

EVALUATION OF DIFFERENT ACCESSIONS / VARIETIES OF MAIZE IN RELATION TO THEIR ANTI-NUTRITIONAL COMPOSITIONS

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ABSTRACT

Maize weevils are known to be among the economically important insect pests of maize in Nigeria. They cause significant damage to maize grains in store. The objective of the study was to assess the susceptibility of different maize accessions / varieties in relation to their anti-nutritional factors. The experiment was done in Department of Crop Science Laboratory, University of Nigeria, Nsukka using a Complete Randomised Design (CRD) and F-LSD to separate the means. Twenty maize accessions / varieties comprising two hybrids (Sammaz – 15 and 16), fifteen open pollinated varieties (Sammaz – 11, 14, 17, 18, 20, 26, 27, 28, 29, 31, 32, 33, 34, 35 and 37) and three local accessions (NSU-P, ENU-E and KAG-W) were used. Sammaz-32 varieties had the least susceptibility index (SI) of 1.79 and was considered as resistant. ENU-E, NSU-P, KAG-W, Sammaz – 11, 14, 15, 16, 17, 20, 26, 27, 28, 29, 31, 33, 34 and 37 were grouped as moderately resistant because their SI ranged between 2.6 and 5.0 while Sammaz – 17, 33 and 35 were grouped as moderately susceptible with an SI range between 5.6 and 7.5. The correlation studies indicated that phytate (0.190), oxalates (0.177), Tannins (0.102), Lectins (0.160) and Trypsin inhibitor (0.106) had very low and positive insignificant ($p < 0.05$) correlations with susceptibility index. However, very low heritability estimated of these qualities suggests that selection of maize accessions / varieties through them will be unreliable. Path coefficient analysis revealed that percentage Tannins (-0.4127) had the highest direct negative on susceptibility index (SI) with a total correlation of (0.102) that was very low and negligibly positive with three opposing positive indirect effects from % phytates (0.3092), %oxalates (0.0235), % lectins (0.2744) and supportive indirect effect from % Try (-0.0899) The heritability estimate of percentage tannins could be considered to make it the most reliable anti-nutritional factor for use in the selection of the maize accessions / varieties in the study for improvement against maize weevil attack.

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