ABSTRACT

Brown spot caused by *Drechslera oryzae* (Breda de Haan) Subramainan and Jain is a serious disease of rice of wide spread occurrence and inflicting heavy damage to the crop in North Bihar in Boro and Kharif season. Keeping in view the importance of rice and seriousness of the disease, the studies mainly on its pathogenicity, its development at different dates of sowing, effect of growth stages of rice verities on the development of disease, its development in direct seeded and transplanted rice varieties/entries at dough and mature stages, its development in Boro and Kharif seasons rice, screening of rice varieties/elite entries for their resistant against brown spot, effect of inorganic nutrients application on disease severity in pot experiment, effect of organic and inorganic nutrients application on brown spot of rice in vivo, evaluate the effect of different seed treating chemicals on germination of seed, root and shoot development and severity of brown spot on the rice seedlings and efficacy of different fungicides in reducing the severity of brown spot were carried out during Kharif 1999 and 2000.
The pathogenicity of *D. oryzae* was proved on rice varieties by artificial inoculation and subsequently Koch’s postulates were established.

The typical spot on leaves are small, oval or circular and dark brown. Most of the spots had light yellow halo around the outer edge.

Morphological studies of *D. oryzae* showed that conidia were large, fusiform, acrogenous and slightly curved and septate. The size of conidia varied from 35.0 - 62.0 x 6.0 - 11.0 μm. The conidia were septate and it varied from 4-9. Conidiophores were dark, olivaceous, and length varied from 80.0-135.0 μm.

Manipulations in dates of sowing have been found effective in the management of the disease. Among the different dates of showing least (7.1%) and low (10.1%) development of brown spot was noticed in plots sown on 25th May and 10th June respectively. Delayed sowings predisposed the rice plants to severe infection and development of the disease.

The growth stages of plants showed profound effect on the development of the disease. The dough stage recorded maximum disease infection. The least development of disease was found at seedling, tillering, and to some extent on panicle initiation stage. Among the varieties minimum and maximum severity of disease was found in the verity Richaria and Pankaj respectively.

In direct seeded rice and transplanted rice the disease severity was more in direct seeded rice than the transplanted rice. Among the dough and mature stages, the maximum severity of disease at mature stage than the dough stage in both conditions.

In Boro and Kharif season rice the disease severity was more in Boro season than the Kharif season rice. The disease severity was maximum in seedling stage and minimum in dough stage in Boro season rice, where as in Kharif season the disease severity was maximum in dough stage and minimum in seedling stage respectively.

In screening trial out of 101 varieties/elite entries, only two entries namely IET 13818 (OR- 165-97-15) and IET 13830 (Rewa 14-174) showed highly resistant
reaction against the brown spot disease. Twelve entries were found resistant, while fifteen entries/varieties were moderately resistant. Rest of the varieties/elite entries were screened either moderately susceptible or susceptible or highly susceptible.

In respect of inorganic nutrient application have profound effect on severity of brown spot of rice. The severity of disease due to inorganic nutrient application was significantly reduced the disease as compared to no inorganic nutrient sources.

In respect of inorganic and organic nutrient application have important effect on disease development of brown spot of rice. The severity of disease due to application of organic and inorganic sources was significantly low as compared to no organic and inorganic sources.

In respect of seed treating chemicals, the maximum germination was observed in Bavistin treated seed where as the minimum germination was found in control.

In respect of seed treating chemicals, have been found effective on the root and shoot length development. The maximum root and shoot length was found in Bavistin treated seed, where as the minimum root and shoot length was found in control.

In respect of seed treating chemicals have been found effective on the severity of brown spot of rice seedlings. The minimum severity of brown spot of rice seedlings was found in Bavistin treated seed where as the maximum severity of disease of rice seedlings were found in control.

In respect of efficacy of different fungicides in reducing the severity of brown spot of rice. The minimum severity of brown spot and maximum yield of rice were found in Bavistin, treated seed and one spraying of Bavistin at pre-flowering stage plots where as the maximum severity of brown spot and minimum yield were found in control plots.