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## Correlation and Path Coefficients in Tomato (*Solanum lycopersicon* Mill) under Fruitworm (*Helicoverpa zea* Buddie) Infestation in Line x Tester Breeding

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### Abstract

Field experiments were conducted under irrigation during 2010 to 2011 at Lake Allau, Borno State (11°6' N, 13°17' E) and Hong, Adamawa State (10°15' N, 13°20' E) in Nigeria to evaluate the parents F1 hybrids of tomato developed through line x tester for fruit yield and resistance to *Helicoverpa zea*. The study determined the association between fruit yield and other yield components. It also determined path coefficients between fruit yield and other traits. Correlation revealed that relationship between numbers of trichomes was negative and significant genotypically and phenotypically associated with damaged fruits. The higher the number of trichomes the less damage was observed due to worm infestation in tomato. Further result indicated that association between numbers of leaves/plant, and percentage damaged fruits was significant negative. Number of fruits/plant was positively and significantly genotypically correlated with fruit yield and percentage damaged fruits. Genotypic correlation values were higher in magnitude than the corresponding phenotypic values, thus establishing a strong genetic relationship among the traits. Path coefficient analysis revealed that, number of flower clusters/plant exhibited highest direct effect on fruit yield. Even though correlation between number of flower clusters and fruit yield was positive, it was not statistically significant. It is suggestive from the result of this study that the direct effect of trichome count, number of flower clusters/plant and days to final harvest and indirect effects of trichome count, number of leaves/plant and plant height could be considered concurrently for amenability fruit yield. This investigation is not unmindful that more agronomic traits and their relationship with yield need to be investigated while selecting for better fruit yield under worm infestation in parts of Nigeria. Further evaluation is recommended in that respect.

**Keywords:** Correlation, fruit yield, line x tester, northeastern Nigeria, path analysis, trichome