

Variability in Aggressiveness of Rice Blast (*P. oryzae*) Isolates originating from resistant and susceptible cultivars

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Rice Blast disease caused by fungus, *Pyricularia oryzae* is the most devastating and destructive diseases of rice throughout the world in all the rice growing ecosystems. The fungus attacks the aerial parts of the rice plant *i.e.* leaves, nodes and panicle. The lesions on the leaves are spindle shaped with grey centre. The lesions on the leaves grow and coalesce each other and dries the plant in favourable conditions. It can cause severe loss in yield to the extent of 70-80% in various rice ecosystems (Srinivas Prasad *et al.*, 2011). There are several reports on the variability of the pathogen. In the present study, an isolate collected from a resistant cultivar IR-64 was compared with the isolate collected from susceptible cultivar HR-12. The fungus was isolated and pure cultures were maintained by following standard procedures. Ten differential hosts of the blast fungus were grown in small size plastic cups and they were inoculated with these two isolates at four leaf stage. After inoculation, the plants were covered with polythene sheet and sprayed with water regularly to maintain humidity. The disease reaction was noted after one week by following 0-9 SES scale. (IRRI, 1996). The results are presented in the Table-1.

Table 1. Reaction of host differentials to blast isolates collected on HR-12 and IR-64 hosts.

S. No.	Differential host	HR-12 Isolate (Score)	Reaction	IR-64 Isolate (Score)	Reaction
1	<i>O. minuta</i>	2	R	5	S
2	Raminad str-3	3	R	5	S
3	Zenith	3	R	5	S
4	NP-125	2	R	5	S
5	Dular	3	R	5	S
6	Kanto-51	3	R	6	S
7	Calaro	2	R	5	S
8	Tadukan	1	R	4	MR
9	IR-64	3	R	6	S
10	Tetep	1	R	4	MR

R-Resistant, S-susceptible, MR-Moderately Resistant

Ten international blast differential lines which are known to contain single or multiple blast resistance genes were tested against these two blast isolates. The IR-64 isolate could infect the differential lines like *O. minuta*, Raminad str-3, Zenith, NP-125, Dular, Kanto-51, Calaro, Tadukan including IR-64 and Tetep while HR-12 isolate showed resistant reaction (score 4) to all these lines.

The efficacy of fungicide Tricyclazole @ 25 ppm & 50 ppm was used by adding it at the time of pouring sterilized Oat meal agar medium (OMA) in petriplate. The medium without fungicide served as control. Seven days old fungus agar block was aseptically transferred to each petriplate and incubated at 28°C. The radial growth of the mycelium was measured periodically at 10 and 15 days. Under *in-vitro* conditions the fungicide at all the concentrations inhibited mycelial growth of *P. oryzae* when compared to control (Fig.1). The growth of the HR-12 isolate was checked more compared IR-64 isolate (Table-2, Fig.1).

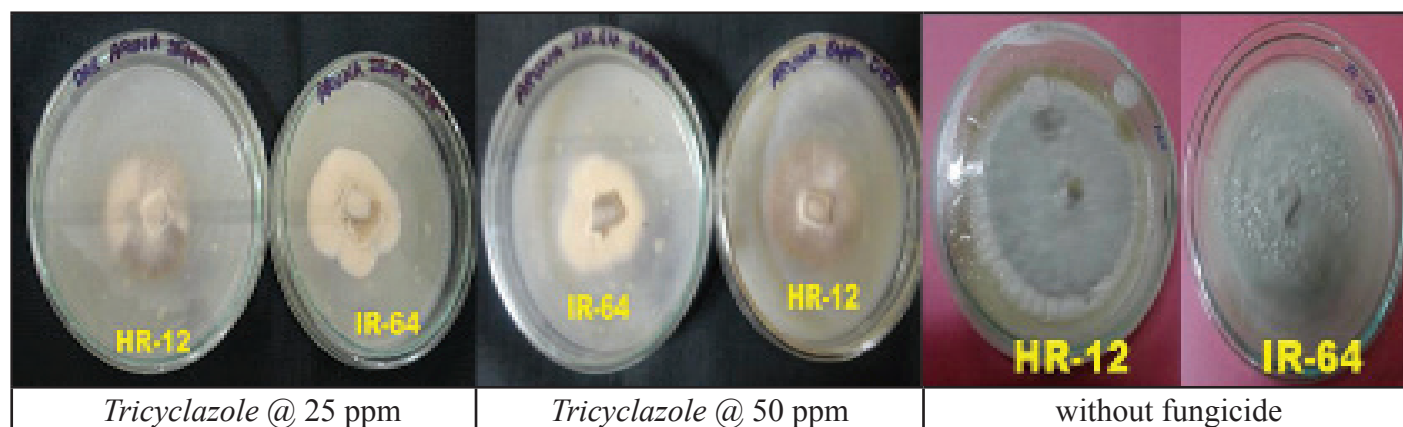


Fig. 1. Radial growth of *Poryzae* at different concentrations of fungicide

Table 2. Radial growth of *Poryzae* at different concentrations of fungicide

Isolate	25 ppm concentration*		50ppm concentration*	
	10 th day	15 th day	10 th day	15 th day
HR-12 Isolate	3.4	5.4	2.8	4.2
IR-64 Isolate	4.5	6.8	3.0	4.0
Check without fungicide	6.2	8.2	6.8	8.8

*Indicates radial growth of the mycelium in mm

Conclusion

Therefore, the blast isolate collected from IR-64 was more aggressive than isolate from HR-12 and the isolate was different in giving reaction to differential hosts and also *in-vitro* evaluation against fungicide.

References

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