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Comparative study of percentage disease index in Pusa Ruby and S-22 cultivars of tomato during pathogenesis after the infection of *Alternaria solani* Ell & Mart.

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Abstract : The present investigation deals with the comparative study of percentage disease index in two cultivars of tomato (Pusa Ruby and S-22) infected with *Alternaria solani*. Study of " Early Blight Disease " of plant is very important as it causes much more loss in food crops like potato, tomato etc. In humid condition this disease causes fruit rot of tomato in field, storage and transits. *Alternaria solani* is the fungus which is responsible for the disease, belongs to the form class Deutermycetes. In this research two cultivars of tomato were taken and inoculated with pure culture of *Alternaria solani*, maintained in P D A slant and after observing the symptoms, compared between two and Percentage Disease Index was calculated.

Keywords : Early blight, Deuteromycetes, Target board.

INTRODUCTION

Tomato is very important vegetable for Indian people for its important constituents like - proteins, sugars, ascorbic acids etc. Botanical name of tomato is *Lycopersicon esculentum* MILL. It belongs to the family Solanaceae. In humid condition, symptoms of " Early Blight of tomato " shows black infected area with " target board " like concentric rings on the surface of the fruits. Conidia of *Alternaria solani* are golden brown coloured, spindle shaped with vertical and horizontal septa. After maturation it germinates producing germ tube and infects the host and new mycelia are formed.

This project work shows the study of symptoms of two cultivars of tomato, after infection with *Alternaria solani* till rotting, keeping two days intervals and disease rating and percentage disease index of both were determined and comparative analysis of both were done.

MATERIAL AND METHODS

- (A) Cultures of *Alternaria solani* were obtained from the division of "National Center of Fungal Taxonomy," New Delhi, (Ref. No - 1420.08) for comparing and establishing authenticity of the isolates obtained from the tomato fruits.
- (B) The solid medium was used for the maintenance of the pure culture of the fungus *Alternaria solani* was potato, dextrose and agar medium.

For determination of P D I in tomato fruits of both ripe Pusa Ruby and S-22 cultivars, disease assessment procedure was same as adopted by Wheeler (1969), Shekhawat and Chakraborty (1976). To determine the Percentage Disease Index in tomato fruits of both the cultivars, inoculated separately by *Alternaria solani*. To observe the symptoms, ten tomatoes of each cultivar were taken and inoculated. This was carried out for a period of 14 days at an interval of two days each. The disease rating was assessed by using the arbitrary scale mentioned below.

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RESULT AND DISCUSSION

To determine the percentage disease index, 10 fruits were examined in each case for presence of different indices of disease symptoms.

In Pusa Ruby cultivar, disease initially show low intensity upto 4 days after infection. After 10th days infection, rate of increase became almost doubled. The fruit shows soft rotten appearance after 12 days infection. At this stage PDI become 80%.

In S-22 cultivar symptoms show more or less similar pattern. Fruit showed less spots on 10th day in comparison to Pusa Ruby cultivar. After 10th day rate of rotting increases and on 16th to 18th day, it shows watery mass with bad odour in complete rotting.

However there were certain discernible differences in disease syndrome of two hosts due to infection and PDI were also slightly different. At the end period of 10 to 12 days, the disease index was 70% in Pusa Ruby whereas in S-22, it was only 55%. On 8th day PDI reached upto 37.5% in both cultivars. On 4th day, PDI of Pusa Ruby was more than three times in comparison to S-22 cultivar. On 14th days, there were slightly different in percentage disease index between two cultivars. However in both the instances there were very rapid enhancement of disease index during 10 to 14 days of infection, which could be due to rotting of fruits.

TABLE - 1

Progress in disease expressed as PDI in Pusa Ruby cultivar infected with *Alternaria solani* during 14 days pathogenesis.

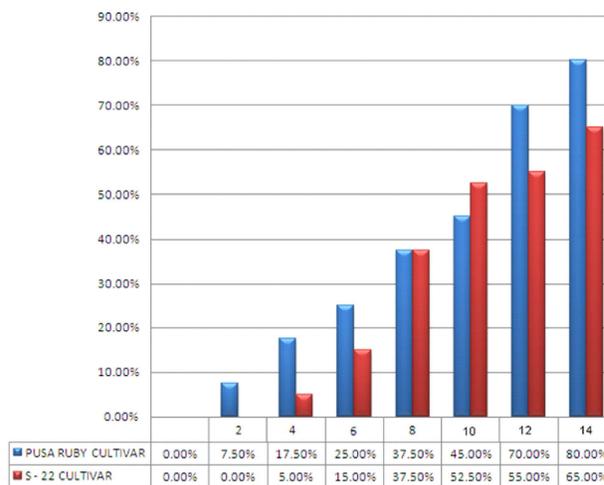
Days after inoculation	P D I
0	0%
2	7.5%
4	17.5
6	25%
8	37.5%
10	45%
12	70%
14	80%

TABLE - 2

Progress in disease expressed as PDI in S-22 cultivar infected with *Alternaria solani* during 14 days pathogenesis

Days after inoculation	P D I
0	0%
2	0%
4	5%
6	15%
8	37.5%
10	52.5%
12	55%
14	65%
16	75%

COLUMN GRAPH SHOWING PERCENTAGE DISEASE INDEX IN PUSA RUBY AND S - 22 CULTIVARS OF TOMATO



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