Bacterial Leaf Streak of Rice
Xanthomonas oryzae pv. *oryzicola*

Hosts: Rice (*Oryza sativa* and *Oryza perennis*), Australian rice (*Oryza australiensis*), and species of wild rice, including *Oryza spontanea*, *Oryza perennis balunga*, *Oryza nivara*, *Oryza breviligulata*, *Oryza glaberrima*, *Leersia hexandra*, and possibly *Zizania aquatica*.

Disease common name: Bacterial leaf streak of rice.

Pathogen: *Xanthomonas oryzae* pv. *oryzicola*.

Disease Cycle

Inoculum: Bacteria are found in infested seed and straw.

Transmission: Bacteria are spread in fields by mechanical contact, rain, and irrigation water. Seed transmission is very important, but the part played by weeds is not well understood. It has been thought that seed transmission can occur from one summer season to the next but not if seed is sown during the winter season, since the pathogen does not become established in cool, dry, winter weather.

Infection: Bacteria enter the leaf through stomata or wounds and multiply in parenchymatous tissue. Disease development is favored by rain, high humidity, and moderate to high temperatures (28–40°C).

Symptoms and signs: First symptoms are small, water-soaked streaks that elongate and darken. The streaks enlarge, turn yellowish orange to brown depending on the cultivar, and eventually coalesce (Fig. 1). Tiny amber droplets of bacterial ooze are often present on the lesions (Figs. 2 and 3). Lesions tend to be delimited by veins and occur anywhere on the leaf. In later stages, leaves wither and turn brown, and the disease is then difficult to distinguish from bacterial blight, caused by *Xanthomonas oryzae* pv. *oryzae* (Fig. 4). However, lesion margins remain linear rather than becoming wavy, as is the case with blight. Damage is often associated with rice leaf rollers, rice leaf folders, and hispa beetles, since bacteria readily enter the damaged tissue from insect feeding.

Survival: The bacterium survives on infested seed and straw and for short periods in irrigation water.

Disease Management

Primary control of the disease is by planting resistant cultivars and using seed treatments.

References

Benedict, A. A., Alvarez, A. M., Berestecky, J., Imanaka, W., Mizumoto, C. Y., Pollard, L. W., Mew, T. W., and Gonzalez, C. F. 1989. Pathovar-specific monoclonal antibodies for *Xanthomonas campestris* pv. *oryzae* and for *Xanthomonas campestris* pv. *oryzicola*. Phytopathology 79:322-328.

Bradbury, J. F. 1986. Guide to Plant Pathogenic Bacteria. CAB International, Slough, U.K.

Mew, T. W. 1993. *Xanthomonas oryzae* pathovars on rice: Cause of bacterial blight and bacterial leaf streak. Pages 30-40 in: *Xanthomonas*. J. G. Swings and E. L. Civerolo, eds. Chapman and Hall, London.

Webster, R. K., and Gunnell, P. S., eds. 1992. Compendium of Rice Diseases. American Phytopathological Society, St. Paul. MN.

Figure 1. Severely infected leaves with light brown streaks. (Courtesy H. Kaku/M. Goto)

Figure 2. Tiny droplets (visible when enlarged) of bacterial ooze from lesions resulting from artificial inoculation. (Courtesy H. Kaku/M. Goto)

Figure 3. Turbid bacterial ooze from infected margin on the right side. Normal clear gutattion on uninfected side. (Courtesy A. Hayward)

Figure 4. White streak caused by *Xanthomonas oryzae* pv. *oryzae* on the right. Water-soaked streaks and yellow ooze caused by *Xanthomonas oryzae* pv. *oryzicola* on the left. (Courtesy T. Mew)