

RESEARCH NOTES

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Influence of Inoculum Potential of *Rhizoctonia Solani* Kuhn on Seedling Infection of Rice.

Sheath blight disease of rice caused by *Rhizoctonia solani* (*Thanatephorus cucumeris* (Frank) Donk) is potentially a serious disease in many rice growing areas. With the introduction of high yielding susceptible and high fertilizer responsive strains of rice the occurrence of the disease has been found to be severe. The occurrence and severity of sheath blight disease of rice in Tamil Nadu was reported by Venkata Rao and Kannaiyan (1973) and Kannaiyan and Prasad (1976). The seedling infection of rice due to *R. Solani* was reported by Kannaiyan and Prasad (1978). The present note deals with the influence of inoculum potential of *R. Solani* on seedling infection of rice and the results are reported here under.

Well sieved, sterilized and unsterilized clay soil was filled in earthen pots and surface sterilized seeds of ADT-31 susceptible to the disease were sown. The pathogen multiplied in Rice-Sand medium (Kannaiyan and Prasad, 1978) was inoculated to give graded series of inoculum levels (W/W) in both sterilized and unsterilized soils viz. 1, 2, 3, 4, 5, 10, 15, 20, 25, 30, 40, 50, 60, 70 and 80 per cent on 15th day after sowing. Seedlings in sterile and unsterile soils without inoculation served as controls. For each inoculum level two replicate pots were maintained and the moisture content was maintained at

saturation level. The pots containing sterilized soil were watered with sterilized tap water. The development of seedling infection was observed and recorded.

The results are presented in Table I. Increase in inoculum levels increased the seedling infection upto 25 per cent and thereafter a gradual decline in infection was observed in both sterilized and unsterilized soils. It was found that 20 and 25 percent inoculum levels of *R. Solani* were optimum for inducing highest seedling infection of rice in both sterilized and Unsterilized soil. Shanmugam (1975) has reported that 25 percent inoculum level was optimum to induce root rot of sunflower caused by *Rhizoctonia bataticola*. The results have also indicated that the increase in inoculum level beyond 25 per cent gradually reduced the disease incidence. It has been demonstrated by earlier workers that increase in inoculum level need not necessarily increase the pathogenicity in certain soil-borne diseases (Rao and Vital Rao, 1963 and Kannaiyan and Prasad, 1973).

The disease incidence was less in unsterilized soil than in sterilized soil, possibly because the fungus was more active in the absence of competing soil microflora. The effects of interaction between root-infecting fungi and soil saprophytes at root surfaces on the

outcome of infection are not well understood (Sanford, 1959). The decrease in disease observed in the present study with *R. Solani* when inoculum was added to soil at high levels may be due to its failure to attain the required threshold level of infection owing to autoinhibition.

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Table-1 Influence of inoculum potential on seedling infection of rice

| Inoculum Levels (%) | Sterilized Soil | Unsterilized Soil |
|------------------------|---------------------------|-----------------------------|
| | Mean seedling infection % | Mean seedling infection (%) |
| 1 | — | — |
| 2 | 6.0 (14.18) | — |
| 3 | 10.0 (18.44) | — |
| 4 | 12.0 (20.27) | — |
| 5 | 12.0 (20.27) | — |
| 10 | 28.0 (31.95) | 18.0 (25.10) |
| 15 | 58.0 (49.60) | 22.0 (27.97) |
| 20 | 100.0 (90.00) | 78.0 (62.03) |
| 25 | 100.0 (90.00) | 84.0 (66.42) |
| 30 | 86.0 (68.03) | 68.0 (55.55) |
| 40 | 84.0 (66.42) | 50.0 (45.00) |
| 50 | 60.0 (50.77) | 46.0 (42.71) |
| 60 | 50.0 (45.00) | 36.0 (36.87) |
| 70 | 40.0 (39.23) | 30.0 (33.21) |
| 80 | 3.60 (36.87) | 26.0 (30.66) |

S.E = 2.9286

1.8594

S.E.D = 4.1417

2.6296

C.D = 8.88

4.206

Figures in parenthesis are transformed value

Significant at 1% Level

— No infection