

A Case Study :

Surveillance of onion basal rot disease incidence caused by *Fusarium oxysporum* f.sp. *cepae* and varietal reaction under field condition

S. SUDHASHA¹, S. USHARANI^{1*} AND T. RAVIMYCIN²

¹Department of Plant Pathology, Faculty of Agriculture, Annamalai University, ANNAMALAINAGAR (T.N.) INDIA

²Department of Botany, Annamalai University, ANNAMALAINAGAR (T.N.) INDIA

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Onion (*Allium cepa* L.) is one of the most important vegetable crops grown in different parts of our country for its local consumption and export. The major constraints in the production of onion are the diseases viz., basal rot, anthracnose, stem blight etc. which cause severe loss in the productivity. both in field and in storage condition. Of all the diseases the basal rot caused by *Fusarium oxysporum* f.sp. *cepae* is the serious disease in onion growing areas, causing considerable economic losses. The disease occurs in all stages of growth of the crop. Yield loss up to 50 per cent has been recorded in susceptible cultivars (Evert *et al.*, 1985) and 90 per cent losses during seedling stage (Davis and Reddy, 1983), and storage loss accounted to 30 per cent (Barnocakine Stoilova, 1986).

The study was undertaken to survey onion basal rot disease incidence in some parts of Coimbatore and Dindigul districts of TamilNadu state and the varietal reaction was assessed in field condition. The survey conducted in two districts of Tamilnadu state and the population count of pathogen were taken from five different places of the two districts. The pathogenicity of the *Fusarium oxysporum* f.sp. *cepae* was assessed at different age of the crop. In field condition, about six varieties were assessed for varietal reaction against the pathogen.

Survey on the occurrence of the onion basal rot:

Surveys were undertaken in important onion growing pockets in two districts of Tamil Nadu viz., Coimbatore and Dindigul. At each place, five plots were selected. In each plot one metre square area at five randomly selected places were used for taking observation on basal rot. The formula used for calculating disease incidence is as follows (Rajendran, 1995).

$$\text{Disease incidence} = \frac{\text{Total number of plants infected}}{\text{Total number of plants observed}} \times 100$$

Estimation of soil population of basal rot pathogen at different places:

Dilution plate technique was adopted to assess the population of soil borne pathogens as per the method followed by Allen (1953). The infected soil samples were collected from Palladam, Pollachi, Sulur, Thondamuthur and TNAU orchard. One gm soil sample was diluted with ten ml of sterile distilled water. Serial dilution were made. One ml of the final dilution (10⁶) was poured into the Petri plate and 15ml of PDA medium was added and kept at room temperature for 3 days. Colony forming units were counted at the end of the incubation period.

Pathogenicity of *Fusarium oxysporum* f.sp. *cepae*:

The fungus was multiplied by inoculating in sand maize medium (Muthusamy, 1972). Sand and ground maize seed were mixed at the ratio of 19: 1, moistened and autoclaved at 1-4 kg/cm² for 2 hours about 2-3 times consequently. In this sterilized medium, one week old culture of *Fusarium oxysporum* f.sp. *cepae* was inoculated and incubated at 28±2°C for 14 days. Sieved garden soil was taken in pots and autoclaved at 1-4 kg/cm² for 2 hours about 2 days consequently. Inoculum multiplied on sand maize medium was incorporated @50g/kg of soil. After 10 days, 50 days old onion seedlings of variety Rampur Rose were transplanted into pots. Symptom development were observed 30 days after transplantation. From the infected plants, the causal agent was re-isolated.

Effect of inoculum level and age of the plant on disease incidence:

The method followed by Bohra and Lodha (1998) was

* Author for correspondence.