SHORT COMMUNICATION

SHEATH BLOTCH OF RICE - A NEW REPORT IN PAPUA NEW GUINEA

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ABSTRACT

Sheath blotch of rice, caused by *Pyrenochaeta oryzae* was reported for the first time in Papua New Guinea (PNG). The pathogenicity was confirmed through artifical inoculation. Seasonal carryover, pre-disposing factors and management stategy of the disease are also discussed.

Keywords: *Rice, Sheath blotch.*

INTRODUCTION

Sheath blotch, a minor disease of rice, caused by *Pyrenochaeta oryzae* was first described in Japan by Miyake (1910). The disease has also been reported to occur in Bangladesh, Burma, China, India, Malaysia, Sierra Leone, Philippines and Thailand (Shahjahan *et al.* 1983).

The disease normally attacks the lower leaf sheath near the lower part of the stem, but occasionally found on the leaf blade and glumes at the later stages of plant growth. The initial symptoms are dark brown, oblong blotching on the leaf sheath. As the symptoms mature, the center gradually becomes grey or greyish - brown but the margins remain dark brown. The center of the spots becomes a bit sunken and associated with black pycnidia, protruding ostioles and setae merged from the sheath tissue. The blotches ultimately girdle the entire sheath and the leaves die. This in turn reduces the photosynthetic area, making the plants weaker and vulnerable to lodging, and ultimately affects grain filling.

MATERIALS AND METHODS

In August 2001, symptoms typical to the sheath blotch was observed on the rice var. IR 19661 at the Agricultural farm of the PNG University of Technology, Lae, Morobe Province of PNG, situated at 6°45' S and 147° E at an altitude of 65 m.a.s.l. Infected sheaths were collected from the field and brought to the laboratory. In preparation for the isolation of the causal organism, inocula were prepared by cutting small pieces of about 9 mm^2 from the lesion margins, and surface sterilized by dipping into one percent sodium-hypochlorite solution for two minutes. The sterilizing solution was decanted and the inocula were washed thoroughly with distilled water. Four inocula were then placed on the potato dextrose agar (PDA) plates. The plates were incubated at room temperature of about 25° C. In 2-3 days time, the fungus started to grow onto the culture medium. The fungus was transferred to one peercent water agar plates and subsequently purified through hyphal tip culture. On PDA medium, the fungus produced pycnidia and singled celled, hyaline pycnidiospores in 15-20 day-old cultures. The fungus was idendified as *Pyrenochaeta* sp. as described by Barnett & Hunter 1998.

To complete Koch's postulates, IR 19661 plants were inoculated at booting stage with the fungus in the screen house. Agar blocks with the 5-day-old fungus were placed on slightly wounded leaf sheaths with sticky tape.

RESULTS AND DISCUSSION

Water soaked lesions and brownish blotching similar to those found in the field were produced in 5-7 days after artificial inoculation (see photograph) of the IR 19661 rice plants in the screen house. *Pyrenochaeta* sp. was re-isolated from the artificially inoculated plants confirming the pathogenic cause of the disease. This is the first report of the occurrence of rice sheath blotch in Papua New Guinea. The disease with low to moderate level of infection was also observed in several rice varieties in Clean Water Trukai farm in Markham Valley, Lae. The primary infection takes place from the fungus in the infected straw and/or from the soil. The disease is aggravated with insect damage that makes the plant weaker and planting of susceptible rice varieties

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Figure 1. **Showing the typical sheath blotch symptoms on IR 19661 on artificial inoculation with *Pyrenochaeta* sp. in the screen house.**

(Miah & Shahjahan 1987). High temperature accompanied by high humidity further aggravates the disease. As a preventive measure, it is advisable to protect the crop from insect damage and to destroy/ burn the infected straws in order to reduce the inoculum level in the soil that might otherwise initiate new infections (Miah & Shahjahan 1987). Despite the disease is currently of minor concern, it could become a major threat when when the rice cultivation in PNG extends in the future. This warrants a nationwide survey to determine the epidemiology, distribution and the possible impact of the sheath blotch on the rice industry in Papua New Guinea.

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