INTRODUCTION

The vegetables contribute an important part of daily food requirement in the world and play a unique role in developing countries like India both in economic and social field for increasing income as well as nutritional status of people. Amongst the different vegetables, tomato (Lycopersicon esculentum) is the most widely cultivated crop of the world. The yield of tomato in India is a less than those in agriculturally advanced countries, partialy because of poor agronomic practices followed in many remote areas and partialy because a huge amount of crop is damaged by insects, fungi, bacteria,viruses and nematodes (Garrett,1963; Dasgupta,1992 and Anwar and Saxena, 1993). Plant parasitic nematodes alone have been reported to cause tremendous losses to various vegetable crops. Exact estimation about the losses due to nematodes are not available but it is estimated that they cause tremendous losses in cultivated crops ranging from $ 250,000,000 (Hutchinson et al.1961) to $ 500,000,000 (Cairns, 1955). Later, Taylor (1971) reported an yearly loss of $ 372,335,00 of vegetable. The annual loss to potato in England due to golden nematode, Heterodera rostochiensis, alone is estimated to be high as $ 2,000,000 (Southey and Samuel, 1954). A committee of the society of nematologists had estimated that vegetable crops suffer 11.00% annual loss due to nematodes (Feldmesser et al.

1971) while another committee of the Society of Nematologists under the chairmanship of Dr. Julius Feldmesser estimated crop losses in the USA as with vegetables suffering an 11% or $ 266,989,100 annual loss due to the parasitic nematodes. This would account for an average loss of $ 132.57 per hectare for vegetable crops in the USA. The greatest losses on a doller basis due to nematodes in order of severity are in tomato, bean, cucumber and carrot. On a percentage of crop loss basis, bean, brussels sprouts, carrot, cucumber and melon are given as 20% and green pepper and tomato as 15%. Other situations are not well known, but nevertheless, a considerable decrease in yield of vegetable crops also is caused by interaction of nematodes with other plant pathogens such as bacteria and fungi.

In India, Krishnappa (1985) has summarised the crop losses in terms of money or percentage of area infected due to the plant parasitic nematode as severe to moderate in some crop areas. Van Berkum and Seshadri (1970) reported the annual loss of $ 10 million from ear-cockle disease caused by Anguina tritici in Rajasthan. Paruthi and Bhatti (1985) reported a loss of 2.85% in field of wheat due to this nematode. In another report, Handa et al. (1985) estimated the losses in barley due to H. avenae to the extent of Rs. 1687-5911 per hectare. None of our cultivated crops is perhaps as susceptible to root-knot nematode as the vegetable crops and an infestation upto 85% has been observed on tomato,

egg-plant, okra, cucurbits, potato, tobacco, papaya, jute, cotton and groundnut. It becomes most uneconomic to grow potatoes and other vegetable crops because of root-knot nematodes (Prasad, 1964).

In nature, monopathogenic conditions seldom prevail. Plants are exposed to a variety of micro-organisms inhabiting soil specially those in the rhizosphere. Soil inhabiting fungi cause themselves damage to tomato. Plant parasitic nematodes specially root-knot nematode, Meloidogyne spp. and reniform nematode (Rotylenchulus reniformis) are principal nematode pathogens of tomato. The source of infection in both is larvae surviving in the soil. During pathogensis of nematodes, soil fungi (both saprophytic + pathogenic) change the disease seenario. The pathogenic ones undergo interactions with nematodes causing tremendous damage to crops and situation termed as disease complex. Considerable work has been carried out on interaction of plant parasitic nematodes with pathogenic fungi and the literature has been reviewed from time to time by Gonzalez, 1982 ; Kleineke and Wyss,1981; Nougera and Smith 1982, Chahal and Chhabra, 1984, Franc and Abawi,1994 and Kathy and Lawrence, 1995 .

On the other hand, saprophytic fungi inhibiting the rhizosphere have been known to accelerate the damage or reduce the damage (Pitcher,1965). However, very little information is

available on the interaction of plant parasitic nematodes with saprophytic fungi. Some of the fungi, otherwise known as saprophytic become pathogenic in the presence of plant parasitic nematodes (Melendez and Powell,1970; Powell and Batten,1967, Sidhu and Webster,1977: Powell et al.,1971, Powell, 1979). Various saprophytic fungi like Dactylella ellipsospora, Arthrobotrys oligospora and Paecilomyces lilicinus (Jatala et al., 1980, Linford and Yap,1939) known for antagonistic properties have been used for biocontrol of nematode. However, there are large number of fungi which inhabit the rhizosphere zone of the plant but not the fungi have been tested against nematodes and disease complexes involving nematode and fungus. Thus, very little information exists on the role of rhizosphere fungi on the interaction involving nematode and fungus.

Recently, Arya and Saxena (1988) obtained very promising results on the effect of certain rhizosphere fungi i.e. Trichoderma viride, Trichothecium roseum and Epicocum sp. on the interaction involving Meloidogyne incognita + Rhizoctonia solani. These fungi were able to mitigate the damages in crops caused by the disease complex involving nematode + the fungus to a varying degree. Therefore, there is need to study the effect of rhizosphere fungi on two principle nematode ie. Meloidogyne incognita and Rotylenchulus reniformis together with soil

inhabiting pathogenic fungi on growth of tomato. The present study is an attempt in this direction.