

*Agri. Res. J. Kerala, 1974: 12 (2)*

## FIELD EVALUATION OF FUNGICIDES AGAINST PYRICULARIA ORYZAE CAV., CAUSING RICE BLAST

Blast incited by *Pyricularia oryzae* is the most destructive disease of rice. As most of the high yielding strains are susceptible to blast studies were undertaken at the Rice Research Sub Station, Moncompu, Kerala, to evaluate the efficacy of some proprietary fungicides in controlling the disease under field conditions. Blitox (Copper oxychloride) Captan (N (trichloromethyl thio) 3a, 4, 7, 7a tetrahydrophthalimide), Cuman-L (Zinc dimethyl dithio carbamate), Dithane-M-45 (Zinc ion and manganese ethylene bisdithio carbamate.), Dithane Z-78 (Zinc ethylene bisdithio carbamate), Hinosan (O-ethyl S S diphenyldithio phosphate.), Kocide (Cupric hydroxide) Miltox (Zinc ethylene bisdithio carbamate + copper oxychloride) and Bordeaux mixture were the fungicides used.

The experiment was conducted in randomised replicated plots of size 5 x 3m. The variety Jaya was planted with a spacing of 16 x 10cm. There were two treatments viz., 5 sprayings at an intervals of 15 days from 10th day of transplanting and 3 sprayings at an interval of 20 days after transplanting. Hinosan was sprayed at 0.1% and all other fungicides at 0.2% and at the rate of 500 l/ha.

The leaf infection was recorded on 100 hills per plot, selected at random. The leaves were graded into 5 categories depending on the lesion type viz. 0 - (no lesion), 1 - (Small brown specks of pinhead size), 2 - (Small roundish lesions with necrotic grey spots) 3 - (Lesions quite conspicuous, elliptical with large necrotic centre.) and 4 - (Lesions many, large, leafblades withered, leaf area 50-100% damaged). Based on the observations of 100 hills, the disease index for each was worked out using the formula:  $\text{Disease Index} = \frac{\text{Sum of all numerical ratings}}{\text{Total number of hills} \times 100/4}$  where 4 rating of maximal disease category. The percent efficiency of each fungicide over the control was worked out by the formula:  $\text{Percent efficiency} = \frac{\text{Disease index in control} - \text{Disease index in treatment}}{\text{Disease index in control}} \times 100/4$ .

Panicle infection was recorded as percentage of affected panicles based on the observations of ten hills per plot at random. The per cent efficiency over control was worked out for each treatment by the formula,  $\text{Percent efficiency} = \frac{\% \text{ of panicle blast in control} - \% \text{ of panicle blast in treatment}}{\% \text{ of panicle blast in control}} \times 100/4$

RESEARCH NOTES

**Table 1**

**Mean leaf infection, panicle infection and grain yield**

| Treatment                                 | Leaf blast       |   | Panicle blast                      |   | grain yield<br>in kg./ha. | percent<br>efficiency<br>over<br>control |
|---|------------------|---|------------------------------------|---|---------------------------|--|
|   | disease<br>index | percent effici-<br>ency over<br>Control | percent of<br>affected<br>panicles | percent effi-<br>ciency over<br>control |                           |  |
| Blitox (5 sprayings)                      | 50.83            | 18.7                                    | 48.43                              | 8.0                                     | 5367                      | 12.6                                     |
| Blitox (3 sprayings)                      | 51.80            | 17.6                                    | 50.43                              | 4.2                                     | 5667                      | 18.9                                     |
| Bordeaux mixture<br>(5 Sprayings)         | 47.08            | 24.7                                    | 41.74                              | 20.7                                    | 5567                      | 16.8                                     |
| », (3 „ )                                 | 46.83            | 25.1                                    | 40.76                              | 22.6                                    | 5434                      | 14.0                                     |
| Captan (5 „ )                             | 50.92            | 18.5                                    | 49.64                              | 5.7                                     | 5134                      | 7.7                                      |
| (3 „ )                                    | 53.33            | 14.7                                    | 39.53                              | 25.1                                    | 4834                      | 14                                       |
| Cuman (5 „ )                              | 51.58            | 17.5                                    | 33.26                              | 36.8                                    | 5701                      | 19.6                                     |
| (3 „ )                                    | 40.42            | 35.3                                    | 28.67                              | 45.6                                    | 5968                      | 25.2                                     |
| Dithane M-45 (5 „ )                       | 44.08            | 28.6                                    | 38.16                              | 27.5                                    | 5634                      | 18.2                                     |
| (3 „ )                                    | 54.00            | 13.6                                    | 25.34                              | 51.9                                    | 6068                      | 27.3                                     |
| Dithane Z-78 (5 „ )                       | 51.75            | 17.1                                    | 50.03                              | 5.0                                     | 4734                      | -0.5                                     |
| (3 „ )                                    | 47.00            | 24.8                                    | 40.58                              | 23.0                                    | 5401                      | 13.3                                     |
| Hinosan (5 „ )                            | 45.50            | 27.2                                    | 27.60                              | 47.6                                    | 5301                      | 11.2                                     |
| (3 „ )                                    | 48.90            | 21.8                                    | 42.23                              | 19.8                                    | 6034                      | 26.6                                     |
| Kocide (5 „ )                             | 56.58            | 9.5                                     | 46.82                              | 11.1                                    | 5634                      | 18.2                                     |
| (3 „ )                                    | 49.83            | 20.3                                    | 44.96                              | 24.6                                    | 5667                      | 18.9                                     |
| Miltox (5 „ )                             | 40.08            | 35.9                                    | 50.85                              | 4.0                                     | 5034                      |  |
| (3 „ )                                    | 37.33            | 40.3                                    | 34.55                              | 34.4                                    | 6001                      | 25.9                                     |
| Control (without fungicidal<br>treatment) | 62.25            | —                                       | 52.82                              | —                                       | 4567                      | —  |
| F-test                                    | Not sig.         |   | Not sig.                           |   | Not sig.                  |  |

The results are presented in Table 1. Treatment effects were not statistically significant. Reddy and Pandit (1972) also found that dithane Z-78, dithane M-45, kocide, miltox and difolatan were **uneffective**. However from the observation on leaf blast, panicle infection and grain yields, it may be seen that the fungicides dithane M-45, hinosan cuman and miltox are comparatively efficient than blitox, bordeaux mixture, captan, dithane Z-78 and kocide in controlling the rice blast on percent efficiency basis. Five sprayings were not found to exhibit more efficiency over 3 sprayings except for hinosan in the case of leaf blast and panicle infection.

The authors are grateful to Dr. R. Gopalakrishnan, Rice Specialist, Kerala for encouragement and to the Kerala Agricultural University for providing facilities

## REFERENCE

Reddy, P. R. and Pandit S. V. 1972. Screening of fungicides for the control of blast disease of paddy. *Sci. & Cult*, 38 : 144-145.

Kerala Agricultural University,  
Rice Research Sub Station,  
Moncompu, Kerala.

P. VARADARAJAN NAIR  
P J TOMY

(M.S. received: 3-9-1974)