



Managing Powdery Mildew in Melons

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Brawley, April 10th, 2025

Cucurbit Powdery Mildew

- *Podosphaera xanthii*
- *Erysiphe cichoracearum*







Pumpkin on the right with better color and handle quality is from a research plot treated weekly with fungicides while the other pumpkin is from a non-fungicide-treated plot, 10-1-90.



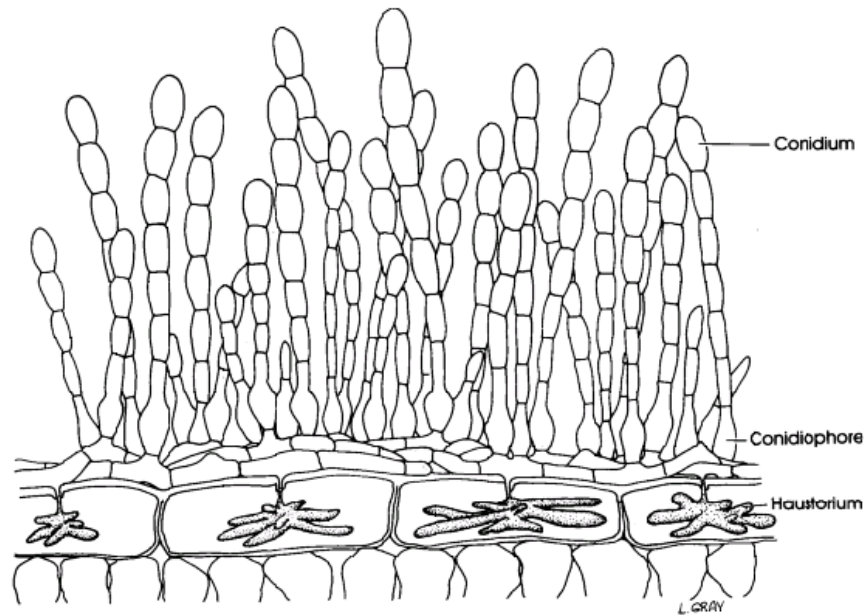






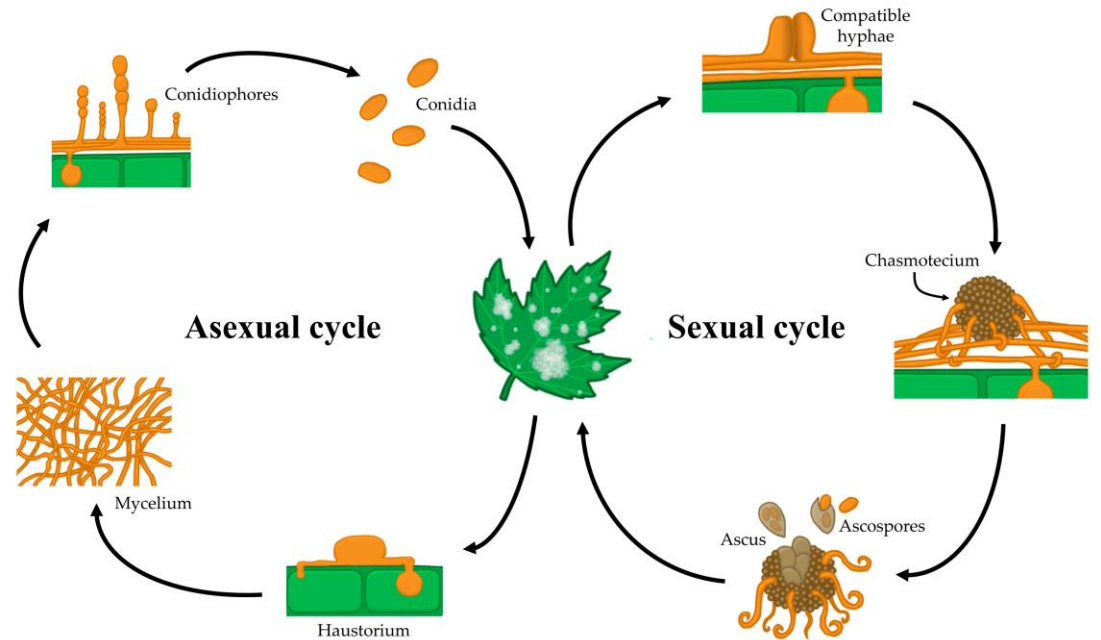
The Pathogens

- *Podosphaera xanthii*
- *Erysiphe cichoracearum*



Drawing by Lenore Gray

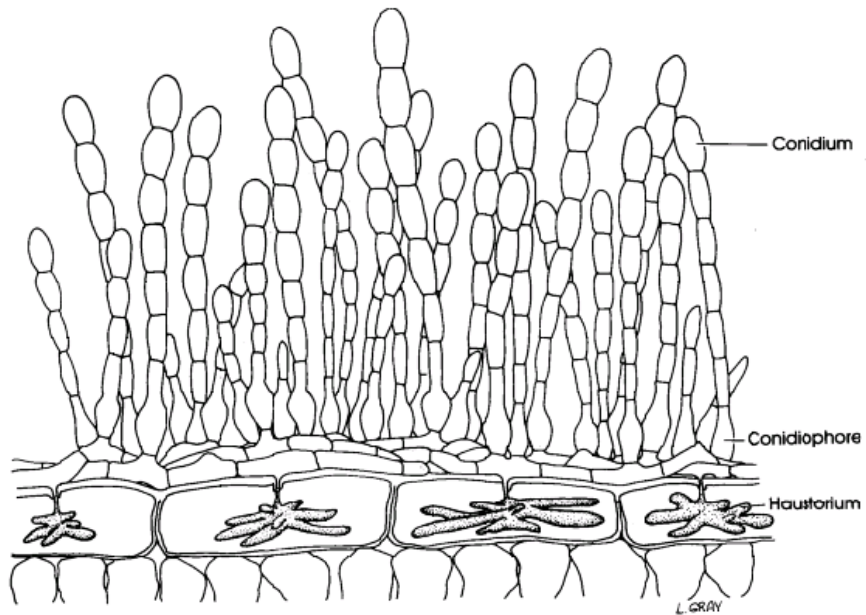
Obligate Parasitic Fungi



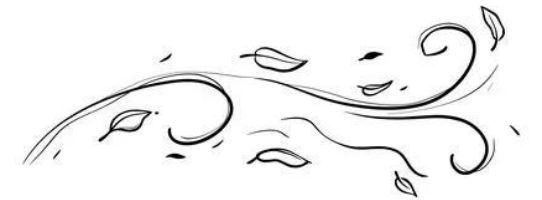
Microorganisms 2020, 8(9), 1431

Asexual and Sexual cycles

Easy dispersal



Drawing by Lenore Gray



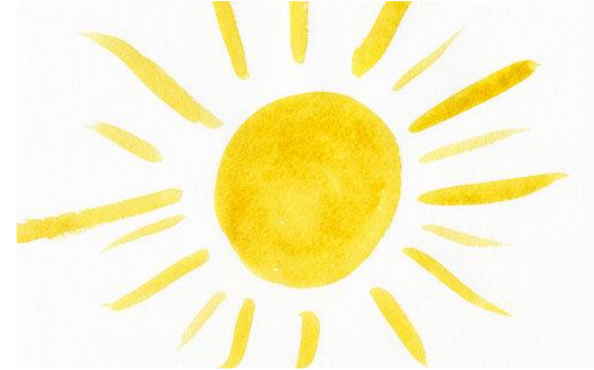
As low as 1–2 mph
Highly effective ~ 4,5-9 mph

What else we need to know

Spores and fungal growth are sensitive to extreme heat (above 90°F) and direct sunlight.



Plant in sunny areas as much as possible



Ideal conditions for development: moderate temperatures (60–80°F) and shady environments



Apply only what's needed—**extra fertilizer leads to extra foliage and more disease risk**

Extended moisture on plant surfaces can inhibit or kill spores of some species



Overhead sprinkling **may help reduce powdery mildew** because spores are washed off the plant. **But it may also contribute to other pest problems**



Managing Cucurbit Powdery Mildew **Conventionally** – Key Points

1 - Use Resistant Varieties

- ✓ Plant varieties that are resistant to powdery mildew.
- ✓ **Resistance levels vary → check the label!!**

<u>Resistance</u>	
Disease resistance: High	Fom: 0, 2
Disease resistance: Intermediate	Px: 1 / Px: 2US

GOLD CROWN

Crop:
Melon

Segment:
Cantaloupe Western Shipper

Ecology:
Open Field

Type of Market:
Fresh

Production Cycle:
Main

2 - Monitor Regularly

- ✓ Start weekly scouting when fruit starts to form → plants are more susceptible then.
- ✓ Check at least 50 older leaves, **especially the underside**, where symptoms usually appear first.

3 - Apply Fungicides Early

- ✓ Begin sprays as soon as you see symptoms.
- ✓ Spray weekly, dry weather favors disease, and it usually lasts all season.

Managing Cucurbit Powdery Mildew **Conventionally** – Key Points

4 – Conventional Options

- ✓ **Systemic fungicides** (those that move into the leaf) are the most effective for powdery mildew because they can reach the lower leaf surfaces where the disease starts.
- ✓ Powdery mildew adapts quickly. Many fungicides that worked in the past are now less effective or don't work at all → some fungicides belonging to **FRAC 1, QoIs (FRAC 11), and FRAC 7**.
- ✓ Torino (FRAC U6) and Quintec (FRAC 13) → **Resistance builds up quickly if used more than once**.
- ✓ Most recommended fungicides in Northeast of the USA for cucurbit powdery mildew are **Vivando, Procure, Proline, Luna Experience, Rhyme, Aprovia Top, Miravis Prime, and Gatten** (M. McGrath, Cornell Univ.).
- ✓ Use fungicides with different FRAC codes in **rotation**. Never apply the same fungicide more than twice in a row.
- ✓ Fungicide resistance is **dynamic**. Expect this pathogen to develop resistance to additional fungicides and thus fungicide recommendations to continue to change.

Managing Cucurbit Powdery Mildew **Organically** – Key Points


1 - Use Resistant Varieties

- ✓ Plant varieties that are resistant to powdery mildew.
- ✓ **Resistance levels vary → check the label!!**

2 - Monitor Regularly

- ✓ Start weekly scouting when fruit starts to form → plants are more susceptible then.
- ✓ Check at least 50 older leaves, **especially the underside**, where symptoms usually appear first.

3 - Apply Fungicides Early

- ✓ Begin sprays as soon as you see symptoms.
- ✓ Spray weekly, dry weather favors disease, and it usually lasts all season.
-  ✓ Be sure to cover the undersides of leaves, because organic fungicides have contact activity, but challenging due to the large size of cucurbit leaves and density of foliage.

Managing Cucurbit Powdery Mildew **Organically** – Key Points

4 - Organic Options

- ✓ Many organic fungicides are available.
- ✓ Sulfur is most effective but **may burn cantaloupes in temps over 80/85°F** (some varieties are sulfur-tolerant).
- ✓ Rotate at least two different products with different modes of action for best results.

5 - Evaluate Your Results

- ✓ Within a week of your **last spray**, check how severe powdery mildew is to see how well your program worked.

MOST IMPORTANT!



When choosing a pesticide, consider information relating to the pesticide's properties and application timing, honeybees, and environmental impact. Always read the label of the product being used.





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