Status of the Rice Gall Midge (*Orseolia oryzae* W.M.) in the State of Jharkhand

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Abstract

Jharkhand state is known to be endemic to gall midge over past several decades. However, pest incidence is mainly influenced by the weather factors. During 2011, the entire sate experience severe incidence of gall midge. Field experiments were laid out in farmers field in pest endemic regions of the state to evaluate performance of local popular rice varieties and available hybrids. Results revealed relatively low pest damage in popular varieties like Lalat, IR36, Naveen, Sahbhagi Dhan, Sudha and Abhisek. But all the hybrids tested were found to be highly susceptible to the pest.

In the state of Jharkhand, approximately 17 lakh hectare land area is covered by *kharif* rice. Out of which about 4 lakh hectare area is covered by upland (direct sown) rice and about 12-13 lakh hectare is covered by transplanted rice. In the current kharif (2011) season, June and July faced mild to severe drought like situation. Enough and very good rains were received since 2nd week of August. Hence, transplanting of rice became delayed by almost 20-25 days in general in the state of Jharkhand. This led to high level of gall midge buildup. Swarna, Samba Mahsuri, IR36, IR64, Mansoori, Lalat, Kalamdani, Sita, and Basmati (BR-9&BR-10) were more popular improved high yielding rice varieties in the state of Jharkhand. Among various hybrid rice cultivated, PA6444 and PHB71 and Arize Tej were very popular. Among the major insect pests, gall midge (*Orseolia oryzae* WM) is considered as the most injurious. Although, this insect pest is prevalent throughout the state, certain parts like districts of Ranchi, Lohardagga, Khunti, Gumla and Simdega are endemic to the pest wherein damage normally ranges from 10 to 70%, based mainly on congenial climate. These pockets encounter 20-70% yield loss, annually. Hence, resource poor farmers of these areas are hesitant to grow aromatic and hybrid rice varieties as these varieties are highly prone to attack of gall midge.

During the year 2011 due to favourable weather conditions, during wet season, gall midge incidence was severe in these endemic districts. Hazaribagh and Ramgarh, Dumka, Jamatra and Giridih districts also recorded severe pest damage with infestation ranging from 40-65 %SS%. Over 7000 ha of area in these new districts was severely affected. Pest incidence was noted during July-August in the nursery and during August through October in the main field. Even in November, late planted long duration varieties suffered from the damage.

Common rice varieties grown and their reaction to gall midge was recorded. Highly susceptible varieties to gall midge were Swarna, BPT5204, IR64, Mansoori, Basmati and other local aromatic rice varieties and rice hybrids. Varieties that were noted to be resistant or less damaged were IR36, Lalat, Naveen, Sahbhagi Dhan, Sudha and Abhisek.

Biotype status of the gall midge population prevalent in the state has been earlier established as Biotype 3 (Shaw et al., 1981; Kalode and Bentur 1989). However, evaluation of the new set of gall midge biotype differentials was not conducted in the state during recent years due to poor and uncertain incidence of the pest. In view of this, extensive observations were made on the performance of different rice varieties, biotype differentials and popular hybrids grown in these districts.

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Materials and Methods

Two experiments, one each, for: (A) high yielding popular varieties during *kharif* (wet) season , 2011 in the farmers fields of village: Khunti toli (Block & district Simdega), located in hot spot (gall midge endemic) area of Jharkhand to determine the reaction of rice varieties against gall midge. (B) Another field experiment was conducted in the farmer's field in village: Khuntitoli village in Simdega District for evaluation of popular hybrids available in the State. . The trial was executed with 11 rice varieties, replicated thrice, in the randomized block design with plot size of 5 x 2 square meter. Seeds were shown on 7th July and transplanting of seedlings was made on 12th August, 2011. The crop was raised with no pesticidal application with RDF (recommended dose of fertilizer). Pest damage in terms of percent silvershoots (%SS) and percent plant damage (%DP) was recorded 30 and 50 days of transplanting.

Results and Discussion

Results (Table 1) revealed that the popular gall midge resistant rice variety Lalat had least plant and silver shoot damage while the susceptible check had the highest damage. Naveen and MTU1010 performed next best. The popular hybrid variety, PA-6444 (20.42%SS) showed susceptible reaction.

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Table 1: Reaction of some of the popular rice varieties/hybrid to gall midge in Jharkhand

Sl.No	Varieties	Plant damage (%DP)	Percentage of silver shoot (%SS)
1.	BVD203	19.23	6.76
2.	IR64	58.47	27.93
3.	IR36	26.34	10.17
4.	BVS1	23.63	7.54
5.	MTU 1010	17.06	6.89
6	Lalat	11.41	4.19
7.	Naveen	16.67	6.28
8.	PA6444 (hybrid)	43.98	20.42
9.	Abhishek	37.58	13.94
10.	Sahbhagi	36.84	14.01
11.	TN1 (Check)	88.46	38.42

In another field experiment 21 rice hybrids along with Swarna and TN1 were tested in the farmers field. Results (Table 2) showed that all the hybrids tested were highly susceptible to the gall midge in Jharkhand. Thus it is imperative that the hybrids to become popular in the state, these must carry gall midge resistance.

Table 2: Reaction of some rice hybrids against gall midge in Jhankhand

Sl.No	Name of entries	DP(%)	SS(%)
1	Tara	55.08	18.20
2	Rasi-111	49.19	15.38
3	Loknath-510	62.25	19.41
4	Us-382	46.22	13.14
5	Arize tej 6129	51.14	15.42
6	Rh 2576	49.51	16.55
7	R 6305	62.38	20.22
8	Bs129g	46.38	13.22
9	Nph 567	40.30	12.23
10	Kph 412	51.50	16.38
11	Uday 131	70.15	20.14
12	Rh 664	32.38	12.22
13	Pac 801	51.44	16.14
14	Mrp 5629	49.39	13.22
15	Drh 748	36.22	12.14
16	Maruti 115	71.30	20.23
17	PAC807	50.33	16.44
18	PA 6444	50.15	15.38
19	Erica	54.42	17.52
20	Reshmi	46.33	13.81
21	786	48.45	15.50
22	TN1 (Check)	89.62	40.42
23	Swarna (Check)	92.44	34.35

SS-Silver shoot ; DP Damaged plants

References

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