

Special Research Report #119: Disease Management

Managing Powdery Mildew on Verbenas

M.K. Hausbeck¹, Professor and Extension Specialist and M.L. Daughtrey², Senior Extension Associate
¹Michigan State University, Plant Pathology, East Lansing, MI 48824; ²Cornell University, Long Island Horticultural Research & Extension Center, 3059 Sound Ave., Riverhead, NY 11901

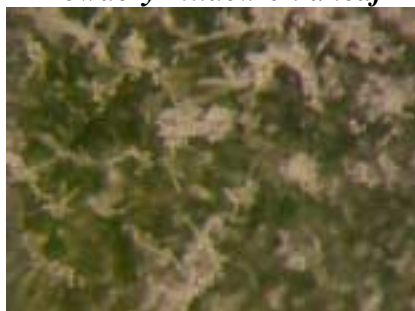


BACKGROUND

Powdery mildew is caused by the fungus *Erysiphe cichoracearum*. This pathogen



Powdery mildew on a leaf



Closeup of powdery mildew



Powdery mildew conidia

infects many different hosts, including annual and perennial flowers, and vegetables. However, this is not the same powdery mildew fungus that infects roses or poinsettias. The fungus grows only on living tissue and becomes established on healthy plants.

Under favorable conditions, the fungus produces abundant chains of conidia (spores) which give the infected plant a white, powdery or fluffy appearance. Powdery mildew can occur on all above-ground plant parts. Severe infection results in yellowing and death of leaves; thereby reducing photosynthesis. Unlike other pathogens that require free water or water droplets on the plant surface for infection to occur, powdery mildew can infect at low relative humidity levels. Epidemics, however, can occur when the relative humidity is high.

MATERIALS NEEDED

In the first trial, verbena seedlings were treated with fungicide every 14 days.

Sprays were initiated before powdery mildew appeared and after the disease was newly established. The ability of the fungicides to control disease was rated using a scale of 1 to 10, where 1=no disease to 10=80-100% of the leaves infected with powdery mildew. In the second trial, verbena plants were treated every 7 (6 sprays total) or 14 days (3 sprays). Disease was rated 6 weeks after treatments began.

RESULTS

Powdery mildew was best controlled when fungicides were applied before disease symptoms. In the first trial, Terraguard, Compass, Strike, and Systhane all provided excellent disease control when applied every 14 days. Disease control was maintained, even 24

days after the last spray. In the second trial, disease was less severe and fungicides were applied frequently (every 7 days). Thus, all treatments were helpful in limiting disease.

Fungicides tested on powdery mildew on verbenas.

Fungicide	Active ingredient	Registered
Compass 50WDG	trifloxystrobin	yes
Decree 50WDG/500SC	fenhexamid	no
Insignia/BAS 500 02F	pyraclostrobin	no
Phyton-27 21.4%EC	copper	no
Strike 50WDG	triadimefon	no
Systhane 40WSP	myclobutanil	yes
Terraguard 50W	triflumizole	yes



Untreated



Strike 50WDG 4 oz



Systhane 40WP 5 oz

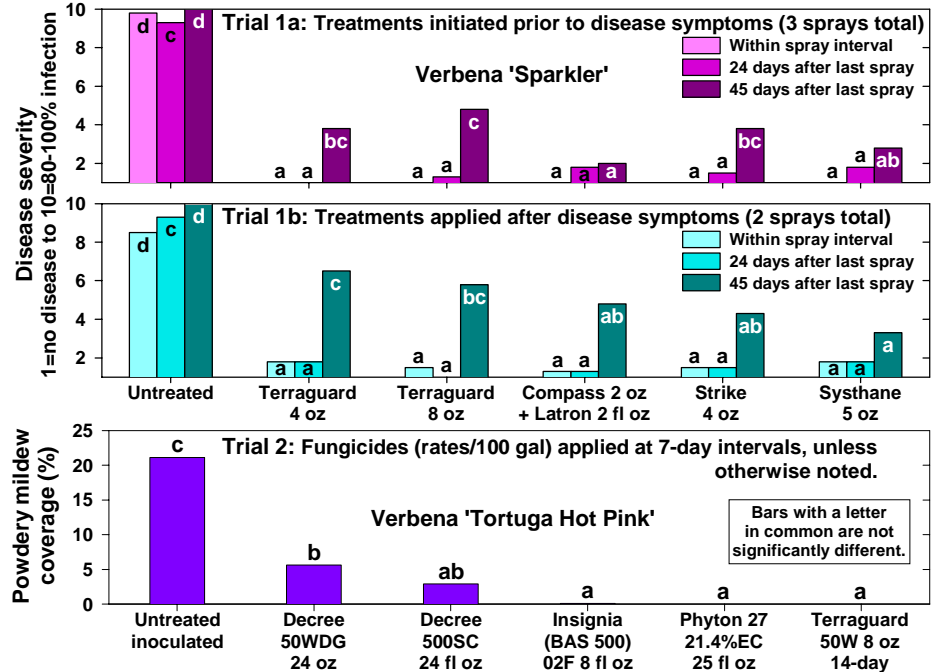


Terraguard 50W 4 oz



*Compass 50WG 2 oz
+ Latron B-1956 2 fl oz*

Powdery Mildew on Verbena



Terraguard and Insignia were superior to the other treatments at suppressing powdery mildew on the undersides of leaves.

CONCLUSIONS

When fungicides were applied prior to disease appearance, powdery mildew was nearly completely prevented. This occurred even when treated plants were continuously exposed to severely infected plants. Several fungicides had activity against powdery mildew and can be used in a program that alternates products based on their mode of action.

IMPACT TO THE INDUSTRY

Powdery mildew on verbena can be managed through preventive application of effective fungicides.

Susceptible crops, such as verbena, should be treated prior to development of powdery mildew. Once the disease becomes established, it is highly difficult to eradicate it.

When applying fungicides:

- Choose ones effective for powdery mildew.
- Apply in a timely manner and, preferably prior to disease development.
- Rotate among fungicides that have different modes of action. This aids in preventing development of fungicide resistance in the powdery mildew pathogen. Since Insignia and Compass act similarly they should not be used exclusively in a disease management program.

Research cooperators included: Larry Barnes, Texas A&M University.