

POWDERY MILDEWS—CUCUMBER & MELON *Sphaerotheca fusca*; SQUASH *Erysiphe orontii*; GRAPE *Uncinula necator*; APPLE *Podosphaera leucotricha*; WHEAT *Blumeria graminis*



Mildew on wheat



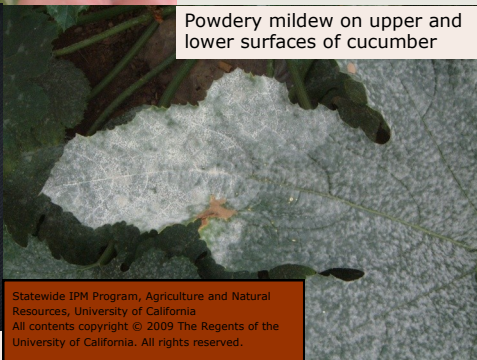
Apple shoot and fruit severely damaged by mildew



PM on peach



PM on grape



Powdery mildew on upper and lower surfaces of cucumber

Description

All powdery mildews (PM) are similar in their life-cycles but each is specific to a crop host. Thus PM on wheat will not infect rose; PM on rose will not infect cucumber or grape. But PM on rose is the same as on peach and almond.

PM only infects living plant tissue. Its 'mycelium' (fungal tissue) lives on the surface of the leaf or fruit and inserts 'haustoria' to feed from the cells. Spread is mostly by 'conidia' (spores—the powder) blown in the wind and overwintering is in buds, on shoots or on weeds. In wheat, the mildew fungus survives over winter as 'cleistothecia' (sexual resting stage) on wheat straw or mycelium on 'volunteers' (self-sown plants).

Weather is important for control decisions and different PMs prefer different conditions, but in general maximum development is 20–30°C, growth stops at 6°C and is slow over 30°C. Temperatures over 35°C often kill mildew. Rain washes off conidia and there is no infection for 3 days. Spread by conidia is best at high humidity (RH>70). High light can destroy infection. Thus conditions in Afghanistan are not always suitable for mildew: control is only necessary for part of the season.

Monitoring

- On wheat, check 50 flag leaves at growth stages 8 & 10. Threshold is 1% leaf area infected.
- On apples, assess blossoms at 'pink bud' for primary mildew. Threshold is 2%.
- Roses susceptible to PM are often planted in vineyards as indicators of an infection period.

Control

- Plant resistant varieties if available.
- Avoid high nitrogen and lush growth.
- Remove roses in the vicinity of stone fruit and nuts.
- On fruit, cut out infected shoots in winter pruning and infected buds in spring.

Infection periods are when mildew is present, the plant is growing fast and producing unprotected new growth and the weather is suitable for spread. Fungicides prevent infection but most will not eradicate infection older than 3 days. During infection periods, apply azoxystrobin, myclobutanil, tebuconazole, bupirimate, or chlorothalonil every 10 days, or wettable sulphur or sulphur dust every 5-7 days. Sulphur can damage plants if temperature is over 32°C.