

Bacterial blight (*Xanthomonas oryzae* pv. *oryzae*)

Causal agent: Bacteria



Fig 1. Colony morphology of *X. oryzae* on Peptone sucrose Agar plate (source: Ranjan et al. 2018: Microbiology & Biotechnology Letters)

Favorable conditions for disease development

- Disease development is favored by temperatures between 26-34°C. (optimum temperature for initial infection is 20°C) and a relative humidity (RH) above 70%.
- The bacteria infects rice and many grasses (such as Barnyard and Bermuda grass).
- Under high RH the bacteria oozes from leaf lesions and is spread by wind, splashes of irrigation or stormy rains.
- Upon landing on susceptible host, bacteria germinates and penetrates through wounds and natural openings (such as stomata).
- The bacteria can multiply and survive in other host grasses and infected rice stubbles between seasons.
- The infected rice materials became source of inoculum in the subsequent seasons.
- The inoculum lasts for about two weeks on bare soil.

Geographical Distribution

- The disease has been reported in some rice growing area of Kenya, Uganda and Tanzania.

Crop Damage and associated loss

- The bacteria invades and blocks the water conducting vessels of rice.
- The infected leaves turn grayish-green and roll up. Later, the leaves turn yellow to straw-color and finally wilt which may lead to death of the plant.
- Damage in seedlings are characterised by a yellowish ooze which comes out when basal end of the plant is squeezed.
- On mature plants the symptoms appear as water-soaked lesions, yellow-orange stripes on leaf blades or leaf tips.
- Yield loss of up to 100% have been reported in West Africa.



Fig 2. Bacterial blight



Fig 3. Bacterial ooze



Fig 4. Dried up bacterial



Fig 5. Blight progression on leaf

Management Strategies

Cultural control

- Enhance general crop health through application of fertilisers at recommended rates (*refer to Agronomic Practices Factsheet*).
- Enhance unfavorable RH for the bacteria by adoption of alternate wetting and drying of tilled plots.
- Prevent multiplication of the bacteria in alternate hosts by maintaining a clean rice field through timely removal of weeds, rice stubble, straw, rice ratoons and volunteer seedlings.
- Break the disease cycle by drying up the bacterial inoculum, leave the fields fallow for a season.

Resistant cultivars

- Some African cultivars (such as NERICAs 1, 4, 10 and 11, and Dourado Precoce) possess resistance to blight disease. However, this trait has not been bred into the most preferred cultivars.