

POWDERY MILDEW

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Powdery mildew is the name given to diseases caused by fungi that produce a white, powdery appearance on the surface of leaves and sometimes other green plant parts. Infected tissues are often distorted and misshapen. There are many kinds of powdery mildew fungi, and each is highly specialized. For example, the powdery mildew that infects squash plants will not infect orses, and the powdery mildew from roses will not attack zinnias and vice versa. Powdery mildew fungi are obligate parasites; that is, they can grow only on living plant tissue. When the mildew-infected plant part dies, so does the mildew, unless perithecia are formed.

Most powdery mildew fungi grow over the surface of the leaf, sending short food-absorbing projections (haustoria) into the epidermal cells. The fungus produces masses of spores (conidia), which become airborne and spread to other plants. Powdery mildew spores are unique in that they require no external moisture for germination; most other fungi require free water in the form of dew, guttation, rain, or water from overhead irrigation for germination and infection or growth.

The fungus survives in the absence of susceptible host tissues by forming a sexual stage (perithecium) resistant to drying and other adverse environmental conditions. With many perennial plants, such as rose, the fungus survives as mycelium in dormant buds.

Powdery mildews are particularly severe in semiarid regions, such as most of California, and are less troublesome in high rainfall area.

Control

The best control is through the use of resistant species or cultivars. If control of the disease is desired in an established planting, fungicides could be used. In general, there are two types of fungicidal control: eradication of existing infections and protection of healthy tissues. In practice, some products provide both protection and eradication.

Sulfur is the most common protective fungicide. Its effectiveness as a fungicide increases with increasing temperature, but the likelihood of plant injury also increases with temperature. Plant damage may result at temperatures exceeding 90°F (32°C). Some plants such as melons are sensitive to sulfur. Sulfur can be applied as a dust or as a spray. Repeated applications are generally necessary to protect new growth and also to renew deposits removed by rain or irrigation.

Lime-sulfur has eradicant action, and residual sulfur provides protection. It cannot be applied when temperatures exceed 80°F (27°C).

Benomyl, fenarimol, triadimefon, and triforine are protectants, but some eradication can be expected if the fungus is wetted. These systemic fungicides enter leaf tissue and are not removed by irrigation or rain.

TRADE NAMES OF MATERIAL USED FOR POWDERY MILDEW

Benomyl: methyl-(butylcarbamoyl)-2benzimidazole carbamate

Trade names:

Acme Benomyl Systemic Fungicide
Benlate
Cooke System Fungicide
Dexol Benomyl Plant Fungicide
Green Light Systemic Fungicide
Lily/Miller Benomyl Fungicide
49'er Gold Strick Benomyl
Science Benomyl Fungicide
Tersan 1991

Benarimol: (2-chlorophenyl)- (4-chlorophenyl)-5-pyrimidinedimethanol

Trade name:

Rubigan

Lime-sulfur: calcium polysulfides

Trade names:

Orthorix
Polysul

Sulfur

(many brands of dust and wettable powders)

Triadimefon: 1-(4-chlorophenoxy)-3,3-dimethyl-1-(1H-1,2,4-triazol-1-yl)-2-butanone

Trade name:

Bayleton

Triforine: N,N'-[1,4-piperazinedylbis (2,2,2-trichloroethylidene)] -bis (formamide)

Trade name:

Funginex

To simplify information, trade names of products have been used. No endorsement of named Products is intended, nor is criticism implied of similar products that are not mentioned

WARNING ON THE USE OF CHEMICALS

Pesticides are poisonous. Always read and carefully follow all precautions and safety recommendations given on the container label. Store all chemicals in their original labeled containers in a locked cabinet or shed, away from foods or feeds, and out of the reach of children, unauthorized persons, pets, and livestock.

Recommendations are based on the best information currently available, and treatments based on them should not leave residues exceeding the tolerance established for any particular chemical. Confine chemicals to the area being treated. **THE GROWER IS LEGALLY RESPONSIBLE** for residues on the grower's crops as well as for problems caused by drift from the grower's property to other properties or crops.

Consult your county agricultural commissioner for correct methods of disposing of leftover spray materials and empty containers. Never burn pesticide containers.

PHYTOTOXICITY: Certain chemicals may cause plant injury if used at the wrong stage of plant development or when temperatures are too high. Injury may also result from excessive amounts or the wrong formulation or from mixing incompatible materials. Inert ingredients, such as wetters, spreaders, emulsifiers, dilutents, and solvents, can cause plant injury. Since formulations are often changed by manufacturers, it is possible that plant injury may occur, even though no injury was noted in previous seasons.

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