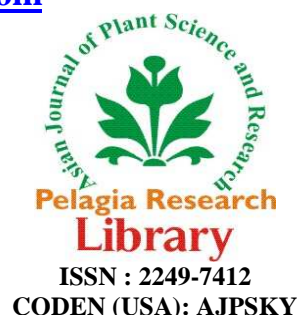




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Prevalence and distribution of blast disease (*Pyricularia oryzae* cav.) on rice plants in paddy growing areas of the Bundi district, Rajasthan

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ABSTRACT

*Seventeen different localities were selected in various Paddy growing area of Bundi district during Kharif season 2009-2010 and 2011. Observations were recorded on prevalence and distribution of blast disease caused by *Pyricularia oryzae* cav. were recorded. Maximum disease incidence of 50.67 percent was recorded from K. patan locality. All plant parts leaf, node, neck and glumes were found infected.*

Key Words: Blast disease, *Pyricularia oryzae*, Paddy.

INTRODUCTION

The cereals contribute tremendous and stupendous role in daily food requirement of the world and play an infallible part in human diet. Among the cereals 'Rice' (*Oryza sativa* Lin.) family Poaceae is 'Life' for the most people living in world. Considering its important position, The United Nation designated year 2004 as the International year of Rice.

Rice play an important role in supporting over three billion people around the world with more than 6.7 billion bowls of rice consumed every day. (IRRI Annual Report 2010, Sushil Pandey 2011). Therefore it is a challenge for agriculture to increase food production to meet the food demands and human sustainability.

The production of rice in India, however, increased gradually because of significant development in agriculture, research, education, extension etc. Besides increasing crop production, one of the greatest challenges is to control the disease of rice. Rice pests are any organism or microbes with crop potential to reduce the yield or value of this crop (Jahn et.al.2007). Epiphytotic infections and their effects on production were reported as early as 1942 in Bengal. (Padmanabham 1973). A major constrain in profitable rice production is the occurrence of certain fungal diseases and Paddy rice worldwide. Paddy blast is caused by a fungus belonging to fungi imperfect *Pyricularia oryzae* cav. Synonym *Pyricularia oryzae* cav. Having its perfect stage in Ascomycetes named as *Magnaporthe grisea* (Herbert) Barr (Omb nov.) In Rajasthan rice is grown in eighteen districts. The major rice growing districts are Hanumangarh, Ganganagar, Kota, Bharatpur, Rajsamand and Bundi. The present study area 'Bundi' is situated in South Eastern Plains of Rajasthan. Here rice is an important crop under cultivation and is a major source of earning because of export.

MATERIALS AND METHODS

In the present investigation an intensive survey of the various localities viz. Ajjanda, Arnetha, Radi, Kapren, keshavraipatan, Gandoli (Tehsil-Keshavraipatan), Laban, Deikhera (Tehsil Indragarh), Gardara, Hattipura, Bardha, Dolara, Matunda, Namana, Talera (Tehsil Bundi), Satoor (Tehsil Hindoli) and Karwar (Tehsil Nainwan) covering the major rice growing areas of the Tehsils of Bundi district, was conducted during Kharif season of 2009-2010 (from July to November).

A total of 50 plant samples (healthy and infected) were selected from 10 sampling units (5 plants from each unit), kept in sterilized plastic bags and brought to laboratory. On the basis of morphological symptoms healthy and infected plants were separated. Infected plant samples were washed thoroughly under tap water. The plants were kept in refrigeration at 4 degree Celsius temperature for further processing.

The fungal diseases, on the field collected rice plant samples, were identified on the basis of morphological symptoms using standardized keys of identification of plant pathogen and these samples were assessed for the occurrence of fungal diseases in the above said localities of the study area.

The occurrence and incidence of blast disease was calculated on rice plant samples by using the disease rating scale of 0-5 developed for foliar diseases (anonymous 1996).

O =no symptoms.

1 = 1 – 5 % (Few) spots on <50% of leaves

2 = 5 – 20% spots on <50% of leaves

3 = 5 – 20%spots on >50% of leaves

4 = 20 – 50% spots on <50% leaves

5 = >50% spots on >50% leaves

The formula used for calculation of Percent disease incidence is as follows:

Percent disease Incidence (PDI) =

Sum of Individual disease Rating / Total number of leaves observed x 100 / Maximum Rating.

Table: 1 – Prevalence and distribution of blast disease (*Pyricularia oryzae* cav.) in different location of Bundi district.

S.N.	Teh	Location	No. of Sampling Unit	No. of Plant Samples Studied	No. of Infected Plant	PDI in %	Decrease in yield per plant (seed weight) mg.	
							Healthy(H)	Infected (I)
1	K. Patan	Ajjanda	10	50	17	16.00	75.6	57.2
2		Arnetha	10	50	14	14.23	79.9	69.3
3		Radi	10	50	25	35.00	80.5	67.7
4		Kapren	10	50	21	22.67	78.5	65.0
5		K. Patan	10	50	43	50.67	78.2	42.6
6		Gandoli	10	50	27	36.00	76.0	50.2
7	Indargarh	Laban	10	50	18	17.33	79.6	67.5
8		Deikhera	10	50	19	18.82	80.5	60.2
9	Bundi	Gardara	10	50	14	14.82	80.0	62.2
10		Hattipura	10	50	23	29.20	82.5	67.3
11		Bardha	10	50	34	43.90	78.5	52.0
12		Dolara	10	50	13	13.67	75.2	59.5
13		Matunda	10	50	26	28.20	79.6	54.6
14	Bundi	Namana	10	50	22	25.22	74.6	56.5
15		Talera	10	50	30	40.33	74.9	59.6
16	Hindoli	Satoor	10	50	16	15.92	76.9	67.2
17	Nainwan	Karwar	10	50	18	17.78	80.1	64.9

RESULTS AND DISCUSSION

The present investigation was aimed to find out the occurrence and distribution of fungal diseases of paddy and specially blast disease on rice plant in all the seventeen localities of Bundi district during Kharif season of year

2009-2010 and 2011 (Table 1). The observations from the table revealed that fungal diseases like false smut, brown leaf spot, sheath blight and blast are fairly present in the area in the order of blast > sheath blight > brown spot > false smut. The loss of yield of about 45.52% was recorded from Keshavraipatan and of about 25.21% was recorded from Dheikhera. The report of highest PDI in Keshav rai patan locality is supported by the fact that in this area rice fields are many, providing heavy crop canopy to the spread of fungus.

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