

Systemic and non-systemic fungicides tested for their bio-efficacy against *Fusarium moniliforme*

H.S. WABALE AND H.L. CHAUHAN

Accepted : November, 2009

SUMMARY

The bio-efficacy of fungicides against *F. moniliforme* revealed that Topsin-M 75% WP (500, 1000 and 1500 ppm) and Emisan 6 % WP (3000 ppm) were highly fungitoxic in growth inhibition up to 7 days of incubation. Whereas, Tilt 25% EC, Thiram 75% WP, Cosko 75% ds and Captan 75% D were found moderately fungitoxic and rest of fungicides were least effective.

Key words : Rice, Seed, Fungi, Fungicides

The majority of rice pathogens are reported seed borne in nature, providing primary inoculum to initiate the endemic and epidemic disease in rice growing area of Gujarat. Many workers *viz.*, Acharya *et al.* (2004), Jayaweera *et al.* (1988), Duraiswamy (1982) and Anonymous (1995) etc., have studied various seed borne diseases of rice and they were reported to cause seed discoloration by many pathogens *viz.*, *Curvularia* spp., *Fusarium* spp., *Helminthosporium* spp., *Pyricularia* sp., *Alternaria* sp., *Sarocladium* sp. and *Phoma* sp. They reduce germination and seed weight (Zulkifli *et al.*, 1991) and mortality of seedling (Joi and Ahmed, 1976; Bora and Gogoi, 1992 and Anonymous, 1995). Among which *Fusarium* spp. are the dominant fungi reported from South Gujarat conditions (Anonymous, 1995). Therefore, the screening of fungicides *in vitro* was carried out as it saves time, labour, cost of testing fungicides in the field and also provides information of the bio-efficacy and persistence of various fungicides and their dose against the pathogens.

MATERIALS AND METHODS

The diseased and healthy panicles/seed samples of widely cultivated rice varieties *viz.*, Jaya, Gurjari, Masuri, GR-4, GR-6, GR-11, IR-24, IR-28 were collected from NARP Farm, NAU, Navsari and from farmer's fields. The isolation was carried out using potato dextrose agar medium.

Eleven fungicides consisting of systemic and non-systemic each with its three concentrations were evaluated

against *F. moniliforme* employing the poisoned food technique.

The 500 ml conical flasks containing 250 ml PDA medium were sterilized in autoclave at 1.2 Kg cm⁻² pressure for 20 minutes. The calculated quantity of test fungicides was added aseptically in autoclaved lukewarm PDA medium and mixed well by stirring to facilitate uniform mixing of fungicides in the medium. Afterwards, 20 ml of medium with respective fungicide was poured in previously sterilized and labelled Petriplate. Three replications were maintained in each treatment. The Petriplate containing PDA medium without addition of fungicide served as control. The fungal block of 5 mm diameter was kept aseptically in the centre of each Petriplates and was then incubated at room temperature (27 ± 2°C).

The observations were recorded daily for radial growth in mm up to full growth in any Petriplate. The per cent growth inhibition (PGI) was worked out using the following formula given by Vincent (1947).

$$\% \text{ growth inhibition} = \frac{C - T}{C} \times 100$$

where, C = Growth in control Petriplate in mm

T = Growth in treated Petriplate in mm

The data was statistically analyzed.

RESULTS AND DISCUSSION

The fungus *F. moniliforme* was isolated from pink to pinkish yellow discolored seed collected from rice panicle.

The bio-efficacy of eleven fungicides tested against *F. moniliforme* (Table 1) indicated that among all the fungicides tested, three concentrations of Topsin-M 75% WP and higher concentration of Emisan 6% WP were

Correspondence to:

H.S. WABALE, Department of Plant Pathology, N.M. College of Agriculture, Navsari Agriculture, NAVSARI (GUJARAT) INDIA

Authors' affiliations:

H.L. CHAUHAN, Department of Plant Pathology, N.M. College of Agriculture, Navsari Agriculture, NAVSARI (GUJARAT) INDIA