



Correlation between agronomic and stem borer resistant traits in maize: Implications in selection

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ABSTRACT

Objective: The interrelationship between agronomic and resistant traits of two stem borer species, and its influence on selection was studied in a yellow maize population, DMR ESR-Y, at Ibadan between 2009 and 2010.

Methodology and results: Two hundred and fifty (250) full-sib progenies of the population with three checks were evaluated. Resistant traits had negative correlations with most agronomic traits including grain yield (GY). GY had significant relationship with days to 50% pollen shed, (DTA) ($r_g = 0.49^{**}$), plant height (PH) ($r_g = 0.46^{**}$) and ear aspect (EA) ($r_g = -0.98^{**}$). Indirect selection of GY via DTA and PH gave gains that were a little lower than direct selection for GY, but they have higher heritability. Indirect selection of stem tunnelling and cob damage through EA would give gains of 150.64 % and 106.94 % respectively.

Conclusion and application of results: This result suggested that either days to 50% pollen shed or plant height could be considered in selection for stem borer resistance. Ear aspect is another good criterion to consider instead of cob damage and stem tunnelling to hasten selection. The result indicated that breeders selecting for stem borer resistance and high yield could consider plant height, days to 50% pollen shed, ear aspect and grain yield itself as criteria for selection. In selecting the best genotypes in any crop improvement study therefore, breeders need to consider not only the magnitude of the correlation between pairs of traits, but the desirability of their relationship, ease of measuring the traits, correlated response among the traits, and heritability of the secondary trait selected.

Keywords: Correlated responses, heritability, secondary traits, selection, stem borer resistance