EPIDEMIOLOGY AND MANAGEMENT OF EARLY BLIGHT [\textit{Alternaria solani} (Ellis and Martin) Jones and Grout] OF TOMATO

ABSTRACT

Key words: Tomato, early blight, fungicide, insecticide, bio control agent, epidemiology

Tomato (\textit{Lycopersicon esculentum} Mill) is important vegetable crop which suffers from several diseases. Among the fungal diseases, early blight caused by \textit{Alternaria solani} (Eills and Martin) is wide spread and cause considerable damage and has become serious threat to tomato cultivation in Saurashtra region of Gujarat.

Tomato plant showing typical early blight spot symptoms were collected from Vegetable Research Station, Junagadh Agricultural University, Junagadh. Isolation from leaves of infected plants were carried out which yielded \textit{Alternaria solani} on PDA.

Typical symptom on old leaves were found as small lesions, circular to irregular, brown to black in color. The spot have concentric rings often surrounded by yellow holo. Later stage symptom appear on stem, petioles and fruits. As the disease advances characteristic concentric marking is seen inside the spots which is typical symptom of early blight.

Pathogenicity of the fungus was successfully proved by standard protocol. On the basis of morphological, cultural characteristics and pathogenicity, test the pathogen were confirmed as \textit{Alternaria solani} (Eills and martin).

The optimum temperature range for this fungus was 25 to 30 °C. However, maximum mean colony diameter of test fungus was recorded at temperature of 25 °C.
In solid media potato dextrose agar medium which was significantly superior over all other media and next better media was Richard’s agar medium.

Among the seven biological control agents tested, maximum inhibition was recorded in *Trichoderma harzianum* followed by *Bacillus subtilis*. Though all non systemic and systemic fungicides tested were capable of inhibiting the growth of *A. solani* at various concentrations as compared to the control, mancozeb and copper oxychloride among non-systemic fungicides and hexaconazole among systemic fungicides gave maximum growth inhibition at all concentrations.

In field evaluation of minimum (5.20%) disease intensity was recorded in mancozeb 0.20 % and significantly superior over all treatments. Hexaconazole was remain next better in reducing alternaria blight disease. The highest yield 35150 kg/ha was obtained in mancozeb which was statically at par with hexaconazole, carbendazim, copper oxychloride and chlorothalonil. The yield loss of tomato has record 28.52 per cent.

Epidemiology study revealed that the progress of early blight disease was affected by variation in weather variables as well as their interaction. The development of early blight in relation to weather parameters indicated that the maximum temperature (°C) and wind speed were found positive effect and minimum temperature (°C) found negative effective for the disease development.

Out of ten genotypes screened, genotypes *vìz.*, NTL-12-07, JTL-08-14, GT-1, JTL-12-10 and GT-2 were found to be resistant. Four genotypes *vìz.*, JTL-08-16, JTL-12-02, GTL-12-07 and ATL-11-10 were found moderately resistance. One genotype NTL-12-02 was found highly resistance.