

Potato bacterial wilt Race 3 biovar 2 (479)

Summary

- Worldwide distribution. In Australia, New Zealand, New Caledonia, Papua New Guinea.
- A devastating disease of potato; also affecting tomatoes, eggplants, and others. Entry through roots: leaves rapidly turn yellowish and wilt; stems show browning and ooze from vascular areas; plants collapse and die. Ooze too from 'eyes' (buds) of tubers.
- Spread: short distances by run-off water; longer distances by movement of infected tubers, soil on machinery, shoes. Possibly insects. Survival: in soil up to 2 years; on volunteers, weeds, roots of non-hosts.
- Biosecurity: protocols needed to respond to a breach, and a plan should eradication fail.
- Cultural control: use only certified seed; avoid cutting tubers; avoid land where diseases previously occurred, or have 2-3 year (preferably 4) rotation with unrelated crops (cereals, sweet potato, cabbages, onions); improve drainage using ridges or raised beds; rogue disease plants; clean machinery, tools, footwear after working in infested fields; collect debris after harvest and burn.
- Chemical control: not appropriate for this disease.

Common Name

Brown rot of potato. It is also known as bacterial wilt of potato.

Scientific Name

Ralstonia solanacearum Race 3 biovar 2. Other names are: *Bacillus solanacearum*, *Burkholderia solanacearum*, and *Pseudomonas solanacearum*. There are five races of *Ralstonia solanacearum*: Race 1 has a host range of over 50 plant families (200 plant species), including chilli, capsicum, peanut, and *Solanum* species (but more rarely on potato); race 2 mostly affects banana and *Heliconia*, Race 4, ginger, and Race 5, mulberry.

Under a revised classification system (2005), and based on DNA sequencing, *Ralstonia solanacearum* has been divided into four groups, reflecting geography (phylotypes), and further by genetic sequence of an important gene (sequevars). By this method potato brown rot is Phylotype II, sequevars 1&2.



Photo 1. Bacterial wilt on potato caused by *Ralstonia solanacearum* (Fiji). Some leaves only are wilting.



Photo 2. Internal browning of tomato caused by bacterial wilt, *Ralstonia solanacearum* (USA).



Photo 3. Bacterial wilt streaming, *Ralstonia solanacearum*. A white 'smoke-like' discharge occurs from the cut end of an infected stem (tomato) when placed in water.



Photo 4. Bacterial ooze, *Ralstonia solanacearum*, on 'eyes' of potato (UK).



Photo 5. Cross-section of potato tuber showing brown ring of vascular tissues caused by brown rot bacterium, *Ralstonia solanacearum*.



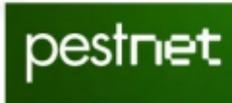
Photo 6. Collapse of potato caused by bacterial wilt, *Ralstonia solanacearum* (The Netherlands).

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Information from Charkowski A, *et al.* (2020) Bacterial Diseases of Potato. In: Campos H, Ortiz O (eds) The Potato Crop. Springer, Cham. (https://doi.org/10.1007/978-3-030-28683-5_10); and Lemay A, *et al.* (2003) Pest Data Sheet *Ralstonia solanacearum* race 3 biovar 2. USDA/APHIS/PPQ Center for Plant Health Science and Technology Plant Epidemiology and Risk Analysis Laboratory Raleigh, NC, USA. (https://plantpath.ifas.ufl.edu/rsol/RalstoniaPublications_PDF/USDARalstoniaPestDataSheet_2003.pdf); and from Sullivan M, *et al.*, (2013) CPHST Pest Datasheet for *Ralstonia solanacearum* race 3 biovar 2. USDA-APHIS-PPQ-CPHST. (<http://download.ceris.purdue.edu/file/1610>). Photo 1 Anare Caucau, Koronivia Research Station, MoA, Fiji. Photo 2 Clemson University - USDA Cooperative Extension Slide Series, Bugwood.org. Photo 4 Central Science Laboratory, Harpenden, British Crown, Bugwood.org. Photo 5 Ministry of Agriculture and Rural Affairs, Bugwood.org (<https://www.forestryimages.org/browse/subthumb.cfm?sub=10469>). Photo 6 National Plant Protection Organization, the Netherlands.

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