

EFFECT OF FUNGICIDAL SEED TREATMENT ON SAROCLADIUM ORYZAE AN INCITANT OF RICE GRAIN DISCOLOURATION DISEASE.

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ABSTRACT

Grain Discoloration is the important diseases of rice, in South Gujarat region. The management of rice grain discoloration with fungicides tested, increased seed germination, shoot and root length significantly as compared to control. The eight fungicides found effective in laboratory screening tested as seed dresser for checking the growth of *S. oryzae*. All these fungicides used as seed dresser had significantly increased seed germination as compared to control. The seed inoculation with *S. oryzae* followed by seed treatment with Thiram 75% WP gave highest germination percentage (92.2%) the next best were Captan 75% and Sixer 75% WP and also gave more shoot and root length.

KEYWORDS: Rice, Seed Treatment, Fungicide, Grain Discoloration

No: of Tables : 2

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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. 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

The several rice disease pathogens are reported seed and soil born in nature. The infected seed has less

viability and hence poor germination. Therefore to eradicate the inoculum from the seed, fungicidal seed treatment was tried. The widely adopted rice genotype Jaya was used for the study. The effect of seed treatment on germination, length of root and shoot were studied with various chemicals used as seed treatment. The pathogen *S. oryzae* were grown in potato dextrose broth for 15 days and then the fungal mats were removed by filtering through muslin cloth and culture filtrate collected to inoculate the seed. The surface sterilized rice seeds were inoculated by soaking in culture filtrate of *S. oryzae* for 24 hours separately, then this seed lot was soaked separately in various desired concentrations of fungicides for 24 hours and were kept for germination test. The one liter fungicidal solution was used for soaking one kg seed. The standard blotter method of ISTA (1976) was used to know the effect on germination and shoot and root length of rice. The high quality transparent plastic petriplates were disinfected using alcohol. Twenty five seed of each treatment were placed at equidistance (16 seed at outer periphery, 8 seed in inner periphery and 1 seed in centre) on three layers of white sterile bottling paper. The blotter paper discs were presoaked in sterile distilled water.

All the seeded petriplates were kept for germination at room temperature ($27 \pm 2^\circ\text{C}$) for five days in incubator. The percent seed germination and

root and shoot length were recorded on 5th day of incubation. The name of fungicides, their trade name and dose used is presented in Table-1.

Table- 1:- The fungicides and their quantity used for seed treatment

S. No.	Trade name	Technical name	Quantity of fungicides used in g or ml kg ⁻¹ seed or 1 lit. water
1	Sixer 75% WP	Carbendazim + Mancozeb	2
2	Topsin M-75% WP	Thiophanate methyl	2
3	Contaf 5% EC	Hexaconazole	1
4	Captan 75% D	Captan	2
5	Thiram 75% WP	Thiram	2
6	Kavach 75% WP	Chlorothalonil	2
7	Emisan 6% WP	MEMC	2
8	Tilt 25% EC	Propiconazole	2
9	Control (untreated)	-	-

RESULT AND DISCUSSION

The seed treatment of all fungicides gave significantly higher germination percentage than control. The significantly highest germination percentage was recorded with Thiram (92.2%) than the rest of treatment. The next best fungicides were Captan (85.6%), Sixer (84.17%), Tilt (82.3%) and Emisan (80.05%). The result of shoot length was significant, the significantly highest mean shoot length (1.55 cm) was observed in

case of Thiram than the control and rest of the treatment. The next best were Sixer (1.46 cm) and captan (1.37cm). The root length was significantly maximum in case of Thiram (4.19 cm) than the rest of treatments which was followed by Captan (3.20 cm) and Sixer (2.88 cm) (Table-2). The study revealed that Thiram, Sixer and Captan are good with respect to germination, root and shoot development of seed treated with fungicides.

Table-2:- Effect of fungicidal seed treatment against seed discolouration organism with regarded to germination of rice seed, shoot and root length.

S No.	Name of fungicides	Germination (%)	Av. shoot length (cm)	Av. root length (cm)
1	Captan 75% D	67.71* (85.60) **	1.37	3.20
2	Contaf 5% EC	58.48 (72.67)	0.80	0.82
3	Tilt 25% EC	65.12 (82.30)	1.27	1.40
4	Emisan 6% WP	63.48 (80.05)	1.23	2.18
5	Sixer 75% WP	66.58 (84.17)	1.47	2.88
6	Kavach 75% WP	57.44 (71.03)	1.10	1.33
7	Thiram 75% WP	73.80 (92.20)	1.55	4.19
8	Topsin-M 75% WP	60.62 (75.93)	1.23	1.20
9	Control	54.03 (65.50)	0.77	1.12
	S. Em. \pm	0.59	0.03	0.07
	C.D. at 5%	1.75	0.10	0.21
	C.V. %	1.62	4.73	6.04

* Figures those outside are arcsine transformed values

** Figures in parenthesis are original values

The similar results were reported by Manibhushanrao (1996). They reported Thiram 2g kg⁻¹ or Captan 4g kg⁻¹ were effective in preventing sheath rot disease. Also Bolla (2002) reported Thiram, Captan, Tilt as seed treatment effective to control all inoculated seed discoloured organisms as well as giving good germination, shoot and root length.

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