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PREVALENCE AND DISTRIBUTION OF BLAST DISEASE (*MAGNAPORTHE GRISEA*) ON DIFFERENT COMPONENTS OF RICE PLANTS IN PADDY GROWING AREAS OF THE KASHMIR VALLEY

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ABSTRACT

All six districts of Kashmir viz; Anantnag, Budgam, Baramulla, Pulwama, Kupwara and Srinagar were selected in various paddy growing areas during kharif 2005 -2006 and 2007 and observations on prevalence and distribution of blast disease caused by *Magnaporthe grisea* were recorded. Maximum disease incidence 0f 25% and severity of 15% of nodal blast and maximum incidence 25% of most destructive phase- neck blast was recorded from the district Kupwara. Other components like rachis and glumes were also found highly infected with neck blast in district Kupwara.

KEY WORDS

Blast disease*, Magnaporthe grisea,* Paddy.

INTRODUCTION

The cereals contribute tremendous and stupendous role in daily food requirement of the world and play an infallible part in human diet where the people derive most of their energy in the form of carbohydrates from the crops. Among the cereals, rice is enormously grown in India both in economic and social field for increasing income as well as nutritional status of the people and provides a major source of calories for a large percentage of world's population, especially in Asia, where more than 90% of the rice is grown and consumed by about 60% of the world's population. Virtually rice is the staple food crop of the people in the northern, southern and eastern parts of India.The production of rice in India, however, increased gradually because of significant developments in agriculture, research education, extension and infrastructure. Farmer's adoption of high yielding varieties and other improved techniques as well as their use of chemicals, fertilizers have undoubtedly contributed to increased rice production, while Kashmir food require stupendous production to feed its population, because Kashmir is reaching a stage at which further expansion in rice area will not be possible. The alternative is to give more emphasis to increase the production potential per unit area and simultaneously providing ways to achieve this on farm through appropriate technology.

In India, the productivity is less than those in agriculturally advanced countries because of

poor agronomic practices followed in many remote areas and partially because a huge amount of crop being damaged by abiotic and biotic stresses (Garret, 1965). A major constrain in profitable rice production is the occurrence of the certain fungal diseases and paddy blast is one of the most important disease of rice worldwide. Paddy blast is generally considered as the principal disease of rice and is caused by a fungus belonging to the Ascomycete, *Pyricularia grisea* Sacc.(= *Pyricularia oryzae* Cavara (= teleomorph *Magnporthe grisea* (Hebert) Barr Comb nov.).

MATERIALS AND METHODS

Stratified multistage random sampling has been used. Each surveyed district of paddy growing areas was divided into different zones as given in Table-1, of approximately the same area by grouping adjacent blocks. These zones were constituted strata. In each zone, six paddy growing villages were selected at random manner, four paddy fields of each village has been taken by dividing fields into three concentric areas-central, middle and peripheral, four sampling units of 3×3 in feet were made randomly. Five plants per hill of each sampling units were collected from each of selected fields from nursery to post flowering at one-month intervals and kept into tassel bags and brought to the laboratory. These samples were assessed and incidence and severity of blast disease was calculated on different components of rice plant as per formula given in following manner:

CALCULATION

Table 1.

Prevalence and distribution of blast disease (Magnaporthe grisea) in different locations of Kashmir region.

District.	Location	Average disease incidence (%)			Disease severity (%)		
		Leaves	Nodes	Neck	Leaves	Nodes	Neck
Anantnag	Shangas	42.67	8.0	17.33	41.33	4.17	4.9
	Kulgam	70.33	24.33	23.33	23.00	7.33	5.13
	Qaimoh	59.33	8.00	9.33	14.83	3.17	3.50
	Khudwani	70.00	21.67	11.33	16.67	5.37	3.07
	Bijbehara	48.33	5.00	8.00	8.50	1.90	1.80
	Pahalgam	33.33	5.00	8.00	8.50	1.90	1.80
	Larnoo	56.67	8.33	10.00	13.17	3.77	3.70
Budgam	Khag	40.00	4.33	5.00	9.47	1.60	4.60
	Chadoora	35.33	3.33	5.00	9.47	1.60	4.60
	Budgam	38.67	5.67	11.33	7.83	1.67	1.73
	Beerwah	31.33	1.33	4.00	6.27	1.33	0.93
	B.K. Pora	42.33	3.00	5.00	9.17	0.33	1.33
Baramula	Patan	36.00	1.67	2.00	9.17	0.33	1.33
	Rafiabad	34.00	1.33	2.33	8.83	1.23	1.83
	Sopore	35.00	3.00	8.75	3.76	0.43	1.83
	Bandipora	33.33	0.67	1.67	5.00	0.23	0.90
	Baramulla	36.33	3.66	2.00	9.80	1.20	2.33
Pulwama	Keller	34.33	3.33	1.33	10.50	0.93	0.63

	Tral	35.33	4.00	0.67	12.50	1.20	0.67
	Kakapora	43.33	5.33	2.67	11.67	2.00	1.36
	Pampora	33.67	6.33	3.00	9.00	1.50	1.37
	Shopian	35.67	5.67	3.33	10.10	1.60	1.30
Srinagar	Ganderbal	48.33	5.33	8.33	13.14	2.33	3.90
	Srinagar	45.00	5.67	5.33	11.23	2.27	3.17
	Shalimar	41.67	16.67	4.67	11.50	2.90	2.57
	Nishat	30.67	3.00	5.33	7.12	1.00	2.63
Kupwara	Hundwara	29.00	6.50	9.50	12.00	3.50	6.50
	Yaripora	60.00	20.00	25.00	30.00	10.00	10.00
	Kupwara	62.00	25.00	25.00	30.00	15.00	10.00
	Helmatpora	35.00	8.00	9.00	14.00	5.50	3.00
	Karansectore	24.50	6.00	7.50	7.00	4.00	

RESULTS AND DISCUSSION

The present investigation was aimed for the prevalence and distribution of blast disease on the different components of rice plants in all the six districts of Kashmir viz; Anantnag, Budgam, Baramulla, Pulwama, Kupwara and Srinagar during kharif seasons of 2005, 2006 and 2007(Table-1) and revealed that the maximum disease incidence and severity for nodal blast and most destructive phase of blast disease-neck blast, was recorded from district Kupwara. The same location i.e. Kupwara was also highly infected with neck blast with other components like rachis and glumes during the survey in all the three years and lead to heavy yield losses. Similar trend was observed in district Anantnag(Kulgam) which is known as the rice bowl of Kashmir. Similar results are obtained by Katsube and Koshimizu (1970) who advocated that for every 10% of neck blast. There was about a 6% yield reduction and a 5% increase in chalky kernals, which lowered the rice quality by one or two classes. Losses due to blast disease may range up to 90% depending up on the component of the plant infected. Total destruction of the crop over large area has been reported from J & K. Several studies have been made to estimate the yield losses due to panicle blast and leaf blast as observed by Goto (1965a), Padmanabhan (1965a), Exconde and Raymundo (1970), Awoderu and Esuruoso (1974), Tien and Huang (1975) and Rodas (1975). Prabhu and Faria (1982) also reported that the panicle blast reduces the 1000-grain weight, the percentage of ripe spikelets and percentage of fully mature grain.

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