

# Update on management of Powdery mildew on melons

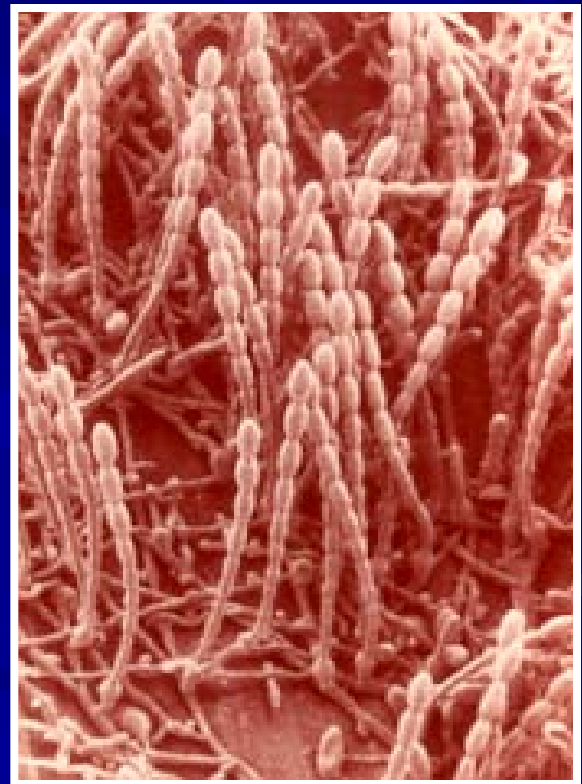
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# Powdery mildew on melons:

Caused by: *Podosphaera xanthii*  
(syn. *Sphaerotheca fuliginea*)





# **Powdery mildew on melons:**

## **Management options**

- Planting resistant cultivars
- Application of fungicides

# Major fungicides used to manage powdery mildew on melons

Name	FRAC group #
Azoxystrobin (Quadris)	11
Chlorothalonil (Bravo)	M 5
Myclobutanil (Rally)	3
Pyraclostrobin (Cabrio)	11
Quinoxifen (Quintec)	13
Trifloxystrobin (Flint)	11
Triflumizole (Procure)	3
Thiophanate-methyl (Topsin M)	1
Sulfur (Microthiol Disperss)	M 2

# Major fungicides used to manage powdery mildew on melons

FRAC group #	Fungicide
1	Thiophanate methyl (Topsin)
3	Myclobutanil (Rally) Triflumizole (Procure)
11	Azoxystrobin (Quadris) Pyraclostrobin (Cabrio) Trifloxystrobin (Flint)
13	Quinoxifen (Quintec)
M 2	Sulfur (Microthiol Disperss)
M 5	Chlorothalonil (Bravo)

# Goals of fungicide efficacy field trials conducted since 1998

- Evaluate and compare individual chemistries for effectiveness in managing powdery mildew on melons
- Evaluate treatment programs that will provide high levels of disease control and at the same time preserve the effectiveness of disease control products

# Protocol for cantaloupe powdery mildew trials

- 'Topmark' cantaloupe seeded in early March on raised beds with 80 inches between bed centers
  - Irrigated by furrow irrigation
- First application of products: May 15 -20
  - From 2 to 5 applications of treatments, depending on year; spray interval ranged from 7 to 10 days
- First application of products usually from 7 to 14 days before visual detection of powdery mildew in plots
  - One exception was 2004, when first application made 3 days after first detection of powdery mildew



# Protocol for cantaloupe powdery mildew trials

- Powdery mildew usually appears in late May
- Disease ratings taken at crop maturity (mid-June)
  - 10 leaves collected from each plot and disease severity was rated on the upper and lower leaf surface

# Powdery mildew rating system

- 0 = No powdery mildew (PM) present on sampled leaves
- 1 = 1 to 5 PM colonies on leaf surface
- 2 = 6 to 10 PM colonies on leaf surface
- 3 = >10 PM colonies to 25% of leaf surface covered
- 4 = 26 to 50% of leaf surface covered with PM
- 5 = 51 to 100% of leaf surface covered with PM



Rating scale: 1

2

5

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% control \* 80

60

0

\* assuming nontreated melon plants have a rating of 5

# Relative efficacy of melon powdery mildew fungicides (2007 to 2009)

FRAC group #	Fungicide
1	Thiophanate methyl *
3	Myclobutanil ** Triflumizole ***
11	Azoxystrobin * Pyraclostrobin ** Trifloxystrobin **
13	Quinoxifen ***
M 2	Sulfur ***
M 5	Chlorothalonil **

Disease control: Green\*\*\* = 80-100%; Yellow\*\* = 60-79%; Red\* = below 60%

# What is the future for fungicides with moderate to low efficacy ?

- Can they be effective partners in treatment programs with stronger fungicides:
  - For resistance management?
  - For effective control of powdery mildew?
- Field trials were conducted in 2008 and 2009 to answer these questions

# Color code for disease control levels

Green = 80-100%; Yellow = 60-79%; Red = below 60%

## Fungicide application sequence (2008 and 2009 trials)

Green	Green	Green	Green
Yellow	Yellow	Yellow	Yellow
Red	Red	Red	Red
Grey	Grey	Grey	Grey
Green	Red	Green	Red
Grey	Grey	Grey	Grey
Red	Green	Red	Green
Grey	Grey	Grey	Grey

# Color code for disease control levels

Green = 80-100%; Yellow = 60-79%; Red = below 60%

Fungicide application sequence (7-10 day application interval)				% Disease control	
				2008	2009
Procure	Procure	Procure	Procure	98-100	98-100
Quintec	Quintec	Quintec	Quintec		
Sulfur	Sulfur	Sulfur	Sulfur		
Flint	Flint	Flint	Flint	90	81
Cabrio	Cabrio	Cabrio	Cabrio	80	74
Kaligreen	Kaligreen	Kaligreen	Kaligreen	30-60	24-52
Quadris	Quadris	Quadris	Quadris		
Serenade	Serenade	Serenade	Serenade		
Sovran	Sovran	Sovran	Sovran		
Topsin	Topsin	Topsin	Topsin		

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Green = 80-100%; Yellow = 60-79%; Red = below 60%

Fungicide application sequence (7-10 day application interval)				% Disease control	
				2008	2009
Procure	Procure	Procure	Procure	100	99
Quintec	Quintec	Quintec	Quintec	100	99
Topsin	Topsin	Topsin	Topsin	45	36
Procure	Topsin	Quintec	Topsin	98	95
Quintec	Topsin	Procure	Topsin	92	95
Topsin	Procure	Topsin	Quintec	100	93



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Fungicide application sequence (7-10 day application interval)				% Disease control	
				2008	2009
Procure	Procure	Procure	Procure	100	99
Quintec	Quintec	Quintec	Quintec	100	99
Quadris	Quadris	Quadris	Quadris	60	52
Procure	Quadris	Quintec	Quadris	95	98
Quintec	Quadris	Procure	Quadris	98	100
Quadris	Procure	Quadris	Quintec	89	86

# Color code for disease control levels

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Fungicide application sequence (7-10 day application interval)				% Disease control	
				2008	2009
Procure	Cabrio	Quintec	Cabrio	95	95
Procure	Flint	Quintec	Flint	95	95
Procure	Kaligreen	Quintec	Kaligreen	85	95
Procure	Quadris	Quintec	Quadris	95	98
Procure	Serenade	Quintec	Serenade	95	90
Procure	Sovran	Quintec	Sovran	95	98
Procure	Sulfur	Quintec	Sulfur	100	98
Procure	Topsin	Quintec	Topsin	100	95

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Fungicide application sequence (7-10 day application interval)				% Disease control	
				2008	2009
Quintec	Cabrio	Procure	Cabrio	90	95
Quintec	Flint	Procure	Flint	95	93
Quintec	Kaligreen	Procure	Kaligreen	100	95
Quintec	Quadris	Procure	Quadris	98	100
Quintec	Serenade	Procure	Serenade	95	90
Quintec	Sovran	Procure	Sovran	90	95
Quintec	Sulfur	Procure	Sulfur	100	100
Quintec	Topsin	Procure	Topsin	92	95

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Fungicide application sequence (7-10 day application interval)				% Disease control	
				2008	2009
Cabrio	Procure	Cabrio	Quintec	98	95
Flint	Procure	Flint	Quintec	100	100
Kaligreen	Procure	Kaligreen	Quintec	80	86
Quadris	Procure	Quadris	Quintec	90	86
Serenade	Procure	Serenade	Quintec	90	90
Sovran	Procure	Sovran	Quintec	85	86
Sulfur	Procure	Sulfur	Quintec	100	100
Topsin	Procure	Topsin	Quintec	100	93

# What is the future for fungicides with moderate to low efficacy ?

- Can they be effective partners in treatment programs with stronger fungicides:
  - For resistance management? YES!!
  - For effective control of powdery mildew? YES!!