 300 SC (A23156) 11.41 fl oz	at planting hole	6668.9ab	18.4fg
Rhyme 7 fl oz	1, 4, 7	6191.4b	24.8ef
Rhyme 7 fl oz	1, 4	6519.7ab	27.0ef
Exp 300 SC (A23156) 11.41 fl oz	1, 4	4542.2c	37.1de
Actigard 0.33 oz + Rhyme 7 fl oz	1, 4, 7	3657.3cd	51.8cd
OR-159B 2 qts/a + OR-278F 2 qts/a	1, 3, 6	3275.1d	52.2cd
Exp 300 SC (A23156) 11.41 fl oz	1	3368.0cd	56.3bc
OR-483A 1 qt/a	1, 3, 6	3027.1d	59.6abc
<b>Inoculated control</b> ←	-	<b>2779.1d</b>	<b>61.9abc</b>
OR-488 60 fl. oz/a + OR-079B	1, 3, 6	2657.5d	68.6ab
OR-505A 2 qts/a	1, 3, 6	2461.6d	72.9a



# Summary Macrophomina

- ✓ 'FL Medallion' highly susceptible
- ✓ Fields with a history of disease should be terminated with a fumigant (Vapam or Kpam) as soon as possible after the end of season
- ✓ Pre-plant fumigation with Telone C-35 (350 lb/A) has consistently performed better in our trials than PicClor60 (300 lb/A)
- ✓ Drip applications of Rhyme can slow down disease progress *if* started soon enough
- ✓ Ideally, highly infested fields should NOT be double cropped or the plastic re-used



# Angular leaf spot caused by *Xanthomonas fragariae*





# Angular leaf spot

- ✓ **Introduced with transplants**
- ✓ **Only problematic in years with freeze events**
- ✓ **No chemical treatment after disease has established**
- ✓ **Actigard (0.375 oz/A) applied preventively (foliar or drip) has been shown to reduce disease incidence**
- ✓ **Proposal to look at applications of copper only before freeze events**

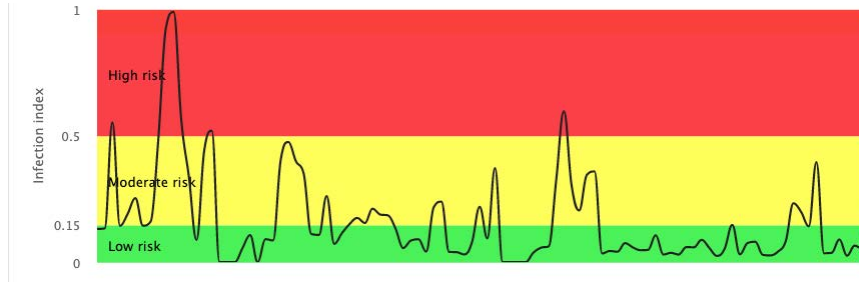
# Botrytis Fruit Rot



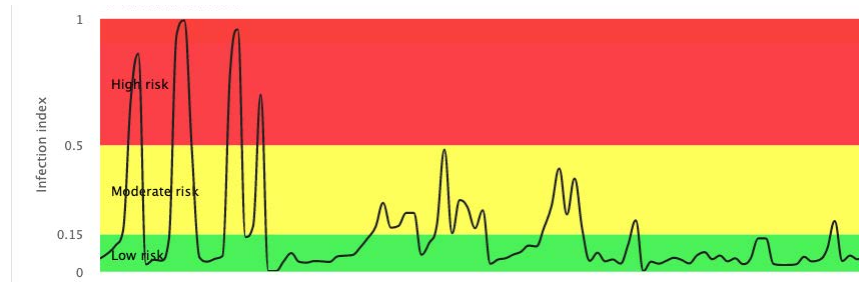


# Lower disease pressure during La Niña seasons

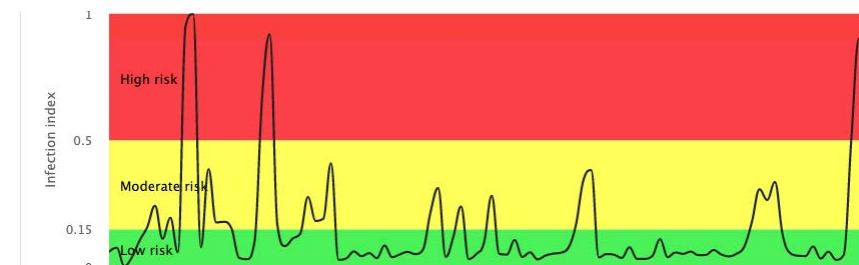
Plant City, Florida  
Nov 1 – Feb 10



2022-23  
(**2.9%** Botrytis in  
Non-treated Control)



2021-22  
(16.6% Botrytis in  
Non-treated control)



2020-21  
(14.8% Botrytis in  
Non-treated control)

El Niño seasons:  
2019-20 – 28.1%  
2018-19 – 26.9%

# General recommendations for Botrytis

## Cultural practices

- ✓ Manage N wisely so that plants don't get too big
- ✓ Increase plant spacing if possible

## Chemical control

- ✓ Multi-site (captan, thiram or biologicals) during weeks of low disease risk
- ✓ Miravis Prime, Switch or Kenja *only* during high alerts

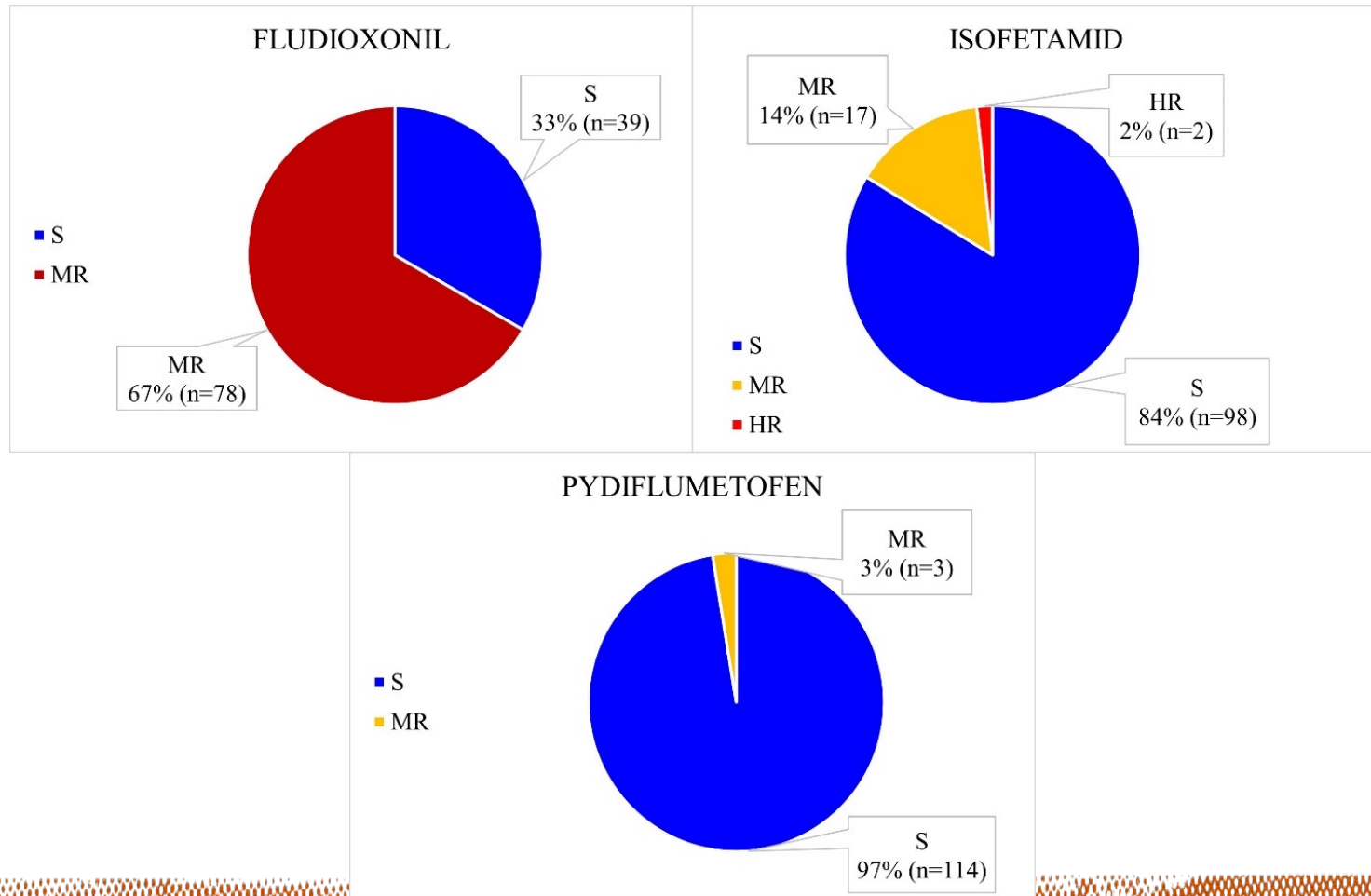
## Nurseries

- ✓ Talk to them about avoiding use of the above single-site fungicides



# Fungicide resistance monitoring

## Switch (fludioxonil + cyprodinil)



## Miravis Prime (fludioxonil + pydiflumetofen)

## Powdery mildew



*Podosphaera aphanis*



# 2022-23 PM trial

Treatment	% PM		Yield (lb/acre)	
Microthiol Disperss (7.5 lb), weekly	25.9	f	17009.6	a
Microthiol Disperss 5 lb alt. Exp 14 3 lb + Induce 1 pt, 14-day	32.6	ef	12886.0	bc
Prolivo 5 oz + Induce 1pt, 14-day ←	37.9	de	12834.6	bc
Gatten SC 6.4 fl oz + Induce 0.125 gal, 14-day	39.2	cde	14543.6	ab
Magister SC (36 fl oz) 14 day ←	39.4	bcde	14109.6	ab
NSTKI-037 4lb, weekly	39.5	bcde	12560.8	bc
Luna Flex 13.6 - 14-day	39.7	bcde	11808.3	bc
Gatten EC 6.4 fl oz + Induce 0.125 gal, 14-day	40.1	bcde	12458.8	bc
SP2700 8 oz/A weekly	40.5	bcde	13998.4	ab
Gatten EC 3.2 fl oz + Induce 0.125 gal, 14-day	40.7	bcde	13655.2	ab
Luna Tranquility 500SC (20 fl oz) alt. Torino (3.4 fl oz), 14-day	40.9	bcde	12641.9	bc
NSTKI-037 6lb, weekly	42.1	bcde	13798.2	ab
Gatten SC 3.2 fl oz + Induce 0.125 gal, 14-day	42.6	bcde	11745.9	bc
OR-491 50 fl. oz/100 gal + OR-097A 32 fl. oz/100 gal, weekly	42.9	bcde	13603.5	ab
Luna Tranquility 500SC 20 fl oz alt. Exp 14 3 lb + Induce 1pt, 14-day	43.1	bcde	12512.3	bc
Miravis Prime 13.4 fl oz 14 day	44.2	abcde	11827.1	bc
Regev at 8.5 oz, 14-day	44.4	abcde	10977.6	bc
Quintec (6 fl oz) alt. Torino (3.4 fl oz) 14-day	46.5	abcd	9748.9	c
Berezi (NSTKI-014) 5lb, weekly	47.2	abcd	10939.3	bc
SP2700 6 oz/A weekly	49.1	abcd	11137.8	bc
Luna Tranquility 500SC 20 fl oz alt. Rally 5 oz + Induce 1pt 14-day	49.2	ab	13107.3	bc
Quintec fb. Magister SC fb. Quintec fb. Torino, 14-day	50.7	abcd	11013.3	bc
<b>Control</b>	<b>51.6</b>	<b>abc</b>	<b>9834.5</b>	<b>c</b>
Quintec (6 fl oz) fb. Torino (3.4 fl oz) fb. Mettle (5 fl oz), 14-day	55.7	a	9603.2	c

# Summary Powdery Mildew

- ✓ Sulfur (Microthiol) consistently most effective (residue, predatory mites)
- ✓ Quintec and Torino not performing as well in our trials
- ✓ Prolivo (pyriofenone) fungicide - new mode of action registered for strawberry and has been show effective
- ✓ Magister (fenazaquin) miticide has shown activity against PM
- ✓ Luna is also effective (keep in mind FRAC 7)
- ✓ UVC light...



# Thank you!!

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