

Isoprothiolane – a new fungicide for the management of rice blast

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ABSTRACT

Blast caused by *Pyricularia grisea* Sacc. is one of the major diseases of rice. In situations of sudden occurrence of the disease, use of fungicides is the only effective solution for the immediate suppression of the disease. An attempt was made to test the efficacy of Isoprothiolane (Fuji-One 40E) for the control of blast. Three doses of the fungicide, isoprothiolane (Fuji-One 40 E) was tested in comparison with the standard check fungicide Tricyclazole (Beam 75WP). All the three doses of the fungicide tested were statistically on par with the check fungicide, tricyclazole in reducing the disease and increasing the yield. Hence the lowest dose of isoprothiolane (Fuji One 40E) @ 1.5 ml l⁻¹ which reduced the leaf blast severity by 45.34 per cent and neck blast severity by 16 per cent and increased the yield by 26.9 per cent could be effectively utilized for the control of blast.

Key words: Blast, *Pyricularia*, Isoprothiolane

Blast caused by *Pyricularia grisea* Sacc. is a devastating disease of rice. It can cause economic yield losses (Tripathi *et al.* 1997). Even though the fungus can infect the crop at any stage of its growth, the plants are more susceptible at the seedling stage and at the panicle formation stage. The disease is severe in upland ecosystem due to the increased susceptibility to blast by the plants under non flooded conditions (Oh, 1985). In Kerala blast is a major problem in the wet season especially in dry sown crop. Fungicides are the only effective solution in situations of sudden occurrence of the disease.

A field experiment was conducted to test the efficacy of different doses of Fuji-One 40E against rice blast at the Regional Agricultural Research Station, Pattambi in rainfed uplands during the years 2001 and 2003 in wet season. The experiment was laid out following randomised block design with four replications using the highly susceptible variety Triveni. The treatments were of Fuji-One 40E were at 1.5ml l⁻¹, 2.0 ml l⁻¹, 3.0 ml l⁻¹ and Tricyclazole (Beam 75 WP) at 0.6g l⁻¹, along with an untreated check.

Two foliar sprays with the fungicides were given, first spray immediately after the symptom appearance followed by the second spray after 15 days. The leaf blast severity as per the Standard Evaluation System scale (0-9 SES scale) and per cent incidence

of neck blast were recorded. Grain yield was also recorded at the time of harvest.

The effect of Fuji-one on the blast severity is given in Table 1. The different doses of the fungicide tested were significantly superior to control in reducing the leaf blast incidence. All the three doses of Fuji-one tested were statistically on par with the standard fungicide in controlling the disease. The leaf blast severity recorded in the plots treated even with the lowest dose of Fuji-one was (score 3.37) statistically on par with the disease severity recorded in plots treated with the higher doses of Fuji-one as well as the standard check fungicide (score 3.21).

Table 1. Efficacy of different doses of Fuji-one against of rice (Pooled mean for 2001 and 2003)

Treatments	Leaf blast severity (score) (0-9 SES scale)	Neck blast incidence (%)	Yield (t ha ⁻¹)
T ₁	3.37 (1.83)	17.08 (24.01)	2.59
T ₂	3.20 (1.78)	14.58 (21.59)	2.63
T ₃	3.19 (1.79)	16.64 (23.57)	2.61
T ₄	3.21 (1.79)	12.95 (20.45)	2.71
T ₅	5.76 (2.39)	26.05 (30.32)	1.90
CD (P=0.05)	0.134	5.90	0.27

The values in parenthesis are sqrt. transformed values for leaf blast severity and arcsin transformed values for neck blast incidence.

There was statistically significant reduction in neck blast incidence, the lowest incidence of neck blast was recorded in plots treated with Beam (12.95%) as against 26.05% in control plots. The neck blast incidence recorded in the plots treated with the Fuji-one (1.5ml l⁻¹) was 17.08 per cent which is significantly less than the control and statistically on par with the check fungicide.

The yield recorded in all the plots treated with different doses of Fuji-One were significantly superior to control and were on par with the standard check fungicide. The plots sprayed with the lowest dose of Fuji-One (1.5ml l⁻¹) recorded a yield of 2.59 t ha⁻¹ which was significantly superior to the yield recorded in control plots (1.9 t ha⁻¹) and was statistically on par with the other doses of the fungicide as well as the standard check. The three doses of the fungicide, Isoprothiolane (Fuji-One– 40E) were statistically on par in reducing

the blast and also in increasing the yield. Identification of newer molecules will be always useful since the continuous use of the same molecules especially systemic fungicides will lead to the development of resistance in the pathogens. The results of the present study revealed the effectiveness of Fuji-One 40E (1.5 ml l⁻¹) against blast that reduced the leaf blast by 41 per cent, neck blast severity by 34 per cent and increased the yield by 36.32 per cent. This fungicide could be effectively utilized for the control of rice blast.

REFERENCES

- Tripathi SK, Patel RP and Tiwari KL 1997. Influence of weather factors on rice blast and its chemical control. *Advances in Plant Science* 10 (2) : 89-93
- Oh SH 1985. *Rice Diseases* (2nd ed). Commonwealth Agricultural Bureau, Kew, England pp.137