

Rice bakanae disease (429)

Summary

- Widespread. Africa, Asia, North, South, Central America, the Caribbean, Europe, Oceania. In America Samoa, Australia, Fiji, Guam, New Caledonia, New Caledonia, Papua New Guinea, Solomon Islands, Vanuatu.
- Moderately serious fungal disease. On rice and many other crops (e.g., maize, sorghum, sugarcane) and weeds; those of economic importance in grass family. IRRI reports losses of up to 20% in Asia. Reported a serious seedborne and soilborne disease of dryland rice in Fiji.
- Infected seed results in poor emergence, or those that emerge are tall, thin yellow-green with few tillers and usually die. Survivors bear panicles of empty grain, with pink-white fungal growth at soil level, moving up the stem; nodes become pink to purple and form roots. Spores develop on the stems, either asexual 'conidia' or sexual 'ascospores' leading to contaminated and/or infected seed. Soilborne infections cause root rots.
- Spread by spores on the wind or in water. Long-distance spread on and in seed. Survival in seed (1-2 years), in soil (1 year), and in plant debris. IRRI reports seedborne levels of up to 25%.
- Cultural control: rotate after 2 years with vegetables or root crops; if practical, pull out infected plants; collect straw and burn, or plough in stubble and straw after harvest.
- Chemical control: seed treatments - use thiram or thiram plus thiophanate-methyl, or fungicides in azole and strobilurin groups.

Common Name

Bakanae disease of rice; also known as Fool's rice. *Bakanae* is from the Japanese for 'foolish seedling'. On maize it is known as maize Fusarium kernel rot (see **Fact Sheet no. 224**).

Scientific Name

Gibberella fujikuroi. The asexual state is *Fusarium moniliforme*. There are three mating groups.

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Information (and Photo 2) from Bakanae. Rice Knowledge Bank. IRRI. (<http://www.knowledgebank.irri.org/training/fact-sheets/pest-management/diseases/item/bakanae>); and CABI (2018) *Gibberella fujikuroi* (bakanae disease of rice). Crop Protection Compendium. (<https://www.cabi.org/cpc/datasheet/25158>); and Bakanae. Department of Primary Industries, NSW Government, Australia. (<https://www.dpi.nsw.gov.au/biosecurity/plant/insect-pests-and-plant-diseases/Bakanae>); and from Graham KM (1971) *Plant diseases of Fiji*. Her Majesty's Stationery Office. London. Photo 1&3 O.P. Sharma, NCIPM, New Delhi, India, Bugwood.org).

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Photo 1. *Bakanae* disease, *Gibberella fujikuroi*, as it appears in the field.



Photo 2. Comparison of symptoms: rice infected by *bakanae* disease, *Gibberella fujikuroi* (left), and healthy plant (right).



Photo 3. Roots from lower nodes on a plant with *bakanae* disease, *Gibberella fujikuroi*.

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