



KARI e-Mimi Fact Sheet No.5/2014

Disease name: Bacterial wilt

<p>Description</p>	<p>Bacterial wilt (BW), also known as brown rot, is the most serious bacterial disease affecting potato production. It is caused by the bacterium <i>Ralstonia solanacearum</i> (formerly <i>Pseudomonas solanacearum</i>). There are four races of the bacterium, with some being host specific whilst others have a wide host range. The pathogen affects more than 30 plant families, including crops and wild plants, sometimes without symptom expression.</p> <p>The bacterium can survive in soil for long periods and can be transmitted to new areas through infected ('sick') tubers, contaminated farm tools/implements, run-off water, human/animal movement (shoes/hooves) and contaminated compost or manure.</p>
<p>Diagnosis/Identification/ Detection</p>	<p>Bacterial wilt in the field can be identified with its characteristic wilting (withering) and rapid plant-collapsing symptom. Wilting may be on leaflets, whole leaves, some shoots, or whole plants.</p> <p>Infection in a wilted plant can be demonstrated by cutting a segment from the lower part of the stem and suspending it in clear water; in this case, characteristic 'smoke-like' strands of bacterial cells flow through the water.</p> <p>Other symptoms include:</p> <ul style="list-style-type: none"> ➤ Soil adhering (sticking) to the 'eyes'. ➤ Creamy white, slimy ooze from tuber 'eyes'. ➤ Slimy ooze from vascular ring of a cut tuber. ➤ Browning of the vascular ring. ➤ Whole tuber rotting and often with a characteristic smell. <p>Classical isolation procedures as well as immunological and molecular tests (need chemicals and laboratory) can also be carried out in a laboratory to confirm the presence or absence of the bacterium in soil and/or plant material.</p>
<p>Photo gallery</p>	

	<p>A collapsed bacterial wilt-affected potato plant</p>	<p>A wilted tomato plant</p>	<p>Bacterial streaming from an infected stem segment suspended in water</p>
	 <p>Soil adhering to tuber eyes due to bacterial slime</p>	 <p>Browning of vascular ring in a sectioned potato tuber</p>	 <p>Bacterial ooze vascular ring in a sectioned potato tuber</p>

<p>Management</p>	<p>In the event of evident cases of bacterial wilt,</p> <ol style="list-style-type: none"> 1. Uproot and destroy (e.g. by burning or burying) all the diseased plants as soon as they are detected. 2. Disinfect farm implements (e.g. pangas, jembes, ploughs, pegs and sprinkler stands) and shoes/boots after use on land that has bacterial wilt cases. A jik solution (dilution of 500 ml in 10 litres of water) can be used for washing the implements. 3. Control run-off water from infected areas to clean areas to avoid spreading of the bacterium. Workers should start working from the disease-free areas before proceeding to the affected parts of the field. 4. Practise crop rotation with crops like maize, beans, carrots, garden peas, onions, spinach, cabbages, kales, sweet potatoes, strawberry, courgettes and cucumber. Avoid planting capsicum, eggplant, potatoes, tomatoes and tobacco on the affected soil for a period of at least 3 years. 5. Always keep the field free of volunteer potato plants and other hosts, including weeds as some act as alternate hosts to the bacterium. 6. After clearing the affected field of the affected plants, you can apply soil fumigants such as Metham Sodium or Basamid Granular to control most of the soil borne pathogens. Always follow the manufacturer's recommendations. <p>In order to prevent infestation of new areas:</p> <ol style="list-style-type: none"> i) Plant BW-free seed tubers (seed from known source or certified seed) or seedlings (for tomato, capsicum, eggplant, etc) in BW-free fields (make reference to cropping history). ii) Protect from contamination e.g. by restricting movement, especially in seed potato fields; workers should start working from the disease free areas before proceeding to affected parts of a field/farm. iii) Disinfect farm implements, especially if used in areas suspected to be infested by <i>R. solanacearum</i>. iv) Control run-off water which may be coming from affected areas to avoid introduction of the bacterium.
<p>Reference Links</p>	<ul style="list-style-type: none"> • Kinyua, Z.M., J.J. Smith, C. Lung'aho, M. Olanya and S. Priou (2001). Onfarm successes and challenges of producing bacterial wilt-free tubers in seed plots in Kenya. <i>African Crop Science Journal</i> 9: 279-285. (Google for the paper).

	<ul style="list-style-type: none"> • http://www.dpi.vic.gov.au/agriculture/pests-diseases-andweeds/plantdiseases/vegetable-diseases/potato-diseases/potatoesbacterial-wilt
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