

Bean rust

Uromyces appendiculatus



Bean rust (photo by Nilanka Herath, Department of Agriculture, Sri Lanka)



Symptoms on bean leaf (photo by AgrEvo)



Telia of bean rust (*Uromyces appendiculatus*) on the stem of a bean plant (Howard F. Schwartz, Colorado State University, Bugwood.org)

Prevention	Monitoring	Direct Control
<ul style="list-style-type: none"> • Plant resistant varieties if available • Use clean bean seeds originating from non-diseased plants or from certified seed dealers • Avoid planting new bean crop next to an old bean field since the fungus is spread by the wind and by water (splashing) • Keep field weed free. Be sure to remove alternate host plants e.g. <i>Oxalis</i> spp. and volunteer bean plants • Avoid walking through the field during wet weather to prevent disease spread from one plant to another • Carry out mixed intercropping with maize which blocks the spread of fungal spores between bean plants • Avoid long periods of leaf wetness by carefully selecting planting dates and avoiding watering at night when temperatures are cooler and less evaporation happens • Avoid over application of nitrogen (delays plant maturity) and ensure adequate potassium fertilization to promote healthy growth • Maximise air flow around the plants by spacing plants well apart (e.g. plant bush bean rows 60-90 cm apart; plant single seeds within rows 5-10 cm apart, or 20 cm apart if planting two seeds per stand) and avoiding damp humid sites • Practise two year crop rotation with non-leguminous plants such as tomatoes, cabbages and kales 	<ul style="list-style-type: none"> • Additional relevant crops: peas, sweet pea, other legumes • Monitor beans particularly closely during blossom and early pod development • Early symptoms are small, slightly raised white to pale yellow spots on the upper and/or lower leaf surfaces • The white/pale yellow spots enlarge and become reddish-brown powdery spots, about 3 mm wide. These spots may be surrounded by a yellow halo-like border • Also look out for spots on the petioles, pods and the stem. • Leaves may curl up, dry up, turn brown and drop off prematurely if the infestation is severe • Pod set, pod fill and seed size can be reduced • Spots may eventually turn brownish-black • Bean rust can be distinguished from leaf spots caused by blights and bronzing by the fact that the reddish-brown powdery spots will rub off on your finger • Infections that occur at or after pod bump and stripe don't usually cause significant economic loss, so control is less essential 	<ul style="list-style-type: none"> • Pick affected leaves, take away from the field in a plastic bag and destroy by burning (if allowed in your area) as soon as possible to prevent spores from spreading • After harvest, remove and burn old crop residues since the disease can live for one year on the material left in the field • If infestation is severe, deep plough field to about 45 cm to turn any remaining residues into the soil. This will encourage the plant remains to rot and reduce the amount of fungal disease carried over to the next bean season

Note: Pesticides may be available to control this pest. Please check with the Ministry of Agriculture in your country to find out which pesticides are registered in your country and the local restrictions for their use.