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BIOCONTROL OF JACKFRUIT ROT BY USING TRICHODERMA SPP

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Abstract:
Two species of *Trichoderma* namely *Trichoderma harzianum* and *Trichoderma viride* were tested aginst *Rhizopus artocarpi* causing fruit rot of jackfruit by applying dual culture technique. Among the two species of *Trichoderma*, *Trichoderma viride* showed maximum inhibition of *Rhizopus artocarpi* sensitive and resistant to ridomil. *Trichoderma viride* was found to be most effective against *Rhizopus artocarpi* inhibiting the pathogen 72.63% and 78.55% in sensitive and resistant isolates respectively.
Keywords: Sensitive, resistant, ridomil, jackfruit rot

Introduction-

Jackfruit (*Artocarpus heterophyllus Lam.*) has been cultivated in India since ancient time. Generally jackfruit is not grown commercially but in certain areas the plant are planted extensively in many fields, in coconut gardens and backyards. Jackfruit is multipurpose species which provides food, fuel, timber and medicinal extract and is potential source of income for both the rural and urban people. Jackfruit is generally grown for its prized edible fruits and seeds (Hayes, 1953; Singh, 1969; Singh, 1986 and Thomas, 1980). There are more than 20 diseases reported on jackfruit tree. Among them leaf spot is caused by *Colletorichum lagenarium* (paris.) Ell. and Holst. Another leaf spot is caused by *Septoria artocarpi* Cke. The pink disease is caused by *Corticium salmonicolor* Berk and Br. Stem rot is caused by *Phytophthora palmivora* Butler and brown rot is caused by *Fomes noxious* (Butani, 1978). Fruit and inflorescence rot caused by *Rhizopus artocarpi* is very common and serious disease of jackfruit (Nelson, 2005).

Use of biocontrol agents is another option for control of jackfruit rot. By using biocontrol agents ecofriendely management of disease is possible. In this investigation *Tichoderma spp.* were used as biocontrol agent.

Material and Method –

The 12 isolates of *Rhizopus artocarpi* from Ratnagiri, Sindhuduerg and Kolhapur from Maharashtra state were tested for the sensitivity to ridomil. In that Ra-9 is more sensitive and UV-Ra-11 mutant was more resistant to ridomil. UV-Ra-11 mutant was obtained by exposing Ra-9 sensitive to UV radiations.

To study antagonistic activity of *Trichoderma* spp against *Rhizopus artocarpi* the on Czapek's Dox Agar medium (CDA) dual culture techniques was applied. 20 ml sterilized melted Czapek's Dox Agar medium (CDA)was poured in sterilized petri plates and allowed to solidify. A 8 mm diameter mycelial disc from actively growing margin were taken from 6 day old culture of *Trichoderma* spp. and *Rhizopus artocarpi* were placed on the opposite of the plate at equal distance from the periphery and incubated at 28±2°C. The three replications were maintained for each sensitive (Ra-9) and resistant (UV-Ra-11) isolates. In control plates (without *Trichoderma* spp.), a sterile agar disc was placed at opposite side of the *Rhizopus artocarpi* inoculated isolates plates. Two, four and six days after the incubation period, radial growth of pathogen isolates were measured and percent inhibition of average radial growth was calculated in relation to growth of the control as follows:

L= [(C-T)/C] X100

Where, L is inhibition of redial mycelial growth,
C is radial growth measurement of the pathogen in control,
T is radial growth of the pathogen in the presence of *Trichoderma* spp.)

Table 1: *In vitro* efficacy of *Trichoderma harzianum* (NCIM NO. 1185) and *Trichoderma viride* (NCIM NO.1051) against growth of *Rhizopus artocarpi* by dual culture method.

Sr. No	Antagonist	% Reduction of mycelial growth	
		Sensitive (Ra- 9)	Resistant (UV- Ra- 11)
1	*Trichoderma harzianum* (NCIM NO. 1185)	66.87	75.42
2	*Trichoderma viride* (NCIM NO.1051)	72.63	78.55

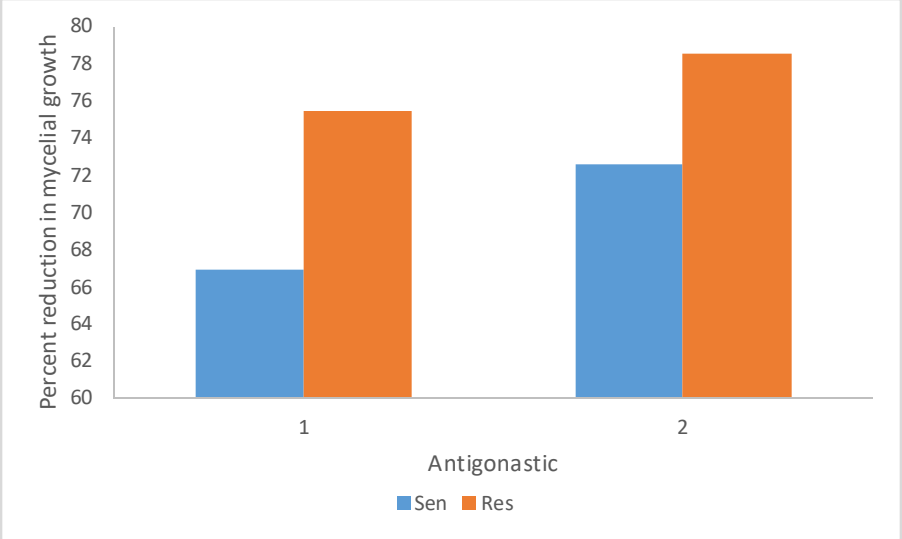

Figure 1 : *In vitro* efficacy of *Trichoderma harzianum* (NCIM NO. 1185) and *Trichoderma viride* (NCIM NO.1051) against growth of *Rhizopus artocarpi* by dual culture method.

Results and Discussion -

The fungal antagonists inhibited mycelial growth of the *Rhizopus artocarpi*(Table 1 and Fig. 1). It is evident from the results of this investigation that the *Trichoderma* spp. has antagonistic activity against *Rhizopus artocarpi*. *Trichoderma viride* showed maximum inhibition of *Rhizopus artocarpi* sensitive and resistant to ridomil. *Trichoderma viride* was found to be most effective against *Rhizopus artocarpi* inhibiting the pathogen 72.63% and 78.55% in sensitive and resistant isolates respectively.

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