

Biological Control Of *Rhizoctonia bataticola* On Black Gram Grown In Rajasthan**Dr. Jagat Pal Singh****Professor****Department Of Botany****Raj Rishi Govt. College****Alwar (Raj.)****Dr. Ram Pal Ahrodia****Asstt. Prof****Department Of Botany****Govt. Nehru Memorial College****Hanumangarh****(Corresponding Author)- rpahrodia1@gmail.com****(Received:15June2023/Revised:30June2023/Accepted:12July2023/Published:22July2023)****Abstract:**

Vigna is one of the important genera growing among the pulse which forms a major part of the diet of people in India. Three field surveys were carried out covering all the major crop growing districts of Rajasthan state. Biological antagonists were applied to control the external seed-borne pathogen.

Keywords: - Field survey, Biological Antagonists, Seed-Borne Pathogen.

Introduction

Pulses form an important part of Indian dietary. They are an important source of proteins. Black gram is mostly consumed in the form of "Daal". It contains 24% protein. Black gram is found to be attacked by many fungal and viral diseases and some insect pests as well.

Dhingra and Khare (1973) screened 38 fungi, isolated from rhizoplane, rhizosphere and non-rhizosphere soils of black gram for *in-vitro* and *in-vivo* antagonism against *R. bataticola*. Vasudeva and Chakravarthi (1954) reported that culture filtrates of *Bacillus subtilis*, added to the growth medium, retarded the growth of *R. bataticola* and *Alternaria solani*. Singh and Mehrotra (1980) identified one isolate of *Bacillus subtilis* and three isolates of *Bacillus sp.* to be antagonistic to *R. bataticola* causing root disease in chickpeas.

Materials And Methods

Trichoderma viride and *Rhizobium japonicum* were used as antagonists against *R. bataticola*. Fresh culture of *T. viride* was procured from ITCC, IARI, New Delhi and *R. japonicum* was obtained from Rajasthan State Agro Industries Corporation, Jaipur. These cultures were maintained on Potato Dextrose Agar (PDA) medium and Congo red Yeast Extract Mannitol Agar (Cr YEMA) medium respectively. The composition of these media was as follows:

Potato Dextrose Agar Media

Potato	-	250 gm.
Dextrose	-	20 gm.
Agar	-	20 gm.
Distilled Water	-	1000ml.

Yeast Extract Mannitol Agar Media

Mannitol	-	10 gm.
K ₂ HPO ₄	-	0.5 gm.
MgSO ₄	-	0.2 gm.
CaCl ₂	-	0.1 gm.
Yeast extract	-	1 gm.
CaCO ₃	-	1 gm.
Agar – Agar	-	20 gm.
Congo red	-	1 ppm.
Distilled water	-	1000 ml.

The antagonists were applied by the seed pelleting method. 590 gm of sugar was dissolved in 500 ml of water and the solution was heated for 15 min. On cooling 200 gm of gum arabic was added to the solution. Seeds were dipped in the prepared solution and air dried and used for the treatments. Three replicates of thirty-four seeds per sample were treated separately by coating them with conidia of *T. viride* and by smothering seeds with *Rhizobium* bacteria. Untreated seeds served as control. Data, of per cent seed germination and recovery of the pathogen, were taken on the 8th day of incubation.

Results

Two seed samples (ac nos. 9325 & 9328) carrying 40% and 15% natural infection of *R. bataticola* were used for the study. Seed pelleted with conidia and mycelium of *Trichoderma viride* were tested for their effect on seed germination and infection of *R. bataticola*. The treatment significantly reduced the recovery of pathogens and brought about increased germination of seeds.

Above mentioned seed samples were also treated with *Rhizobium japonicum*. Germination of seed was increased and *R. bataticola* decreased significantly.

Table: Biological Control

S. No. / Germination Recovery of	Antagonists	Germination %		Recovery of pathogen %	
		Sample ac no. 9325 9328		Sample ac no. 9325 9328	
1	<i>Trichoderma viride</i>	98.3	N.S.	1.0a	2.6b
2	<i>Rhizobium japonicum</i>	99.0	N.S.	5.3b	1.0b
3	Control	77.0	94.3	40.0	15.6

a = Significant at 0.001 level

b = Significant at 0.01 level

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