

EFFECT OF CERTAIN NUTRIENT ELEMENTS ON THE SAPROPHYTIC SURVIVAL OF *RHIZOCTONIA SOLANI* IN SOIL

Sheath blight disease of rice incited by *Rhizoctonia solani* Kuhn [*Thanatephorus cucumeris* (Frank) Donk.] has become serious consequent on the introduction of susceptible high yielding varieties and increased use of nitrogen fertilizer. *R. solani* is a soil borne fungus which is able to survive in soil for more than a year (Kannaiyan and Prasad, 1976). The present paper deals with the influence of certain micronutrients on the saprophytic survival of *R. solani* in soil.

Earthen pots filled with 500 g of well sieved clay soil was used in this study. The nutrient elements as borax, ammonium molybdate, sodium molybdate, zinc sulphate, magnesium sulphate, manganese sulphate, calcium sulphate, copper sulphate and ferrous sulphate were added to soil 0.05 per cent level. Two hundred and fifty rice straw bits (ADT-31) of 2.5 cm length from sheath blight infected plants were cut and added to the soil. The straw bits were buried in soil to a depth of 7.5 cm from the soil surface. The replications were maintained for each treatment. The moisture content of the soil was maintained at 50 per cent water holding capacity throughout the period of study. The treated pots were incubated at room temperature ($28 \pm 2^\circ\text{C}$). Five straw bits in each replication were removed at monthly intervals, washed with distilled water, surface sterilized with 0.1 per cent mercuric chloride for one minute, washed well in sterile distilled water and transferred to petridishes containing Dexon medium (Ko and Hora, 1971).

The results are given in Table 1. All the nutrient salts have reduced the saprophytic survival of *R. solani* in soil as compared to untreated control. Among the salts tried borax and copper sulphate have reduced the saprophytic survival of the pathogen to 330 days as against 420 days in control. The pathogen existed saprophytically up to 360 days in soils treated with ferrous sulphate. The other nutrients were not effective in reducing the saprophytic survival of the pathogen in soil.

Soil amended with nutrient salts have reduced the saprophytic survival of the pathogen. Soils treated with borax, copper sulphate and ferrous sulphate have pronouncedly reduced the saprophytic survival of *R. solani*. Varadarajan (1953) reported that the saprophytic colonization of *Fusarium vasinfectum* in soil was reduced by iron and manganese amendments. Sadasivan (1970) reported that the colonization of buried cotton stubble by *Fusarium vasinfectum* in trace element treatment was very much lower than in control. In the present study, the reduction of saprophytic survival might be due to the increase in the soil microflora which may compete with the pathogen for nutrients. Significant increase in bacterial populations and reduction in the survival of *F. vasinfectum* due to the addition of the trace elements in soil was reported by Varadarajan (1953). The reduction in saprophytic survival of *R. solani* may also be due to

the direct toxic effects of micronutrients on the pathogen. Similar result of the direct toxic effect of micronutrients was reported by Sulochana (1952).

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സംഗ്രഹം

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