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MUNGBEAN POWDERY MILDEW MANAGEMENT WITH FUNGICIDE

Mungbean powdery mildew management with fungicide (<https://communities.grdc.com.au/field-crop-diseases/mungbean-powdery-mildew-fungicide/>)

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Figure 1 Powdery mildew of mungbean, white fungal growth, on upper leaves of maturing mungbean plants. Source: Adam Sparks, USQ

Caused by the fungus *Podosphaera xanthii*, powdery mildew of mungbean is responsible for yield losses of up to 40% in susceptible varieties within Australia. Plants are susceptible to the disease from the seedling stage onwards, with the first sign of infection being small, white circular patches on the lower leaves (Figure 1). The disease is favoured by cool (20 – 25°C) moderately humid, but not wet, weather conditions that are most frequent in later planted crops. Infections often start appearing in February and become most apparent in March or April when whole plants, including leaves and pods, may become covered in white or grey fungal growth (Figure 2). In severe cases plants exhibit bronzing and premature leaf dropping. The disease develops rapidly, spreading across individual leaves and up the plant until eventually the entire plant is covered in powdery white growth.



Figure 2 Mungbean plants exhibiting severe powdery mildew symptoms, greyish-white fungal growth on the leaves throughout the canopy. Source: Adam Sparks, USQ

While infection occurs when the plant comes into contact with airborne spores, the pathogen needs a living host for survival between seasons. The infection cycle takes as little as 5 days from spore germination to the production of spore-bearing structures which provide a source of reinfection, therefore timely management strategies are key.

Fungicide management

Management of mungbean powdery mildew relies on the use of varieties with the highest possible levels of resistance and on the strategic application of fungicides. The varieties Jade-AU and cv. Green Diamond have the highest level of resistance to *P. xanthii* (moderately susceptible; MS), with all other Australian varieties being susceptible (S) or highly susceptible (HS).

Trials led by Queensland DAF and USQ Centre for Crop Health demonstrated that timely fungicide sprays were effectively managing powdery mildew in mungbeans. The most effective timing for the first fungicide application is from the first sign of the disease in the canopy until it is $\frac{1}{3}$ of the way up the plant with a second spray 14 days later being more effective than a single fungicide application.

While the efficacy of different spray schedules will vary yearly depending on weather conditions and first appearance of disease, the cost of fungicide application to control mungbean powdery mildew is generally far outweighed by the resulting return in yield.

Fungicides currently registered under permit of the treatment of powdery mildew in mungbean are:

- Folicur® Tebuconazole (PER13979 (<http://permits.apvma.gov.au/PER13979.PDF>))
- Sulphur (~~PER13605~~ (~~<http://permits.apvma.gov.au/PER13605.PDF>~~) – expires 30th September 2018)
- Custodia® (PER82104 (<http://permits.apvma.gov.au/PER82104.PDF>) – expires 30th November 2019)

Further Information

- Mungbean and sorghum disease update (<https://grdc.com.au/resources-and-publications/grdc-update-papers/tab-content/grdc-update-papers/2017/07/mungbean-and-sorghum-disease-update>) – 2017 GRDC Update Paper
- Fungicide management of mungbean powdery mildew (<https://grdc.com.au/Research-and-Development/GRDC-Update-Papers/2016/06/Fungicide-management-of-mungbean-powdery-mildew>) – 2016 GRDC Update Paper

- Mungbeans vs fungus: two sprays for optimum control (<https://grdc.com.au/GC124-MungbeansVsFungus>) – GroundCover Article

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