

Reactions of Some IR Lines of Rice to *Pyricularia oryzae* in Korea and IRRI*

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한국과 국제미작연구소에서의 몇가지 IR계통 수도에 대한 도열병 반응의 비교

정 후 섭

Since differences of geographic distributions of the pathogenic races of *Pyricularia oryzae* were demonstrated from rice growing countries in Asia⁽³⁾, some of the IR lines highly resistant to rice blast disease in Korea^(2,4) were compared at the blast nursery and the greenhouse at the International Rice Reserach Institute (IRRI).

The lines or varieties of rice tested are listed in Table 1. Pathogenic races of *Pyricularia oryzae* tested are four isolates of P8, one of each of P12, P87, and P150 at IRRI; five isolates of IG-1, three of IH-1, one

of each of IC-3, and IC-4 designated by international differential set at Suwon, Korea.

In the blast nursery test, the procedures for the international uniform blast nurseries were followed⁽⁵⁾. Pathogenic reactions of the lines or varieties to the prevalent races of *Pyricularia oryzae* were tested in the greenhouse and the methods were described elsewhere⁽⁶⁾. The varieties or lines tested were seeded on February 8 and the final readings were made on March 3, 1972 at IRRI and those in Korea were made during the period from July to October, 1971.

Table 1. The lines or varieties tested at the blast nursery.

No.	Line or Variety	Parents
1	Suwon 213	IR8 × (Yukara × TN1) ^a
2	Suwon 214	"
3	Suwon 215	"
4	Suwon 213-1	"
5	Suwon 217	"
6	Suwon 218	"
7	IR1317-266-2	Jinheung × IR262-43-8-11 ^b /2
8	IR781-137-1-2-3	IR8/2 × (Yukara × TNI)
9	IR1317-29-3	Jinheung × IR262-43-8-11/2
10	IR1317-70-1	"

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11	IR1317-89-2	"
12	IR1317-89-3	"
13	IR781B4-351-3-2-1	IR8/2×(Yukara×TNI)
14	IR1317-316-3-2	Jinheung×IR262-43-8-11/2
15	IR781B4-400-4-2-3-3	IR8/2×(Yukara×TNI)
16	IR1317-243-1-2	Jinheung×IR262-43-8-11/2
17	IR1317-316-2-2	"
18	IR781B4-400-4-3-1-2-3	IR8/2×(Yukara×TNI)
19	IR661-1-140-3	IR8×IR127-2-2
20	IR1317-81-3	Jinheung×IR262-43-8-11/2
21	Nongbaek(Japonica)	Norin 29×Ishikarishiroke
22	Jinheung (Japonica)	Norin 13×Futaba

a IR667-98

b Peta/3×TNI

Most of the IR lines of rice were highly resistant to blast disease in Korea^(2,4) whereas those of IR667 were highly susceptible at the blast nursery at IRRI. Of the nine lines of IR1317 tested, 7 lines were resistant in both countries and the rest were susceptible at IRRI while those were resistant in Korea (Table 2). But the check varieties of Japonica, Nongbaek and Jinheung were moderately resistant. It is probable that resistance of some IR1317 lines in both countries is originated from either a Japonica type, Jinheung (Norin 13×Futaba), Peta of an Indica type, or from both.

In the greenhouse test, most of the IR lines were also moderately to highly susceptible to known races of *P. ryzae* isolated from the IRRI blast nursery with a few exceptions. Nevertheless, varieties Nongbaek and Jinheung were again highly resistant regardless of the races tested (Table 3). In other studies⁽¹⁾, however, Jinheung was susceptible to two out of the six races of *P. oryzae* obtained from IRRI. The results agreed with previous studies⁽³⁾ that most varieties in each country are generally susceptible to their own local races, but resistant to races prevalent in distant countries.

Some of the IR 1317 lines of rice were known to have a broad spectrum of resistance to rice blast disease in Korea as well as at IRRI in the limited test. Since some of the IR lines have been tested only once in the blast nursery and with a relatively smaller number of isolates in the greenhouse, repeated tests are needed in order to obtain more stable and broad spectrum of resistance to blast disease as the causal organism is so variable in nature.

Table 2. Pathogenic reactions of some IR lines to *Pyricularia oryzae* in Korea and IRRI at the blast nursery.

No.	Pathogenic reaction	
	Korea*	IRRI**
1	R	7-8
2	R	"
3	R	"
4	R	"
5	R	"
6	R	"
7	R	3.
8	R	6-7
9	R	3
10	R	1.
11	R	1.
12	R	3.
13	R	7-8.
14	R	7-8.
15	R	7-8.
16	R	3.
17	R	8
18	R	8
19	R	8
20	R	3
21	R	3
22	S	3

* ORD, Korea, Annual Report for 1970. R: resistant; S: susceptible

** 1. Highly resistant 8: Highly susceptible Lower than type 3 lesions associated with a few type 4 lesions.

Table 3. Pathogenic reactions of some IR lines of rice to pathogenic races of *Pyricularia oryzae* obtained from Korea and IRRI

No.	Races from IRRI					Races from Korea ^b						
	P8					P12	P87	P150	IG-1	IH-1	IC-3	IC-4
	I	II	III	IV	V							
1	5-6 ^a	1	4	5	5	5	5	5	R	R	R	R
2	5-6	1	4	5	5	5	5	5	R	R	R	R
3	5	1	4	5	5-6	6	5	5	R	R	R	R
4	5	1	4	5-6	5-6	5	5	5	R	R	R	R
5	5	1	4	6	5	5	5	5	R	R	R	R
6	5-6	1	5	6	5	5	5	5	R	R	R	R
7	4	1	1	4	5	4	4	4	R	R	R	R
8	5-6	1	4	4	5	5	4	5	R	R	R	R
9	4	1	4	4	4	4	1	3-4	R	R	R	R
10	4	1	1	4	4	1	1	3-4	R	R	R	R
11	3-4	1	1	4	4	4	4	4	R	R	R	R
12	3	1	4	4	4	4	5	3-4	R	R	R	R
13	4	1	4	5	4	4	4	5	R	R	R	R
14	4	1	4	4	4	4	4	4	R	R	R	R
15	5-6	1	1	5	5	4	4	4	R	R	R	R
16	5	1	1	4	1	1	1	3-4	R	R	R	R
17	5	1	3-4	5	4	5	4	4	R	R	R	R
18	5	1	1	5-6	4	5-6	4	5	R	R	R	R
19	5	1	1	4	4	1	4	4	R	R	R	R
20	3-4	1	4	4	3-4	1	3	3	R	R	R	R
21	1	1	1	1	1	1	1	1	R	R	S	R
22	1	1	1	1	1	1	1	1	S ^c	S	S	R
23	4	1	1	4	6	4	5	4				
24	5	1	1	1	1	1	4	5				

a 1: Highly resistant 6: Highly susceptible

b 5 isolates of IG-1, 3 isolates of IH-1 were tested.

c The only resistant to one out of 5 isolates.

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초 록

한국의 도열병검정못자리에서 고도로 저항성인 공시한 20개의 IR계 수도가 필리핀 IRRI(국제미작연구소)에서는 모두 이병성이었으나 9계통의 IR1317 중에서 7계통만은 저항성이었다. 한편 20개의 IR계는 한국의 도열병균 레이스, 5개의 IG-1, 3개의 IH-1, 각각 한개의 IC-3, IC-4에도 모두 저항성이었으나 필리핀 레이스, 5개의 P₈, 각각 한개의 P₂, P₈₇, P₁₅₀에 대하여는 몇가지 예외를 제외하고 모두 이병성이었다. 그리고 도열병검정못자리에서나 각 레이스에 대한 온실검정에서 대조품종인 진홍은 IR계 수도와는 달리 한국에서는 이병성이었으나 IRRI에서는 저항성이었다.