

# *Leersia hexandra*—A HOST PLANT OF BACTERIAL LEAF BLIGHT

by

Chi-lu Chu and Chin-chung Chien<sup>2</sup>

ABSTRACT: In attempt to find alternative host plants of *Xanthomonas oryzae*, five paddy weeds, *Leersia hexandra*, *Cynodon dactylon*, *Brachiaria mutica*, *B. subquadrifida* and *Echinochloa crusgalli* were tested. Among them *Leersia hexandra* was found to be the weed host of this bacteria.

The symptom on leaf blade of *L. hexandra* usually begin at the main leaf veins after inoculation with clipping method. As the disease advances, the lesion turns clove brown in color and the region near the healthy part shows water soaking.

Owing to the tendency of more fertilizer applied in cultivation and more indica type rice were released to the farmer<sup>(2)</sup>, the disease caused by *X. oryzae* resulted a serious problem in recent years in Taiwan. Up to the present, control measures of this disease are still unsatisfactory. Many methods may serve to get effective control of the disease, one of the possible methods is eradication of the alternative host plant. Therefore, existence of susceptible weeds in the field may play an important role in dispersion of the disease.

The weed hosts of *X. oryzae* in Japan were first found by artificial inoculation.<sup>(1)</sup> Among them, *Leersia sayanuka* is the most important as it serves as a common overwintering host. *L. oryzoides*, *L. japonica* and *Zizania latifolia* are also naturally infected<sup>(5)</sup>.

In the tropics such as in the Philippines and India, a few papers also reported the existence of the weed hosts of the pathogen<sup>(4)</sup>. A species of gramineous plant, *Leersia hexandra*, which is distributed widely in paddy field in Taiwan, were reported herein as a weed host of *X. oryzae*.

## Materials and Methods

### The pathogen and the test plants

Isolate 604 serves as pathogen which showed high virulence in pathogenicity. The test plants employed were as follows:

1. Report of Taiwan Agricultural Research Institute No. (Q) 712. This study was supported by a grant from JCRR.
2. Associate and senior specialist respectively, Department of Plant Pathology, Taiwan Agricultural Research Institute.
3. The author wishes to thank Dr. R. J. Chiu, Plant Pathologist, Joint Commission on Rural Reconstruction, for his guidance in conducting this study. Thanks also due to Dr. C. C. Hsu, Professor of Department of Botany, National Taiwan University, for the identification of the weeds.

- (1) Rice plant of Tainan 5
- (2) Five weed plants including:
  - (a) *Leersia hexandra*
  - (b) *Cynodon dactylon*
  - (c) *Brachiaria mutica*
  - (d) *B. subquadrifida*
  - (e) *Echinochloa crusgalli*

### **The preparation of the inoculum**

The organisms were cultured with Wakimoto's semi-synthetic medium(6) in slant culture and transferred to liquid medium for 24-hour shaking to produce the inoculum for inoculation.

### **The concentration of bacterial cells in suspension**

Generally, the concentration of bacterial cells takes great influence on the infection of bacterial leaf blight of rice, especially on the incubation period and the development of the disease. The concentration of the inoculum used in the experiment was  $10^8$  cells/ml.

### **Inoculation**

The inoculation was conducted with clipping method(3) during the test plants were reached 3—4 leaf stage, then observe the reactions two weeks later.

## **Results and Discussion**

The results were investigated 14 days after inoculation. Among five paddy weeds tested, *L. hexandra* was found to be the host of *X. oryzae*, while the rest of the weeds showed no symptoms on the inoculated portions.

Lesions on leaf blades usually begin at the main leaf veins 2 weeks after inoculation. The lesions are yellowish at first, gradually enlarge both in length and width, and finally turn to clove brown in color(Fig. 2). The regions near the healthy parts showed soaking.

In comparison of the extending rate of lesion, the rate on *L. hexandra* was relatively slower than that on rice plant. For the purpose of proving the pathogenicity of *X. oryzae* isolated to *L. hexandra*, inoculation and reisolation were made for several times. The pathogenicity of *X. oryzae* isolated from *L. hexandra* was similar to that from rice plant, but we found the percentage of successful isolation from infected tissue of *L. hexandra* was lower than that from rice plant. Perhaps, the weed plant is a weak host, and is not a suitable one for the pathogen. Since this weed, *L. hexandra* (Fig. 1) is a common plant growing in paddy field in Taiwan, it is supposed that this weed might be the overwintering host of the pathogen which produced the first inoculum for disease transmission to the rice plant. Studies on pathogen survival time and overwintering period on this weed plant is now underway.

## **Literature Cited**

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# 稻白葉枯病菌之中間寄主—李氏禾 (*Leersia hexandra*)

朱啓魯 簡錦忠

## 摘 要

爲尋求稻白葉枯病菌 (*Xanthomonas oryzae*) 中間寄主，曾以 *Leersia hexandra* (李氏禾)，*Cynodon dactylon* (狗牙根)，*Brachiaria mutica* (巴拉草)，*B. subquidipara* (四生臂形草) 及 *Echinochloa crusgalli* 等五種雜草測定其對稻白葉枯病之反應。結果發現李氏禾有罹病之現象，有餘四種雜草未見顯現病徵。

於李氏禾植株上經剪葉法 (Clipping method) 接種後，病象初由葉脈顯現，病斑呈黃色，當病勢蔓延擴大後則呈褐色，同時臨近病斑之邊緣部份則呈水浸狀。



Fig. 1. Plants of *L. hexandra*

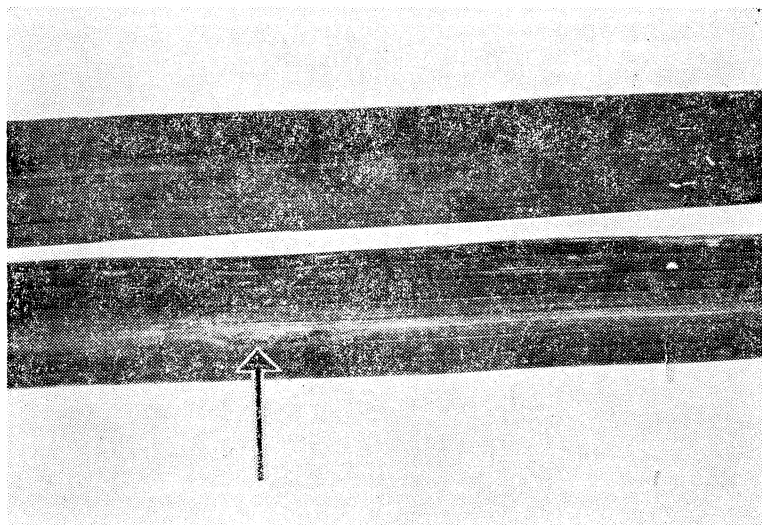


Fig. 2. Healthy leaf (upper) compare with infected leaf (lower)