

SCREENING OF RICE GENOTYPE/ENTRIES AGAINST GRAIN DISCOLOURATION DISEASE OF RICE.

N. K. GAJRE*, H. L. CHAUHAN¹

*Assistant Professor, Polytechnic in Agriculture, Navsari Agricultural University, Vyara, Gujarat, India.

¹Professor & Head (Retd.), Department of Plant Pathology, N. M. College of Agriculture, Navsari Agricultural University, Navsari-396450, Gujarat, India

(Received on Date: 4th July 2016

Date of Acceptance: 24th August 2016)

ABSTRACT

Grain Discoloration is the important diseases of rice, in South Gujarat region. Out of 18 entries screened against rice GD disease, Masuri variety was found resistant to GD, having lowest per cent discoloured grain (1.94) and unfilled grain (0.58) hence rated as resistant, while, TN 1 variety was found susceptible to GD, having maximum per cent discoloured grain (37.55) and unfilled grain (15.05). While, susceptible check, Jaya was found susceptible to GD having 26.39 per cent discoloured grain, while rest of the entries react as moderately susceptible to susceptible reaction.

Key Words: Rice, Grain Discolouration, *Sarocladium oryzae*.

No: of Tables: 1

No:of References: 4

INTRODUCTION

Rice (*Oryza sativa* L.) is one of the most important food and livelihood crop of India. China and India are two largest countries in rice production. It belongs to grass family: Poaceae, sub family: Oryzoidae. It contains protein 6.8 g, carbohydrates 78.2 g, fat 0.5 g, crude fiber 0.2 g, mineral matter 0.6 g, calcium 10 g and phosphorus 160 g per 100 g (Mangalarai and Mauria, 1999). Survey of rice diseases during *Kharif* 1999, from NARP, GAU farm, Navsari and at various districts and reported that the incidence of grain discolouration was 25 per cent, 8 to 19 per cent, 8 to 23 per cent at N.A.R.P., GAU farm, Navsari, Surat and Navsari districts respectively (Anon; 2000). In 2010 *Kharif* season survey teams had also recorded the incidence of grain discolouration which was 22 per cent, 8 to 16 per cent and 13 per cent at N.A.R.P., GAU farm, Navsari, Surat and Navsari districts respectively. The occurrence of grain discolouration has increase in South Gujarat in mid and late matured varieties since last 10 years and has become major problem in rice cultivation as it reduces quality and quantity of rice production, and causing economical losses to farmers, traders and consumer. Keeping this view in mind, the present investigation was undertaken for management of grain discoloration disease of rice.

MATERIAL AND METHODS

Use of high yielding resistant/tolerant cultivars is the most viable, environmentally safe, economical and also less expensive technique for the management of disease. Thus, it is most remunerative to farmers. The identification of the resistance source is a basic need in breeding for disease resistance. Hence, the present investigation was undertaken to find out resistant sources against rice grain discolouration disease. With a view to identify the resistant genotypes/entries against GD, the screening of rice varieties by artificial inoculation in the field under epiphytotic conditions was carried out during *Kharif*-2011. The screening was carried out at NARP farm, NAU, Navsari. The entries were subjected to artificial inoculation by spraying spore suspension (4×10^6 spores ml⁻¹) at crop growth stage of panicle initiation. This operation was carried out in evening hours during prolonged wet weather to facilitate infections and polycyclic development of the disease. All the recommended agronomical practices were adopted for raising the crop. To record the incidence of rice grain discolouration, 5 tillers were selected from the each treatment and labeled. These labeled plants were observed for disease intensity. The disease symptoms and severity such as per cent discoloured grains; unfilled and healthy grains were recorded.

Disease intensity were recorded by standard evaluation system (SES) 0-9 scale.

RESULT AND DISCUSSION

In *kharif*-2011, eighteen rice entries/genotypes along with

susceptible check, Jaya were evaluated by artificial inoculations with *Sarocladium oryzae* under field condition at N.A.R.P., NAU farm. The result presented in Table 1.

Table 1:- Disease (Rice GD) reaction due to inoculation of rice entries / Genotype with *S. oryzae*.

Genotype	% discoloured grain	% unfilled grain	% healthy grain
Narmada	12.30	10.80	76.82
TN 1	37.55	15.05	47.38
GR 4	23.73	9.88	66.40
Masuri	1.94	0.58	97.30
GAR 13	11.13	8.15	80.70
NAUR 1	10.42	5.55	82.31
GR 12	10.83	6.87	82.24
Jaya	26.39	13.13	60.50
CSR 27	9.67	7.25	83.10
Dandi	15.43	11.00	73.57
GR 101	15.73	11.20	73.08
GR 104	20.47	7.60	71.94
GNR 2	12.88	9.20	77.92
GR 11	25.08	11.42	63.50
GR 6	25.74	11.32	62.94
Gurjari	10.93	8.00	81.06
IR 28	21.92	10.08	68.00
IR22	23.55	11.00	65.45
S.Em ±	1.00	0.57	1.64
C.D. at 5%	2.86	1.63	4.73
CV%	9.84	10.52	10.90

Out of 18 entries screened against rice GD disease, Masuri variety had lowest per cent discoloured grain (1.94) and unfilled grain (0.58) hence rated as resistant, while TN 1 variety was found highly susceptible to GD, having maximum per cent discoloured grain (37.55) and unfilled grain (15.05). Jaya variety was also found susceptible

having per cent discoloured grain 26.39, per cent unfilled grain 13.13%. Varieties GR 4, GR 104, GR 11, GR 6, IR 28 and IR 22 were also found susceptible to rice GD. While, variety Narmada, GAR 13, NAUR 1, GR 12, CSR 27, Dandi, GR 101, Gurjari and GNR 2 had moderate per cent discoloured and unfilled grains. The significantly highest

(97%) healthy seed were produce in case of Masuri, which was followed by CSR-27 (83%), NAUR (82%), GR 12 (82%) and in Gurjari 81% healthy seed were recorded hence it was rated as moderately resistant.

The similar results were reported by earlier workers. Shashidar *et al.* (1988) reported that variety Jaya and IR 20 had the most glume discolouration. While Bolla (2002) reported that cultivar Masuri was resistant to *S. oryzae* and grain discolouration.

ACKNOWLEDGEMENT

This memorable occasion provides me with a unique privilege to express my deep sense of respect and indebtedness to members of my advisory committee Dr. K. G. Patel, Professor, Dept. of Agril. Entomology, N. M. College of Agriculture, N.A.U., Navsari Dr. A. N. Sabalpara, Director of research and P.G, Dr. B. P. Mehta, Professor and Head, Department of Plant Pathology and Dr. R.K. Parikh, Professor and Head, Department of Agricultural Statistics.

REFERENCES

Anonymous (2000). 35th PPSC report, NARP, GAU, Navsari path., 99:1-10.

Bolla, V. (2002). M.Sc. (Agri.) Thesis submitted to GAU, S.K. Nagar.

Mangalaria and Mauria, S. (1999). The Hindu survey of Indian

Agriculture. Pub. M/S. Kasturi and Sons Ltd., Chennai. pp. 39.

Shashidhar, H. E.; Hittalmani, S.; Sheshadri, H. L.; Vasant kumar, and Shivashankar, G. (1988). *IRRN*, 13(4):10.