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AWARENESS PATTERN AMONG TRIBAL FARMERS AND INTEGRATED CONTROL OF *ALTERNARIA SOLANI* BY LEAF EXTRACT OF *DATURA METEL* AND *TRICHODERMA VIRIDE*

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Most of the farmers especially from the tribal areas are not aware about several aspects of the diseases and their control methods. An awareness programme was conducted in Taloda Taluka during 2009-2010. It has been found that awareness about modern agricultural methods is very poor.

Under laboratory conditions, *Trichoderma viride* was found to be tolerant up to 75% leaf extract of *Datura metel*, where as *Alternaria solani* was susceptible to a dose of less than 70%. Exposure to sub-lethal concentrations of leaf extract had no effect on the *in vitro* antagonistic ability of *T. viride*. While combination of *T. viride* and reduced dose of leaf extract (65%) completely controlled disease incidence in Tomato seedlings as compared to control.

Key words: Awareness, Antifungal activity, *Trichoderma viridi,* leaf extract, *Alternaria solani*..

Due to lack of proper knowledge with the farmers in respect of the vegetable diseases, their causes and remedies, most of the vegetable diseases remain beyond control. No efforts have been made to survey, collect and analyze the quantum of information available to the farmers, which influences the control strategies for a specific disease. Dissemination of such information will certainly be beneficial to control the diseases thereby increasing the production and marketability of the product.

Studies conducted on the use of plant extracts have opened a new avenue for the control of plant diseases. Besides, being safe and generally non-phytotoxic, the plant extracts are known to be effective against various plant pathogens (Misra and Dixit 1977). In recent years, attempts were made to screen the antifungal properties of different plants against plant pathogenic fungi (Grayer and Harborne 1994).

Use of biocontrol methods for the management of various diseases of different crops has been on the increase all over the world but biological control alone will not be feasible to combat the diseases in all cases. Due to high cost and environmental concerns it is not advisable to protect the crops for entire period by conventional fungicides (Singh 1978). Biological control, in integration with fungicidal treatment was found to be a more reliable approach to manage soil-borne plant pathogens (Mukhopadhyay 1987). There are reports on the compatibility of insecticides and fungicides with *Trichoderma* spp. (Bhat and Srivastav 2003, Jebakumar *et al*. 2000). Considering this background, the present study was aimed at studying the integrated control of *A.solani* by leaf extract of *Datura metel* and *T. viride*.

MATERIALS AND METHODS:

Pure cultures of *T.viride* and also the test organism *A.solani,* obtained from M.T.C.C. (Mircrobial Type Culture Collection), Institute of Microbial Technology, Chandigarh, India,

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A) Table 1: Important vegetable Diseases in Taloda region.

Sr No.	Name of Vegetable	Name of Disease
1	Chilli	1) Leaf Curl 2) Ripe fruit rot & Die-back. 3) Powdery mildew. 4) Wilt.
2	Onion	1) Purple blotch.
3	Cole Crop (Cabbage & Cauliflower)	*1) Alternaria* leaf spot. 2) Damping off.
4	Spinach	1) Curly top. *2) Cercospora* leaf spot
5	Tomato	1) Leaf curl. 2) Powdery mildew. 3) Buck eye rot. 4) Bacterial leaf spot.

were grown and maintained in various media as given below:

T. viride **:**Growth conditionAerobic; Temp-30^{0}C; Incubation time-7 days; **Malt extract Agar (MA) medium** at pH-6.5;

A.solani Growth conditionAerobic;Temp-25^{0}C; Incubation time-5 days; **Potato Carrot Agar medium**at pH .

Datura metel L. **(Solanaceae)**:

Leaf extract preparation method:

100 grams leaves of *Datura metel* were collected and washed in running water and ground with 80% ethanol. The extract was filtered through Whatman's No.:1 filter paper and centrifuged at 5000 rpm for 5 minutes and then the extract was diluted with 80% ethanol to 50%, 55%, 60%,65%, 70%, 80% & 90%.

Laboratory experiment:

Mycelial disc (5 mm) of *T.viride* and *A.solani* were placed centrally on a synthetic medium (Okon *et al*. 1973) in 9 cm Petridishes. After 24 hrs, cultures were exposed to mixture of air and leaf extract in glass desiccators. Four concentrations of leaf extract (50%, 55%, 60% and 65%) were prepared by injecting the required volume of leaf extract in to each desiccator. After 24 hrs of exposure to leaf extract, the cultures were removed and colony diameter was measured after every 24 hrs. The growth of culture untreated with leaf extract was also recorded as check. Cultures were incubated and treated with leaf extract at 30^0 C. The antagonistic ability of *T.viride* was checked *in vitro* according to Dennis and Webster (1971). Dual cultures of *T.viride* and *A.solani* were exposed to 55% *Datura metel* extract for 24 hrs.

OBSERVATIONS:

Occurrence of various diseases on vegetable crops, not only affect their production / yield but also their quality. Deformed / diseased vegetables fetch very less / negligible prices in the market. To determine the awareness pattern among cultivators for important vegetable diseases, 100 vegetable farms were visited in Taloda Taluka. The diseases, which were predominant on the particular vegetable, were recorded. The concerned farmers were interviewed for the awareness patterns about

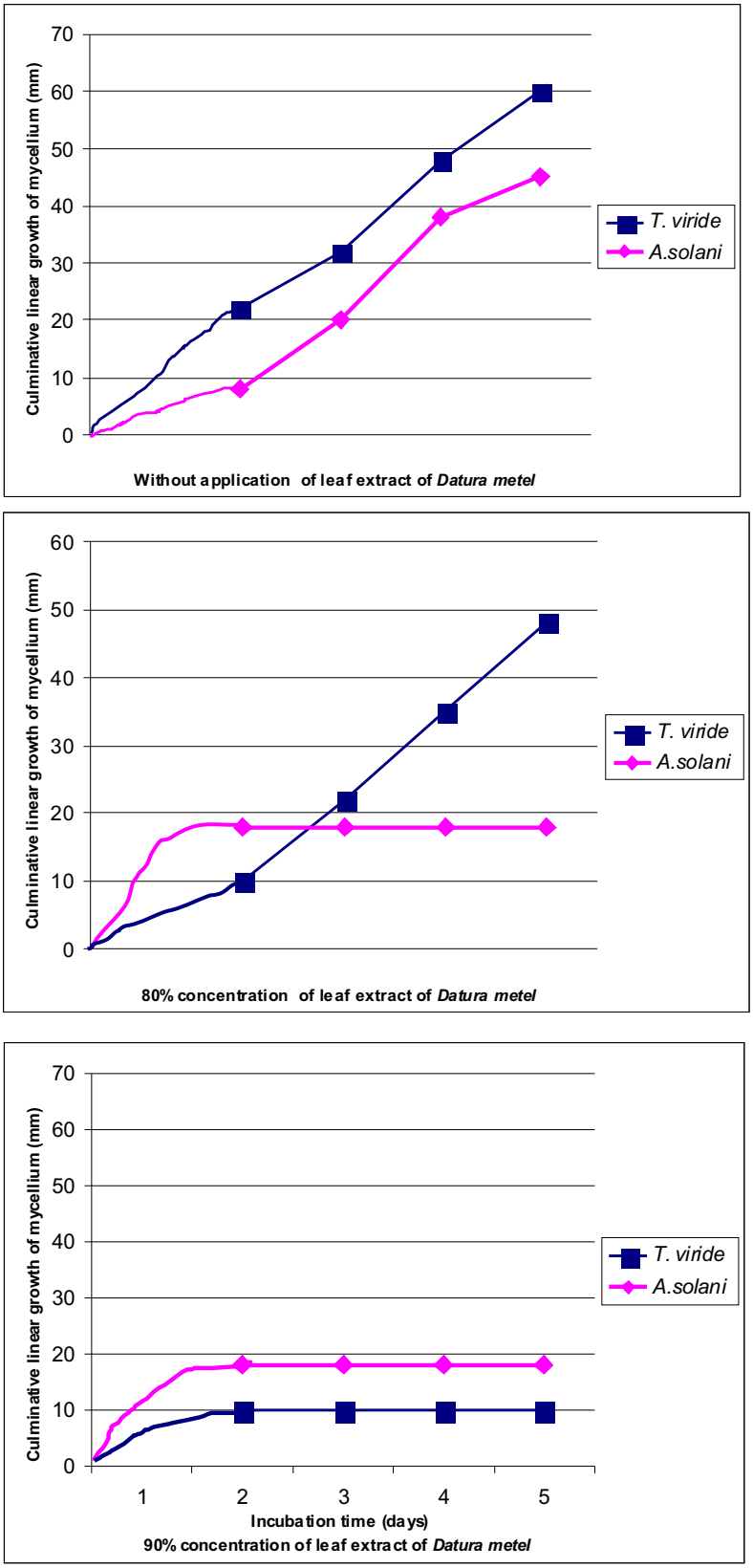

Figure 1:- Growth of *T. viride* and *A.solani* in Petri-dishes

the disease as:

1. Name of the vegetable disease (as known to the farmer).
2. Whether farmer can identify the disease on the basis of symptoms or not.
3. Whether causes are known to him or not.
4. Whether the recurrence of disease & disease cycle is known to him.
5. What control measures does he adopt.

RESULT AND DISCUSSION

During the survey it was commonly observed that the cultivators were not serious about the diseases and their management aspect, until they appear in the rampant form to cause devastating loss. This fact can be substantiated from the findings that hardly 5% cultivators contact the personnel from agricultural department / expert; to know the suitable or recommended control measures, pesticides, etc. and another 5% cultivators refer the news magazine on agriculture to get the knowledge. 90% cultivators use the pesticide as per their past experience / experience narrated by the other farmers or as per the discretion of pesticide dealer. This pattern of pesticide use is mainly responsible for the creation of new pathogen varieties and going to play a major role in creating difficulties for further pesticide control of the disease. It is of urgent need to educate our cultivators in this aspect of pathogen management.

B) Laboratory experiment: -

Effect of leaf extract of *Datura metel*, on growth of fungi on agar, neither *A.solani* nor *T.viride* grew during exposure to the *Datura metel* leaf extract treatment when colonies were aerated, *T.viride* treated with 70% and 80% concentration of *Datura metel* leaf extract continued to grow, where as *A.solani* could not grow when exposed to 80% or more concentration of *Datura metel* leaf extract (Fig.-1). Lower concentrations (below 55%) of leaf extract had no inhibitory effect. *T.viride* was killed only after exposure to 90% *Datura metel* leaf extract.

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