

イネ品種あそみのりのイネ白葉枯病菌レースIIの一部の菌株 に対する質的抵抗性反応

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Qualitative Resistance Reaction of Rice Cultivar Asominori to Certain Race II Strains of *Xanthomonas campestris* pv. *oryzae*

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Key words: *Xanthomonas campestris* pv. *oryzae*, rice, resistance.

The rice cultivar Asominori has been studied for its high level of field resistance to bacterial leaf blight caused by *Xanthomonas campestris* pv. *oryzae*¹⁻³⁾. Sato *et al.*⁴⁾ observed its reactions to races (bacterial groups) I, II, III, IV and V, and reported that its reaction pattern was the same as cultivars of Kogyoku group with reaction pattern R5SSR. Due to its high level of quantitative resistance, the lesions incited by strains of races II, III and IV were very limited, but clearly susceptible.

In our test, however, Asominori showed very high, apparently qualitative resistance to certain strains of race II. We therefore report here its comparative reactions to race II strains and representative strains of races I, III, IV and V.

Three rice cultivars, Asominori, Kogyoku and Kinmaze were used for the experiment. Kogyoku is representative of the cultivar group to which Asominori belongs, and Kinmaze was used as a susceptible check. The seeds were sown in the upland nursery bed, and the seedlings were transplanted one month later to the experimental paddy field. Fully-opened uppermost leaves of the plants were inoculated by clipping inoculation technique 110 days after sowing. Eleven strains of race II and each representative strain of races I, III, IV and V were grown on potato semi-synthetic agar slant for 48 hr at 25 C. Immediately before inoculation, the bacterial cells were suspended in sterilized distilled water, and concentration of the suspension was adjusted to approximately 5×10^8 cfu/ml using a spectrophotometer. Lesion lengths of 20 inoculated leaves were recorded 21 days after inoculation.

The results are presented in Fig. 1. In Asominori, moderately long lesions appeared after inoculation with the three strains T7147, T7142 and N7605 of race II. In sharp contrast, no typical symptoms were observed after inoculation with other strains of the same race except necrosis induced by clipping. Asominori also showed symptomless type of reaction to the incompatible strains T7174 (race I) and Xo-7306 (race V), and produced short lesions by inoculation with T7133 (race III) and H75373 (race IV).

In Kogyoku, all the strains of race II induced typical symptom of yellowing, although the lesion length varied depending on their aggressiveness. Kogyoku remained symptomless after inoculation with incompatible strains T7174 and Xo-7306.

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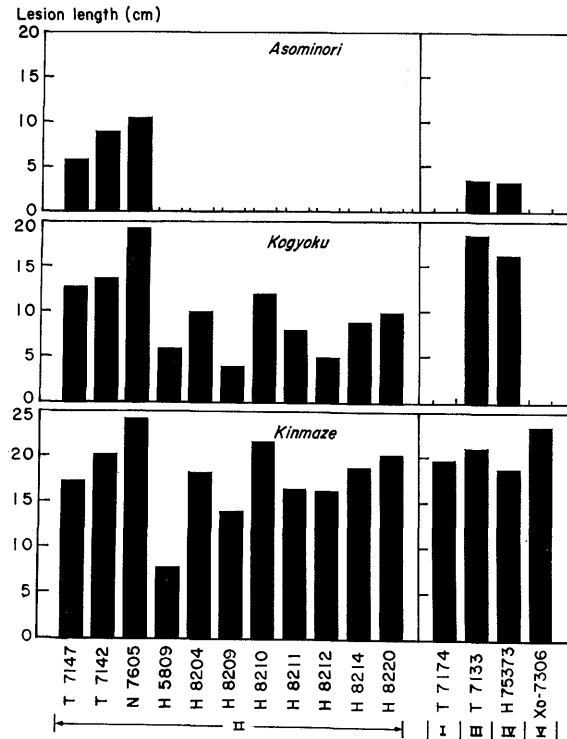


Fig. 1. Reactions of cvs. Asominori, Kogyoku and Kinmaze to race II strains and the representatives of races I, III, IV and V of *Xanthomonas campestris* pv. *oryzae*.

In the susceptible check Kinmaze, all the strains tested induced typical symptoms, and lesion lengths were much longer than those in Asominori and Kogyoku.

From these results, we concluded that reactions of Asominori to strains of race II were divided into two types: one is a short to moderately long lesion and the other is symptomless. Accordingly, it appears possible to classify strains of race II into two groups on the basis of virulence to this cultivar.

Failure of Asominori to show typical symptoms against certain strains of race II is not due to the degree of aggressiveness of the strains inoculated. They induced almost the same length of lesions as the other three strains of race II in Kinmaze. Therefore, the symptomless type of reaction appears to be based on the nature of the host resistance. We have demonstrated that resistance reaction ranges from symptomless to brown necrosis or small yellow lesion, depending on resistance genes^{5,6}). Of these reactions, symptomless type of resistance reaction has been observed only in adult plants of cultivars with *Xa-1* gene; such a reaction reflects a high degree of resistance⁷). These facts indicate that resistance of Asominori is qualitative, and suggest that the resistance is controlled by a major gene or major genes.

Genetic analysis of resistance is under way in Asominori using strains of race II failing in inducing typical symptoms.

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和 文 摘 要

加来久敏・木村俊彦：イネ品種あそみのりのイネ白葉枯病菌レースⅡの一部の菌株に対する質的抵抗性反応

高度な圃場抵抗性を有することが明らかにされている黄玉群品種あそみのりはレースⅠおよびⅤに対して質的抵抗性を、レースⅡ、ⅢおよびⅣに対して量的抵抗性を示すことが明らかにされている。しかしながら、あそみのりの日本産菌株に対する反応を再検討した結果、本品種はレースⅡに属する一部の菌株に対して無病徴型の抵抗反応を示した。それらの菌株はあそみのりで病斑を形成するレースⅡ菌株と同程度の病原力を有していたことから、あそみのりにおける無病徴型抵抗反応は接種菌株の病原力によるものではなく、同品種の質的抵抗性によるものと推定された。したがって、レースⅡはあそみのりに対する病原性から2群に分けることが可能である。

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