



Research Paper

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Ratio of avirulent and virulent population of *Pythium ultimum* as expressed by major cultivars of tomato

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Abstract : Existence of 3 avirulent to 1 virulent propagules of *Pythium ultimum* in soil was confirmed with experiment on Pusa Ruby, TS-22, Vaishali and Parbhani Yashashri by 20 % culture filtrate method. Pusa Ruby possessed monogenic resistance to *Pythium ultimum* and, therefore, phenotypic ratio of 3 resistant : 1 susceptible was obtained which represented matching frequency of 3 avirulent: 1 virulent propagules of *P. ultimum* in 20 % culture filtrate.

Key words : *Pythium ultimum*, Virulancy

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Tomato (*Lycopersicon esculentum* Mill) is most popular vegetable grown all over the world. In India, tomato has wider coverage in comparison to other vegetables. The leading tomato growing states are Uttar Pradesh, Karanataka, Punjab, Haryana, Maharashtra and Bihar. The area and production of tomato in our country was about 3.55 lakh ha and 54.41 lakh tonnes (Anonymous, 1998), respectively. With the development of high yielding varieties/hybrids in last two decades significant progress has been made in tomato production.

Tomato as protective food is being extensively grown as annual all over the world. It is very good source of income to small and marginal farmers and contributes to the nutrition of the consumers. Tomato is a rich source of minerals, vitamins and organic acids.

Tomato is warm season crop prone to many diseases. Most important diseases which are found in India are bacterial wilt, damping off, Fusarium wilt, early blight etc. Damping off disease is caused by *Pythium ultimum*. Pre-emergence damping off is expressed with killing of seeds from initial stage of seed germination to the emergence. Post emergence phase consists of rapid shrinking and darkening of cortical tissue of

the hypocotyl, with dropping of leaves and toppling of seedlings to ground.

There are many strains of *Pythium ultimum* in soil, all the strains are not virulent. Some strains are avirulent to the host plant by gene for gene concept; for each a virulent gene in pathogen there is a corresponding gene in the host conferring resistance and *vice versa*. To find out the ratio of virulent to avirulent strain in the *Pythium ultimum* investigation was undertaken.

RESEARCH METHODS

The occurrence of virulent and avirulent population in haploid fungi like *Fusarium* and *Melampsora* has already been established (Agrios, 1997 and Flor, 1943). Raffin and Trilly (1995) noted that about 75 per cent isolates of *Pythium* sp. could cause only latent infection without symptoms indicating almost avirulent behaviour. So as to obtain the ratio of avirulent to virulent population of *Pythium ultimum* Trow on four different varieties *viz.*, Pusa Ruby, TS-22, Parbhani Yashshri and Vaishali; this experiment was conducted at Department of Plant Pathology, College of Agriculture, Latur in 2006 in split plot design with four replications. Main treatments were four