RESISTANCE ASSESSMENT OF RICE CULTIVARS TO *Xanthomonas oryzae* pv. *oryzae* AND PATHOGENICITY TESTING OF BACTERIAL LEAF BLIGHT ISOLATES IN VIETNAM

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ABSTRACT

Bacterial leaf blight, caused by Xanthomonas oryzae pv. *oryzae (Xoo), is one of the most serious diseases of rice worldwide. Forty isolates of Xoo have been collected from different regions in Vietnam. The isolates were inoculated on some Vietnamese rice cultivars and nearly isogenic lines (NILs) + check varieties to identify pathogenicity of bacterial leaf blight and resistant response to Xoo isolates. The isolates were divided into seven groups based on their pathogenicity to the treatments IRBB 1, IRBB 2, IRBB 3, IRBB 4, IRBB 5, IRBB 7, IRBB 8, IRBB 10, IRBB 11, IR 24, IR 20, Kinmaze, TN1 and BJ1. Three materials IRBB5, IRBB 7 and BJ1 showed complete resistance to all isolates. IRBB 8 was resistant to 37 isolates. IRBB3 was resistant to 36 isolates. IRBB1, IRBB 2, IRBB 11, Kinmaze and TN 1 were susceptible to all isolates. The remaining NILs were resistant to some isolates. Isolates belong to dominant pathogenic group were widely distributed at different places from the North to the South Vietnam. Almost the Vietnamese cultivars were susceptible to all testing isolates. However, some varieties in The Mekong Delta were resistant to a few isolates which were collected in North Vietnam.*

Key words: *Xanthomonas oryzae*, bacterial leaf blight, resistance, isolates

INTRODUCTION

Bacterial leaf blight (BB), a major bacterial disease of rice (*Oryza sativa* L.), is found in most irrigated, rainfed and deep water temperate and tropical rice growing areas, including all Asian countries, West Africa, Australia, South America and the Caribbean (Mew et al. 1982, Mew 1987). The major bacterial blight epidemics occurred in the 1960s. Breeding for BB resistance has become an essential objective of rice improvement in many Asian countries (Mew et al. 1982). Actually, no approach is considered as an effective and economic practice to control this disease (Devadath 1989). The varietal resistance is considered as a key tool under tropical conditions. This approach is comparatively economical and more convenient to control the disease in large scale areas. In addition, knowledge of pathogen population structure, coupled with an understanding of the mechanisms that drive genetic changes in pathogen populations, is essential to formulate long-term strategies to manage the disease. Information on pathogen diversity can be used to identify and characterize our rice germplasm to the

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biotic stress. Information on the extent and distribution of pathogen variation is needed to design effective deployment strategies for varietal resistance improvement (Leung et al. 1997).

In Vietnam, bacterial leaf blight is one of major rice diseases in the North, but occasionally found appearance in the Southern part, especially in Mekong Delta. After 1985, the changes of rice ecosystem and cropping patterns significantly influenced to disease occurrence in the delta. However, it is necessary to identify pathogenicity of BB isolates, resistant cultivars, then to design effective deployment strategies for rice improvement in Vietnam.

The present study aims at identifying pathogenicity of *Xanthomonas oryzae* pv. *oryzae* isolates and resistant varieties.

MATERIALS AND METHODS

Isolation of the causal bacterium: The rice leaves affected by bacterial leaf blight were collected in 1995, 1996 from different regions in Vietnam. Diseased leaf samples were cut into small pieces, 1 cm in length including the marginal portion of fresh lesions. They were placed in 70% ethyl alcohol for a few seconds, dipped in 1 % sodium hypochlorite solution for 1 minute and rinsed in sterile distilled water. Each sample was then homogenized with 10 ml sterile distilled water. The resulting suspension was diluted with sterile distilled water and appropriate dilution was mixed with melting nutrient agar medium kept at 50^{o}C in a waterbath. The mixture was poured into a plate, and the plates were incubated at 25^{o}C for 4 days. Single-colony isolation was made. The viscous and yellow bacterial colonies that subsequently developed were subcultured on peptone sucrose agar (PSA) medium and grown at 25^{o}C for 2 days (Devadath 1989). For long-term preservation, the bacterial cells suspended in 10 % (w/v) skim-milk containing 0.05% L-glutamic acid and were lyophilized. Isolates were stored in sterile skim- milk at 0^{o}C until needed.

Inoculation: The bacterium was revived on PSA medium incubated at 27^{o}C for 2 days and transferred once before inoculation. The culture was suspended in sterile distilled water to reach a concentration of 10^{8} CFU/ml. The suspension was used as inoculum. The code of isolates was listed in Table 1. Fourteen NILs and check varieties, 8 traditional rice cultivars and 12 leading varieties in Mekong Delta were used. (Table 2).

Experiment 1: all rice cultivars were planted in pots. Each pot contained ten rice cultivars and placed in the green house. The experiment was conducted in 1997's dry season.

Experiment 2: all rice cultivars were sown in CLRRI's rice field in 1997's wet season. Plants were transplanted with 21-day old seedlings and spaced at 30 x 30 cm, into two rows/variety, including 160 hills.

The experiment 3: was carried out in 1998's dry season in Japan International Research Center for Agricultural Sciences (JIRCAS) with 14 NILs and checks.

The clipping inoculation method was adopted in these experiments. The scissors were dipped into bacterial

suspension, then the tip of fully expanded leaves was clipped (Kauffman et al. 1973). Three experiments were inoculated at booting stage. Two weeks after inoculation, lesion length of five leaves per variety were measured.

Based on mean lesion length scoring, the susceptible and resistant rice varieties were assessed. Resistance score was depended on the standard procedure developed by Kauffman et. al. (1973).

Table 1. Coding forty isolates of *Xanthomonas oryzae* pv. o*ryzae* collected in 1995, 1996 in Vietnam.

No.	Isolate	Place of sampling		No.	Isolate	Place of Sampling	
		Province	Region			Province	Region
1	B 45	Lao Cai	North	21	C 79	An Giang	South
2	B 46	Lao Cai	North	22	A 58	An Giang	South
3	B 48	Lao Cai	North	23	C 80	An Giang	South
4	B 49	Lao Cai	North	24	C 86	An Giang	South
5	B 40	Nam Ha	North	25	C 87	An Giang	South
6	B 41	Nam Ha	North	26	C 28	Ben Tre	South
7	B 20	Q.N-Da Nang	North	27	E 25	Ben Tre	South
8	B 18	Binh Dinh	North	28	C 75	Dong Thap	South
9	B 11	Phu Yen	North	29	C 67	Dong Thap	South
10	B 59	Hai Phong	North	30	C 66	Dong Thap	South
11	B 36	Thanh Hoa	North	31	D 7	Dong Thap	South
12	B 50	Yen Bai	North	32	C 74	Dong Thap	South
13	B 3	Binh Thuan	South	33	C 78	Domg Thap	South
14	A 8	Dong Nai	South	34	E 23	Tien Giang	South
15	A 80	Vinh Long	South	35	E 22	Tien Giang	South
16	C108	Can Tho	South	36	C 42	Tien Giang	South
17	C151	Can Tho	South	37	C 48	Tien Giang	South
18	C149	Can Tho	South	38	C 4	Tra Vinh	South
19	C152	Can Tho	South	39	C 6	Tra Vinh	South
20	C111	Can Tho	South	40	E 18	Long An	South

Q.N- Da Nang = Quang Nam Da Nang Province.

Table 2. List of rice cultivars used in three experiments.

No.	NILs and checks	No.	Leading cultivars	No.	Traditional cultivars
1	IR-BB 1	1	OM 997-6	1	Lun Can Dai
2	IR-BB 2	2	OM 1726	2	Thom Nut Dich
3	IR-BB 3	3	OM 1723	3	Nho Thom
4	IR-BB 4	4	OM 269	4	Tai Nguyen Duc
5	IR-BB 5	5	OM 1490	5	Lua Bong Dai
6	IR-BB 7	6	OM 1647	6	Nep Thom
7	IR-BB 8	7	OM 1270-49	7	Thom Lun
8	IR-BB 10	8	OM 1697	8	Nang Thom Cho Dao
9	IR-BB 11	9	TM 128		
10	IR 24	10	S 40		
11	IR 20	11	IR 64		
12	Kinmaze	12	IR 50404		
13	TN 1				
14	BJ 1				

*(*NIL*: nearly isogenic lines)*

RESULTS

The pathogenicity variation of bacterial isolates was examined in several countries of South and East-Asia. The diverse populations of bacterial leaf blight pathogens on rice have been recognized so far.

IRBB 5, IRBB 7 and BJ 1 showed complete resistance to all isolates.

IRBB 8 was resistant to 37 isolates and IRBB 3 was resistant to 36 isolates. IRBB 4, IRBB 10, IR 24 and IR 20 were resistant to only 3 isolates. Others such as IRBB 1, IRBB 2, IRBB 11, Kanmaze and TN 1 were totally susceptible to all isolates (Table 3a. 3b.).

Table 3a. Pathogenicity of *Xanthomonas oryzae* pv. *oryzae* isolates collected in North Vietnam (1997 and 1998).

Designation	Provinces in North Vietnam													
	Lao Cai				NH		BD	QN	PY	HP	TH	YB	BTH	DN
	B45	B46	B48	B49	B40	B41	B18	B20	B 11	B 59	B 36	B 50	B 3	A 8
IR-BB 1	S	S	S	S	S	S	S	S	S	S	S	S	S	S
IR-BB 2	S	S	S	S	S	S	S	S	S	S	S	S	S	S
IR-BB 3	S	**R**	S	S	**R**	S	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**
IR-BB 4	**R**	S	**R**	**R**	S	S	S	S	S	S	S	S	S	S
IR-BB 5	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**
IR-BB 7	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**
IR-BB 8	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**
IR-BB 10	S	S	S	S	S	S	S	**R**	S	S	S	S	S	**R**
IR-BB 11	S	S	S	S	S	S	S	S	S	S	S	S	S	S
IR 24	S	S	S	S	S	S	S	S	S	S	**R**	**R**	S	S
IR 20	**R**	S	**R**	**R**	S	S	S	S	S	S	S	S	S	S
Kinmaze	S	S	S	S	S	S	S	S	S	S	S	S	S	S
TN 1	S	S	S	S	S	S	S	S	S	S	S	S	S	S
BJ 1	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**

R = Resistant, S = Susceptible; QN = Quang Nam Da Nang, H P = Haiphong, TH = Thanh Hoa, BT = Binh Thuan, DN = Dong Nai.

Table 3b. Pathogenicity of *Xanthomonas oryzae* pv.*oryzae* isolates collected in South Vietnam (1997 and 1998).

Designation	Provinces in South Vietnam													
	Tien Giang				Ben Tre		Vinh Long	Tra Vinh		Can Tho				
	E22	E23	C42	C48	C28	E25	A80	C4	C6	C108	C151	C149	C152	C111
IR-BB 1	S	S	S	S	S	S	S	S	S	S	S	S	S	S
IR-BB 2	S	S	S	S	S	S	S	S	S	S	S	S	S	S
IR-BB 3	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**
IR-BB 4	S	S	S	S	S	S	S	S	S	S	S	S	S	S
IR-BB 5	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**
IR-BB 7	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**
IR-BB 8	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**
IR-BB 10	S	S	S	S	**R**	**R**	S	S	S	S	S	S	S	S
IR-BB 11	S	S	S	S	S	S	S	S	S	S	S	S	S	S
IR 24	S	S	S	S	S	S	S	S	S	S	S	S	S	S
IR 20	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Kinmaze	S	S	S	S	S	S	S	S	S	S	S	S	S	S
TN 1	S	S	S	S	S	S	S	S	S	S	S	S	S	S
BJ 1	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**

R = Resistant, S = Susceptible.

Table 3b. (continued) Pathogenicity of *Xanthomonas oryzae* pv.*oryzae* isolates collected in South Vietnam (1997 and 1998)

Designation	Provinces in South Vietnam											
	L.An	Dong Thap						An Giang				
	E 18	C 75	C 67	C 66	D 7	C 74	C 78	C 79	A 58	C 80	C 86	C 87
IR-BB 1	S	S	S	S	S	S	S	S	S	S	S	S
IR-BB 2	S	S	S	S	S	S	S	S	S	S	S	S
IR-BB 3	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**
IR-BB 4	S	S	S	S	S	S	S	S	S	S	S	S
IR-BB 5	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**
IR-BB 7	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**
IR-BB 8	S	S	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	S	**R**
IR-BB 10	S	S	S	S	S	S	S	S	S	S	S	S
IR-BB 11	S	S	S	S	S	S	S	S	S	S	S	S
IR 24	S	S	S	S	S	S	S	S	S	S	**R**	S
IR 20	S	S	S	S	S	S	S	S	S	S	S	S
Kinmaze	S	S	S	S	S	S	S	S	S	S	S	S
TN 1	S	S	S	S	S	S	S	S	S	S	S	S
BJ 1	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**	**R**

R = Resistant, S = Susceptible. L.An = Longan Province

- Based on the mean of lesion length, reactions of promising varieties to *Xoo* isolates were presented in Table 4a, 4b, and 4c.
- TN 128 was resistant to 10 isolates.
- OM 1723 was resistant to 8 isolates.
- The local cultivars i.e. Nho Thom, Tai Nguyen Duc, Lua Bong Dai and Thom Lun were completely susceptible to all isolates.
- Almost of Vietnamese varieties were resistant to isolates collected in North Vietnam.
- TN 128, OM 1723, IR 50404, Nep Thom and Nang Thom Cho Dao were resistant to one or two isolates in South Vietnam.

Table 4a. Reaction of promising varieties and traditional cultivars: Pathogenicity of *Xanthomonas oryzae* pv. *oryzae* isolates collected in North Vietnam (1997 and 1998).

Designation	Provinces in North Vietnam													
	LC				N H		BD	QN	PY	HP	TH	YB	BTH	DN
	B 45	B 46	B 48	B 49	B 40	B 41	B 18	B 20	B 11	B 59	B 36	B 50	B 3	A 8
OM 997-6	**R**	S	**R**	**R**	S	S	S	S	**R**	S	S	S	S	S
OM 1726	**R**	S	**R**	**R**	S	S	S	S	S	S	**R**	S	S	S
OM 1723	**R**	S	**R**	**R**	**R**	**R**	S	S	**R**	S	**R**	S	S	S
OM 269	**R**	S	**R**	**R**	S	**R**	S	S	S	S	**R**	S	S	S
OM 1490	**R**	S	**R**	**R**	**R**	S	S	S	S	S	S	S	S	S
OM 1647	**R**	**R**	**R**	**R**	S	S	S	**R**	S	S	**R**	S	S	S
OM 1270-49	**R**	S	**R**	**R**	S	**R**	S	S	S	S	S	S	S	S
OM 1697	**R**	S	**R**	**R**	S	**R**	S	S	S	S	S	S	S	S
TN 128	**R**	**R**	**R**	**R**	S	**R**	**R**	S	**R**	S	**R**	S	S	S
S 40	**R**	S	**R**	**R**	S	S	S	S	S	S	**R**	S	S	S
IR 64	**R**	S	**R**	**R**	S	S	S	S	S	S	**R**	S	S	S
IR 50404	**R**	S	**R**	**R**	S	S	S	S	S	S	S	S	S	S
Lun Can Dai	S	**R**	S	S	S	**R**	S	S	S	S	S	S	S	S
Thom Nut Dich	S	**R**	**R**	**R**	S	S	S	S	S	S	**R**	S	S	S
Nho Thom	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Tai Nguyen Duc	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Lua Bong Dai	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Nep Thom	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Thom Lun	S	S	S	S	S	S	S	S	S	S	S	S	S	S
N.T. Cho Dao	S	S	S	S	S	S	S	S	S	S	S	S	S	S

R = Resistant, S = Susceptible, QN = Quang Nam, HP = Hai Phong, TH = Thanh Hoa, BTH = Binh Thuan, DN = Dong Nai, N.T Cho Dao = Nang Thom Cho Dao

Table 4b. Reaction of promising varieties and traditional cultivars: Pathogenicity of *Xanthomonas oryzae* Pv. *oryzae* isolates collected in South Vietnam (1997 and 1998)

Designation	Provinces in South Vietnam													
	Tien Giang					Ben Tre		Vinh Long	Tra Vinh		Can Tho			
	E 22	E 23	C 42	C 48	C 28	E 25	A 80	C 4	C 6	C 108	C 151	C 149	C 152	C111
OM 997-6	S	S	S	S	S	S	S	S	S	S	S	S	S	S
OM 1726	S	S	S	S	S	S	S	S	S	S	S	S	S	S
OM 1723	S	S	S	S	S	S	S	S	S	S	S	S	S	S
OM 269	S	S	S	S	S	S	S	S	S	S	S	S	S	S
OM 1490	S	S	S	S	S	S	S	S	S	S	S	S	S	S
OM 1647	S	S	S	S	S	S	S	S	S	S	S	S	S	S
OM 1270-49	S	S	S	S	S	S	S	S	S	S	S	S	S	S
OM 1697	S	S	S	S	S	S	S	S	S	S	S	S	S	S
TN 128	S	S	S	S	S	S	S	S	S	S	S	S	**R**	S
S 40	S	S	S	S	S	S	S	S	S	S	S	S	S	S
IR 64	S	S	S	S	S	S	S	S	S	S	S	S	S	S
IR 50404	S	S	S	S	S	S	S	S	S	S	S		S	S
Lun Can Dai	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Thom Nut Dich	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Nho Thom	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Tai Nguyen Duc	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Lua Bong Dai	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Nep Thom	S	**R**	S	S	S	S	S	S	S	S	S	S	S	S
Thom Lun	S	S	S	S	S	S	S	S	S	S	S	S	S	S
N.T. Cho Dao	S	**R**	S	S	S	S	S	S	S	S	S	S	S	S

R = Resistant, S = Susceptible, NT. Cho Dao = Nang Thom Cho Dao

Table 4b. (continued) Reaction of promising varieties and traditional cultivars: Pathogenicity of *Xanthomonas oryzae* pv. *oryzae* isolates collected in South Vietnam (1997 and 1998)

Desigantion	Provinces in South Vietnam											
	L.An	Dong Thap							An Giang			
	E 18	C 75	C 67	C 66	D 7	C 74	C 78	C 79	A 58	C 80	C 86	C 87
OM 997-6	S	S	S	S	S	S	S	S	S	S	S	S
OM 1726	S	S	S	S	S	S	S	S	S	S	S	S
OM 1723	S	S	S	S	S	S	S	S	S	**R**	S	S
OM 269	S	S	S	S	S	S	S	S	S	S	S	S
OM 1490	S	S	S	S	S	S	S	S	S	S	S	S
OM 1647	S	S	S	S	S	S	S	S	S	S	S	S
OM 1270-49	S	S	S	S	S	S	S	S	S	S	S	S
OM 1697	S	S	S	S	S	S	S	S	S	S	S	S
TN 128	S	S	S	S	S	S	S	S	**R**	S	S	S
S 40	S	S	S	S	S	S	S	S	S	S	S	S
IR 64	S	S	S	S	S	S	S	S	S	S	S	S
IR 50404	S	S	S	S	S	S	**R**	S	S	S	S	S
Lun Can Dai	S	S	S	S	S	S	S	S	S	S	S	S
Thom Nut Dich	S	S	S	S	S	S	S	S	S	S	S	S
Nho Thom	S	S	S	S	S	S	S	S	S	S	S	S
Tai Nguyen Duc	S	S	S	S	S	S	S	S	S	S	S	S
Lua Bong Dai	S	S	S	S	S	S	S	S	S	S	S	S
Nep Thom	S	S	S	S	S	S	S	S	S	S	S	S
Thom Lun	S	S	S	S	S	S	S	S	S	S	S	S
N.T. Cho Dao	S	S	**R**	S	S	S	S	S	S	S	S	S

R = Resistant, S = Susceptible; L.An = Long An, NT.Cho Dao = Nang Thom Cho Dao

DISCUSSION

The pathogenicity variation of BB isolates was internationally studied. The virulence variability obviously demonstrated that BB resistance at a country for example Japan, Korea, China but it could be broken down in India or Indonesia. Tetep or Tadukan, for instance, was resistant in Japan but not in the Philippines (Ezuka and Horino 1974).

BJ 1 was resistant in the Philippines or in East Asia, but susceptible in Bangladesh and at specific sites in India (Kaffman and Rao 1972). A highly resistant variety, Asakaze, was unexpectedly and severely attacked by the bacterium (Kuhara et al. 1965). The

race structure changing of a pathogen population may be resulted from several factors, including genetic variation affecting virulent race (mutation or recombination), the introduction of a new race from another geographic area (migration), or the build-up of a preexisting, but minor, component of the population (selection) (Vera-Cruz et al. 1996). Forty isolates of BB have been classified into seven groups according to their virulence reactions (Table 5).

Table 5. Reaction of BB isolate groups to nearly isogenic lines and check varieties

Group	Isolates	Reaction of differential varieties													
		IRBB1	IRBB2	IRBB3	IRBB4	IRBB5	IRBB7	IRBB8	IRBB10	IRBB11	IR24	IR20	Kin-Maze	TN1	BJ1
1	B46, B40, B18, B11, B59, B3, E22, E23, C42, C48, A80, C4, C6, C108, C151, 149, C152, C67, C111, C66, D7, C74, C78, C79, A58, C80, C87	-	-	**R**	-	**R**	**R**	**R**	-	-	-	-	-	-	**R**
2	B45, B48, B49	-	-	-	**R**	**R**	**R**	**R**	-	-	-	**R**	-	-	**R**
3	B20, A8, C28, E 25	-	-	**R**	-	**R**	**R**	**R**	-	-	-	-	-	-	**R**
4	E18, C75	-	-	**R**	-	**R**	**R**	-	-	-	-	-	-	-	**R**
5	B36, B50	-	-	**R**	-	**R**	**R**	**R**	-	-	**R**	-	-	-	**R**
6	B1	-	-	-	-	**R**	**R**	**R**	-	-	-	-	-	-	**R**
7	C86	-	-	**R**	-	**R**	**R**	-	-	-	**R**	-	-	-	**R**
		-	-	-	-		-	-	-	-	-	-	-	-	-

Isolates belonging to group 1 (the biggest group) were presented in different regions, group 2 presented in Lao Cai province. Both of them showed the same reactions to IRBB5, IRBB7, IRBB8, BJ1.

These results demonstrated the diversity of BB isolates in Vietnam. All isolates were tested with only 14 nearly isogenic lines and checks so that we cannot classify into exactly different races.

Most of leading rice varieties in Mekong Delta are susceptible to all isolates collected in the South.

BJ1, IRBB5, IRBB7, IRBB8, and IRBB3 should be recommended to be donors in breeding program to improve the BB resistance in Mekong Delta.

References

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TÓM TẮT

Đánh giá tính kháng cuả các giống lúa đối với *Xanthomonas oryzae* pv. *oryzae* và tính gây bệnh cuả các dòng vi khuẩn gây bệnh bạc lá ở Việt Nam

Bệnh bạc lá do *Xanthomonas oryzae pv. oryzae* (Xoo) gây ra là một trong những bệnh nghiêm trọng cho luá trên thế giới. Bốn mươi dòng vi khuẩn Xoo được thu thập từ nhiều vùng khác nhau ở Việt Nam. Những dòng nầy sau đó được chủng lên các giống lúa triển vọng và các giống chỉ thị nhằm xác định tính gây bệnh cuả các dòng vi khuẩn bệnh bạc lá và phản ứng cuả giống đối với các dòng nầy. Dựa trên tính gây bệnh cho bộ giống chỉ thị: IRBB 1, IRBB 2, IRBB 3, IRBB 4, IRBB 5, IRBB 7, IRBB 8, IRBB 10, IRBB 11, IR 24, IR 20, Kinmaze, TN1 and BJ1, các dòng vi khuẩn được chia làm 7 nhóm. Trong 3 giống chỉ thị IRBB5, IRBB7 và BJ1 có phản ứng kháng đối với tất cả các dòng vi khuẩn IRBB8 kháng với 37 dòng vi khuẩn. IRBB3 kháng đối với 36 dòng vi khuẩn. IRBB2, IRBB 11, Kimaze và TN1 có phản ứng nhiễm đối với tất cả các dòng. Những giống chỉ thị còn lại kháng đối với một số dòng. Những dòng thuộc vào nhóm gây bệnh chính hiện diện trên hầu hết các vùng trồng luá cuả Việt Nam. Phần lớn các giống luá triển vọng cho thấy có phản ứng nhiễm với tất cả các dòng vi khuẩn thu thập. Tuy nhiên, vài giống luá ở ĐBSCL cho phản ứng kháng một số dòng thu thập từ phía Bắc Việt Nam.