

# Australian Garlic Industry Association Information Sheet



## DOWNY MILDEW

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### Symptoms

Downy mildew of garlic is caused by the fungus *Peronospora destructor*. Symptoms appear as elongated patches up to 3mm long that are somewhat paler than the rest of the foliage or have turned a light tan to brown in colour. A furry growth, greyish violet in colour, may be visible on the surface of infected leaves during moist periods, especially early morning. Downy mildew lesions may be violet to purple and can be confused with initial lesions of purple blotch. Infected leaves gradually turn pale green to yellow and diseased parts such as leaf tips fold over and collapse.



Downy mildew symptoms

### Source of Infection and Spread

The fungus survives between seasons as oospores on crop residues incorporated into the soil or on volunteer allium plants. During the growing season, large number of conidia spores are produced and spread by the wind. The downy mildew pathogen requires cool temperatures and the presence of free moisture from rainfall or dew to infect garlic plants. Severe disease outbreaks are most likely to occur when there are periods of cloudy, mild days and cool, still dewy nights.

### Management

Use disease-free bulbs and cloves. Use a three year rotation away from Allium crops in fields where the disease has occurred. Destroy volunteer Allium plants in and around the field and buildings. Locate garlic fields where there is good air movement to promote rapid drying of foliage. Any cultural practices that facilitate air movement and drying of leaves will reduce disease severity.

### Fungicide Options

Preventive applications of fungicides to the foliage when climatic conditions favour disease development can effectively control downy mildew.

**Mancozeb** at 750 g/kg (various trade names). A protectant fungicide registered in all states for control of downy mildew in garlic. Apply as a cover spray at a rate of 150 to 200g per 100 litres of water when disease symptoms first appear. Repeat at seven to ten day intervals and use higher rate if conditions favour disease development. Mancozeb has a seven day withholding period for garlic.

**Metiram** at 700 g/kg (Polyram®). A protectant fungicide registered in all states for control of downy mildew in garlic. Apply as a cover spray at a rate of 2.2 to 3.5kg per 100 litres of water when disease symptoms first appear. Repeat as at seven to ten day intervals and use higher rate if conditions favour disease development. Metiram has a seven day withholding period for garlic.

**Phosphorous Acid** at 600g/L (Agri-Fos 600®). A curative fungicide with a permit to use in all states for the suppression of downy mildew in garlic (note: permit expires in September 2017). Apply at a rate of 3 L/ha when conditions favour disease development. Phosphorous acid has a one day withholding period for garlic.

**Mancozeb** at 640g/kg and **Metalaxyl** at 40g/kg (Ridomil Gold MZ®). A protective fungicide with some curative properties. There is a permit to use Ridomil Gold in NSW, SA and Tas for control of garlic rust in garlic (note: permit expires in December 2012). Victoria growers can also use this product due to Victoria's 'control-of use' legislation. Apply at a rate of 2.5 kg/ha in a protectant fungicide program. Only four applications are allowed per crop with a seven day withholding period for garlic.