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RESEARCH ARTICLE

Efficacy of fungicides in the management of early blight of tomato (*Alternaria solani*)

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ABSTRACT

Early blight caused by *Alternaria solani* is a serious disease of tomato affecting the yield and quality of fruits. *In vitro* and field experiments were conducted to evaluate the efficacy of different fungicides, alone and in combinations with Mancozeb(0.2%), Zineb (0.2%), Ridomil MZ (0.2%) , Saaf (0.05%), copper oxychloride (0.2%) and Thiophanate methyl (0.1%) against early blight of tomato. The highest degree of mycelium inhibition was observed with Mancozeb, followed by Zineb, Saaf and Ridomil MZ-72. Among combination of systemic and non-systemic fungicides, maximum growth inhibition was recorded in Saaf (Carbendazim + Mancozeb at 0.05 % concentration) followed by Ridomil MZ-72 (Metalaxyl + Mancozeb at 0.2 per cent concentration. In field evaluation of fungicides, Mancozeb was found most effective at 0.2 per cent concentration showing least per cent disease index of 20.38 per cent as against 57.63 per cent in control, followed by Zineb and Saaf. Mancozeb recorded highest yield (294.86 q/ha) followed by Saaf, Zineb and Ridomil MZ-72.

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INTRODUCTION

Early blight is the major disease of tomato caused by *Alternaria solani* (Ellis and Martin) Sorauer. The disease in severe cases can lead to complete defoliation and is most damaging on tomato in regions with heavy dew, rainfall, high humidity, and fairly high temperatures (24-29°C). *Alternaria solani* causes disease on foliage (early blight), basal stems of seedlings (collar rot), lesions on stems of adult plants (stem lesions), and fruits (fruit rot) of tomato (Chaerani and Voorrips, 2006). Yield losses up to 79 per cent from early blight damage have been reported from Canada, India, United States and Nigeria (Basu, 1974, Datar and Mayee, 1981; Gwary and Nahunnaro ,1998). During the last few years early blight has been occurring almost every year primarily due to the soil-borne survival of the fungus, local overwintering / oversummering of inoculum, cultivation of susceptible varieties and favourable environmental conditions. Only a few tomato varieties are reported to be tolerant to early blight, but they have not perform well in field. Fungicides are regularly and intensively applied to reduce yield losses, because cultivars that combine early blight resistance and good agronomic or commercial characteristics are not available. Most of the fungicides like Mancozeb, Zineb, Ridomil MZ-72, Saaf and copper oxychloride, Propiconazole, Thiophenatemethyl have been found effective for the control of the disease under field condition (Singh and Singh, 2002; Mishra, 2012) Early blight is prevalent in almost all tomato growing areas of U.P., but not much more information is available for the management of early blight in tomato.