

Scientific Notes

Effects of bactericides probenazole, streptomycin and tecloftalam on bacterial leaf blight of rice

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Bacterial leaf blight caused by *Xanthomonas campestris* pv. *oryzae* is one of the major disease of rice in Taiwan. According to the Annual Report of PDAF, the incidence of bacterial leaf blight was different from year to year. For 16 years its affected areas have not been over 20,000ha. However, the affected acreage has increased markedly since 1980⁽⁵⁾.

Bacterial leaf blight usually begin to appear at the maximum tillering stage and severe at the heading stage. The degree of occurrence of bacterial leaf blight may be different depending on the environmental factors such as climatic and cultural conditions. Cloudy and rainy weather is favorable for disease outbreak and prevalence, specifically in the ill-drained and lowland areas where flooding is easy to take place after heavy rain. Excess use of nitrogen fertilizer increase the disease incidence⁽³⁾.

In Japan, control of bacterial leaf blight has been extensively achieved by use of resistant varieties, improvement of cultivation practices and or application of chemicals. Chemicals have been used including chloramphenicol, streptomycin, probenazole and tecloftalam^(1,2,3).

In Taiwan, Liao et al⁽⁴⁾ has confirmed that the use of bactericides with 10% tecloftalam and oryzemate were found to be effective against the growth of *Xanthomonas campestris* pv. *oryzae* in laboratory test and leaf blight incidence in field trial under inoculation conditions.

Three bactericides were used in this experiment: Probenazole (Oryzmate, 6% G), Streptomycin (Plantomycin, 10% WP), Tecloftalam (Shirahagen, 10% WP). The experiment was conducted in the field at Chungshen Village, Omei, Hsinchu during the second crop season of 1989.

Plots size were about 20 m². A randomized complete block design with four replicates per treatment was used. Rice cultivar Tainung 67 was used in this experiment.

Tecloftalam was sprayed three times at rates of 1kg/ha and 0.67kg/ha at different growth

stages. Streptomycin was sprayed twice at rates of 1.25kg/ha and 1kg/ha. Probenazole was applied at rate of 30kg/ha at panicle exertion stage.

Disease assessment was made for four times at every 10 days from 56 days after transplanting. The first assessment was made 2 days before spray.

Disease incidence were estimated as follows:

$$\text{Disease incidence} = \frac{1B+3C+5D+7E+9F}{9 \times \text{total leaf number}} \times 100$$

where A: No lesion observable

B: Lesion length < 1cm

C: Lesion length < 1/4 length of leaf blade

D: Lesion length about 1/4-1/2 length of leaf blade

E: Lesion length > 1/2 length of leaf blade

F: Lesion extend to leaf sheath

Grain yields were determined by harvesting 12m² of rice and yield response was then calculated as $[(\text{treated} - \text{untreated}) \div \text{untreated}] \times 100$.

The effect of bactericides probenazole, streptomycin and tecloftalam on the epidemics of bacterial leaf blight are shown in Fig 1. Although significant difference in final disease rating was observed, however, significant reduction in disease increment was found during the early part of the epidemic (Fig 2).

The effect of three bactericides probenazole, streptomycin and tecloftalam on disease incidence and yield are presented in Table 1. In comparison to the control, all bactericide treatments were effective in controlling bacterial leaf blight. The disease incidence in tecloftalam treatment was significantly lower than in the control and streptomycin as well as probenazole treatments. However, disease incidence in streptomycin treatment was significantly lower than in the control and probenazole treatments. In general, the bactericides tested gave 12% to 53% of protection value as compared to the control. Yields were increased significantly by bactericide treatments. The bactericide treatments gave percent yield increase from 10% to 37% more than that of the control.

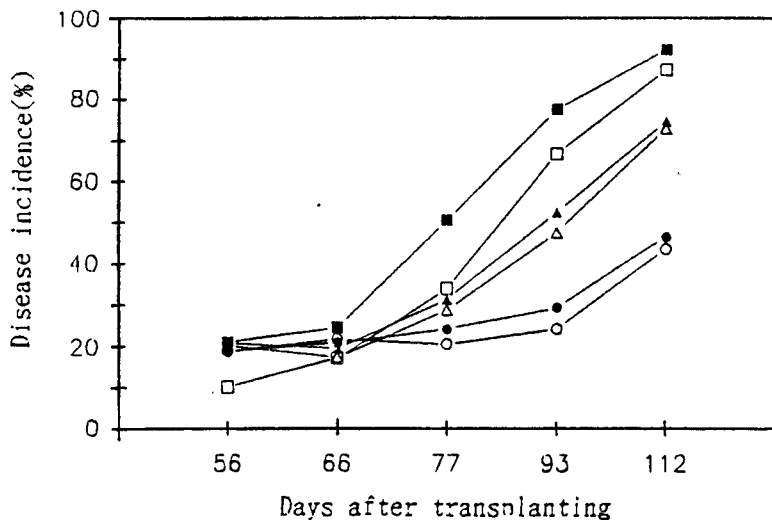


Fig. 1. Effects of bactericides probenazole, streptomycin and tecloftalam on the disease progress curves for epidemics of bacterial leaf blight.

- : 10% Tecloftalam at rate of 1kg/ha.
- : 10% Tecloftalam at rate of 0.67kg/ha.
- △ : 10% Streptomycin at rate of 1.25kg/ha.
- ▲ : 10% Streptomycin at rate of 1kg/ha.
- : 6% Probenazole at rate of 3kg/ha.
- : Check

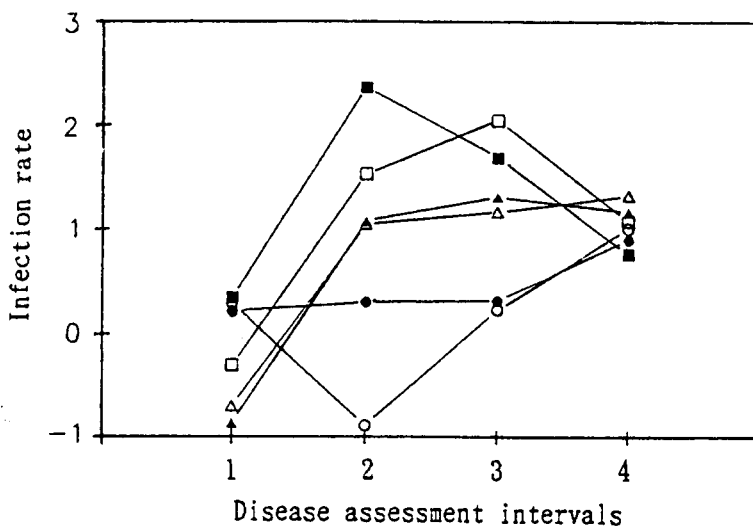


Fig. 2. Effects of bactericides probenazole, streptomycin and tecloftalam on the infection rates for epidemics of bacterial leaf blight of rice.

Table 1. Effects of different amounts of tecloftalam, streptomycin and probenazole on bacterial leaf blight

Bactericide	Dosage (kg/ha)	Final disease incidence (%)	Protection value (%)	Yield (kg/ha)	Yield response (%)
10% Tecloftalam WP	1.00	43.52 ^a	53	5,232 ^a	37
10% Tecloftalam WP	0.67	46.55 ^a	50	5,148 ^{ab}	35
10% Streptomycin WP	1.25	72.72 ^b	21	4,845 ^{bc}	27
10% Streptomycin WP	1.00	74.62 ^b	19	4,690 ^c	23
6% Probenazole G	3.00	87.28 ^c	12	4,188 ^d	10
CK		92.21 ^d	-	3,817 ^e	-

Literature Cited

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撲殺熱、鏈黴素及克枯爛對水稻白葉枯病之效應

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摘要

本試驗主要在探討撲殺熱(Probenazole)、鏈黴素(Streptomycin)及克枯爛(Tecloftalam)對水稻白葉枯病之防治效應。

試驗結果顯示：三種藥劑對白葉枯病均具防治之效果，就防治率(Protection value)而言，10%克枯爛Wp每公頃每次施用1公斤使用3次可達53%，施用量每次每公頃0.67公斤使用3次達50%；10%鏈黴素Wp.每公頃每次施用量1.25公斤使用2次達21%，每公頃每次施用量1公斤施藥2次達19%；6%撲殺熱G.每公頃每次用藥量3公頃，施藥一次，僅為12%。各種藥劑均對傳染速率(Infection rate)有減緩之作用，其中以10%克枯爛Wp最為顯著。施用藥劑後收量明顯增加，10%克枯爛Wp增收35-37%，10%鏈黴素增收23-27%，撲殺熱則增收10%。