New Agriculturist, **26**(1) : 185–192, 2015

Genotype by environment interaction and stability analysis for disease reaction against early blight caused by *Alternaria solani* (Ell. and Mart.) and yield of tomato genotypes in New Alluvial Zones of West Bengal

Poly Saha and Srikanta Das

Received December 26, 2014 and Accepted March 22, 2015

ABSTRACT : Twenty promising tomato genotypes were evaluated at three locations across new alluvial zones of West Bengal viz. Kalyani incheck farm, Mohanpur farm and Gayeshpur farm over the three consecutive years i.e 2009-10, 2010-11 and 2011-12 to find out the stable tolerant genotype, for resistance to early blight caused by *(Alternaria solani)* with high yielding for possible release. The experiment was conducted using Randomised Complete Block Design with three replications. Combined analysis of variance showed highly significant differences among genotypes, environments and genotype by environment interactions for disease resistance and non-significant genotype by environment interactions was observed for fruit yield. Genotypes were tested by two stability parameters as linear regression coefficient (bi) and deviations from regression (S^2di). The result revealed that among the twenty cultivars of tomato TAB-3310, ARTH-2104 and Himsona were tolerant in disease reactions, seven germplasms i.e. Arka Bikas, COTH-2, BCTH-4, Ajeet-11, HAT-2-1, DVRT-2 and ARTH-1023 were found moderately susceptible under West Bengal condition. Stability of yield was also experimented taking the same genotypes revealed maximum yield in TAB 3310 followed by ARTH-2104 and Himsona that could be used to evolve improved varieties for crop production which were suitable for different agro-climatic conditions.

Key Words: Tomato genotypes/cultivar, early blight, disease reaction, stability analysis, resistance, G×E interaction.