Reaction of wild rice species to sheath blight *Rhizoctonia solani* Kühn

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ABSTRACT

Sheath blight symptoms caused by Rhizoctonia solani Kühn were studied in different wild rice plants namely Oryza officinalis, O. alta, O. rhizomatis, O. latifolia, O. longistaminata, O. grandiglumis, O. eichingeri and O. nivara which served as the primary sources of survival of the fungus, helping in disease perpetuation and acting as the principal predisposing factors for initiation and spread of the disease.

Keywords: *sheath blight, wild rice, tolerance, lesion length*

Sheath blight disease of rice incited by *Rhizoctonia solani* Kühn is one of the potentially serious diseases in many rice growing regions next to blast in importance (Manibhusanrao, 1989) and has become more prevalent in many improved varieties currently grown in India. The disease generally appears in the maximum tillering stage and affects all plant parts above water line. Species other than *Oryza sativa*, *O. australiensis* and *O. nivara* were found highly susceptible to the disease, where as *O. rufipogon* and *O. barthii* were observed to be resistant (Kannaiyan and Prasad, 1978). Nayak *et al*. (1979) studied the host range of rice sheath blight pathogen and found that the same organism could infect 20 grasses commonly occurring in rice fields and 13 wild rice species. Considering the importance of sheath blight disease in rice, the present investigation was carried out pertaining to host range of the fungus in different wild rice species.

Eight wild rice species namely *Oryza officinalis*, *O. alta*, *O. rhizomatis*, *O. latifolia*, *O. longistaminata*, *O. eichingeri* and *O. nivara collected* from Central Rice Research Institute, Cuttack were raised in earthen pots plugs of agar agar with five of sclerotia of S_8 isolate (virulent) of *R. solani* each were inserted artificially to the leaf sheath separately when the plants were 30cm. tall. Then the earthen pots were properly covered with large perforated polythene bags and the development of disease symptoms was recorded critically with regards to time taken for the expression of disease symptoms and the length of lesions produced during 15 days.

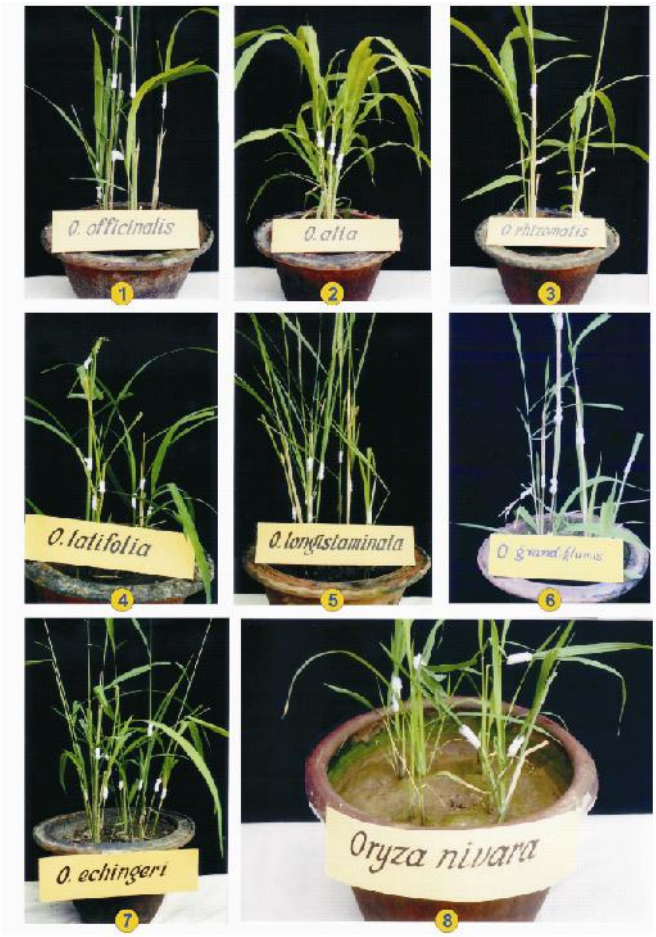
The fungal pathogen produced the highest lesion length (58.2 mm) in *Oryza grandiglumis* followed by *O. rhizomatis* (40.2mm). Among the wild rice, *O. nivara* was found to be more tolerant to the pathogen producing the smallest sized superficial lesion (3.0 mm) after 7 days of inoculation, where as all other seven

Table 1. Sheath blight symptoms in different wild rice species

Sl. No.	Wild rice	Pathogenic reaction	Time taken for appearance of disease symptoms (in days)	Lesion length (in mm)
1	*Oryza officinalis*	+	5	16.8
2	*O.alta*	+	6	18.0
3	*O.rhizomatis*	+	7	40.2
4	*O. latifolia*	+	7	21.6
5	*O. longistaminata*	+	5	25.4
6	*O. grandiglumis*	+	3	58.2
7	*O.eichingeri*	+	4	20.4
8	*O. nivara*	+	7	3.0
	CD (0.05)			1.630
	±SE			0.538

+ indicates infection

Plate 1. Sheath blight incidence in different wild rice species due to *Rhizoctonia solani* (1 to 8)



wild rice plants were found to produce similar type of typical symptoms.

In the present investigation, eight wild rice species were found to be infected by the S_8 isolate (virulent) of *R. solani* confirming its wide adaptability Nayak *et al.* (1979) and Santos *et al.* (2002). The variation in production of disease symptoms observed among the wild rice plants might be due to the presence of morphological/ physiological barriers. The existence of tolerance against a wide range of the fungal/bacterial pathogens as indicated in the wild rice plant *O.nivara* was reported, Nayak *et al.* (1979).

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