

Ecofriendly approaches for the management of rose powdery mildew (*Podosphaera pannosa* var. *rosae*).

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outlines

- Rose plants
- Rose powdery mildew
- Control of powdery mildew
- Designs and experiments

Roses

- House gardens
- Public gardens
- Road sides



POWDERY MILDEW OF ROSE

- Powdery mildew is caused primarily by the fungus ***Sphaerotheca pannosa*** var. *rosae*. The disease occurs wherever roses are grown. Powdery mildew is very destructive, affecting plants grown out of doors and in greenhouses.
- Under conditions that are favorable for disease development, powdery mildew can cause complete defoliation. Epidemics can be expected any time during the growing season when the rainfall is low or absent, the days are warm and dry, and the nights are cool and damp.

POWDERY MILDEW OF ROSE

- Losses from powdery mildew occur through a reduced aesthetic value that is seen in fewer flowers of poorer quality, a lowered photosynthetic efficiency that results in reduced plant growth, a greater likelihood of winter injury, and a reduced salability for roses as cut flowers.

Powdery Mildew

- On garden roses, new shoots in the spring are dwarfed, distorted, and covered with a whitish gray mildew growth.
- On expanding leaves, mildew first appears on the upper leaf surface as irregular, light green to reddish, slightly raised blister like areas.
- The typical dense, powdery white growth (mycelium, conidiophores, and spores) of the mildew fungus soon appears .
- Severely infected young leaves become curled or irregularly twisted and are usually covered with enlarged, whitish gray, powdery, mealy, or felt like patches of the fungus. These leaves often turn reddish purple, under the mildew growth, then yellow, dry, and drop prematurely. Older, infected leaves are not usually distorted, but develop round-to-irregular areas covered with the flourlike mildew growth .



Powdery Mildew Control

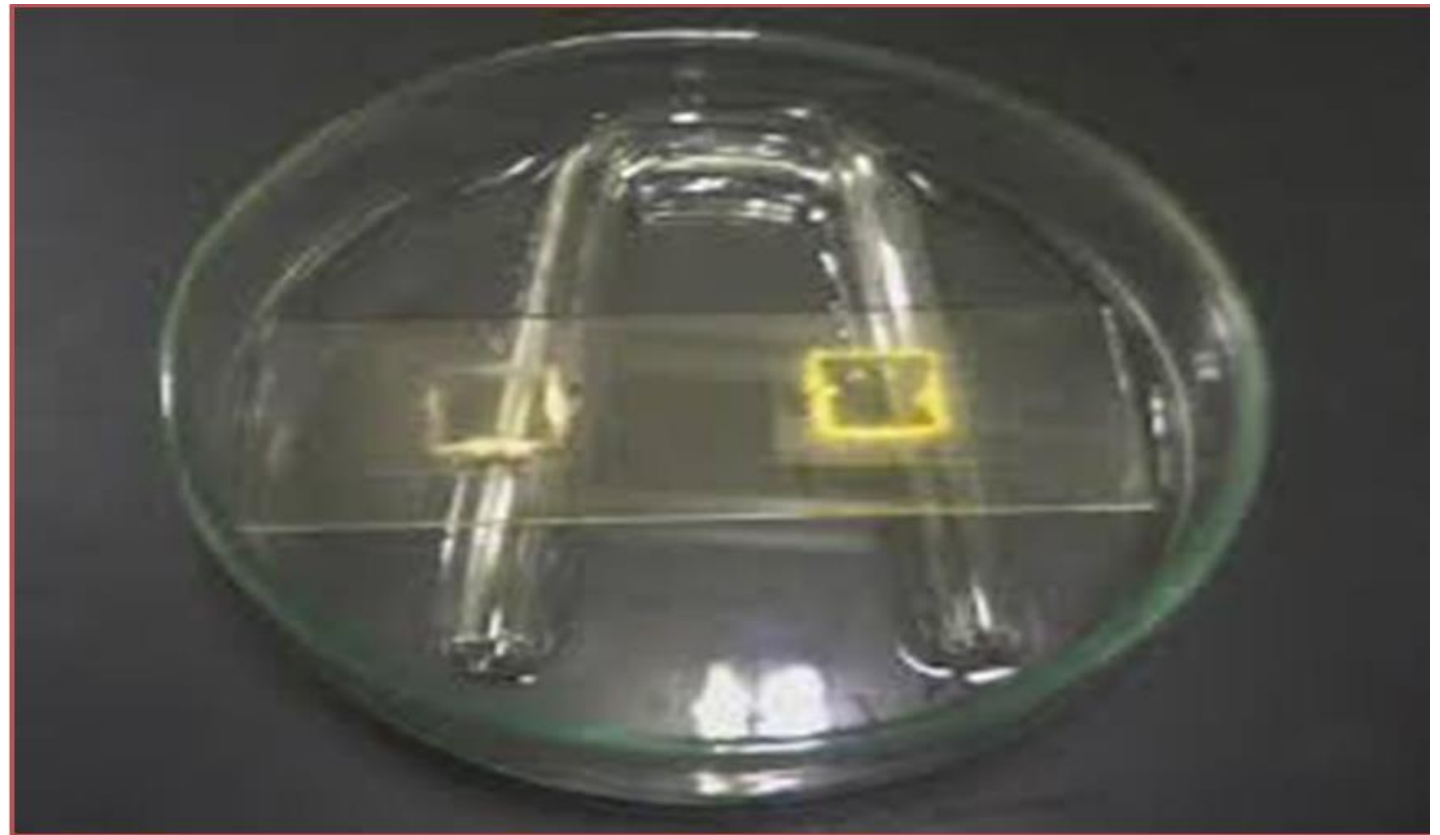
- Plant resistant cultivars.
- Prune or stake plants to improve air circulation.
- Remove diseased foliage from the plant and clean up fallen debris on the ground.
- Wash foliage occasionally to disrupt the daily spore-releasing cycle.
- Destroy all plant debris after harvest.
- If disease symptoms are observed, treat plants with one approved organic fungicides



David Hughes, Gardenseeker.com

Methods

Lab experiment



Methods

Lab experiment

- Screening of the efficacy of plant extracts
- In vitro efficacy through germination of conidia
- Using the following formula:
 - $$\text{Percentage of germination} = \frac{\text{No. of germinated spores}}{\text{Total number of spores}} \times 100$$

Methods

Greenhouse experiment:

- Treatments:
- Rose varieties: 2
- Selected plant extracts (3-4)
- One bioagent (*Trichoderma harzianum*)
- One fungicide for comparison
- Untreated control



Methods

Greenhouse experiment:

- The procedure:
- Inoculation of plants until disease appearance
- Spray application of treatment on infected plants 2 times with 7 days interval.
- Disease assessment

Methods

- Disease assessment scale:
- The 0–5 scale will be used (Townsend and Heuberger (1943) and Biswas *et al.* (1992)), where:
- 0 = No powdery mildew colonies observed,
- 1 = 1–20% of the leaf area infected,
- 2 = 21–40% of the leaf area infected,
- 3 = 41–60% of the leaf area infected,
- 4 = 61–80% of the leaf area infected,
- 5 = 81–100% of the leaf area infected.

Thank you

