

Australian Garlic Industry Association Information Sheet



GARLIC RUST

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Symptoms

Garlic rust is caused by the fungus *Puccinia allii*. Early symptoms are small white to yellow spots or flecks on leaves that turn yellow to orange. The symptoms first appear on the underside of leaves. The yellow to orange spots are pustules containing spores. As the pustules rupture, the orange coloured spores are revealed and then released for wind movement and splashing via rain or irrigation. Spores are microscopic reproductive structures produced by fungi. As the disease spreads the leaves can become so heavily infected, they appear almost orange in colour. Pustules later develop on both sides of leaves and turn black as they mature.



Garlic rust symptoms

Source of Infection and Spread

The orange spores infect the garlic leaves in the same season. They are disseminated by wind and spread long distances. Later when the pustules turn black, and new type of spores are produced which are black. These black spores can survive for long periods of time and are a source of inoculum for infections of successive crops. Spores are readily transported on people, animals and farm equipment. Disease development depends on moisture, temperature and available inoculum. Temperatures between 12 °C and 21 °C with a leaf wetness of at least four hours are required for disease development. The orange coloured spores need free moisture to germinate and infect a leaf. Dense plantings and high nitrogen applications also favour disease development.

Management

Remove crop residues after harvest or incorporate into soil. Burning crop residue is also useful in minimising spore loads. Rotate garlic with non allium species. Adopt irrigation practices that reduce leaf wetness. Drip irrigation is much better than overhead irrigation for rust management. Fungicide options are available but protective fungicides need to be applied to protect the leaf from infection, particularly important for new growth.

Fungicide Options

Copper oxychloride at 500 g/kg (various trade names). A protectant fungicide registered for use in NSW, ACT, Vic, Tas, SA and WA for control of rust in garlic. Apply as a cover spray at a rate of 250g per 100 litres of water at first stage of disease development. Repeat at 14 day intervals under normal conditions and seven day intervals if conditions favour disease development. Copper oxychloride has a one day withholding period for garlic.

Sulphur at 800 g/L (various trade names). A protectant fungicide registered in all states for control of rust in garlic. Apply as a cover spray at a rate of 200 to 300mL per 100 litres of water at first stage of disease development. Repeat as necessary and use higher rate if conditions favour disease development.

Sulphur at 200 g/L (Lime Sulphur®). A protectant fungicide registered in all states for control of rust in garlic. Apply as a cover spray at a rate of 1L per 100 litres of water at first stage of disease development and repeat as necessary. There is no withholding period for sulphur in garlic.

Tebuconazole at 430 g/L (Folicur®). A curative fungicide with a permit to use in NSW and Tas for control of garlic rust in garlic (note: permit expires in March 2013). Victoria growers can also use this product due to Victoria's 'control-of use' legislation. Apply at a rate of 290 mL/ha when disease is in the early development stage then alternate with one of the above protectant fungicides. Only two applications are allowed per crop with a minimum re-treatment interval of 14 days. Tebuconazole has a 14 day withholding period for garlic.