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Genotype \times Concentration \times Mycorrhiza Interactions on Early Maturing Maize under *Striga lutea* in Nigeria

OLAWUYI ODUNAYO JOSEPH¹, ADEGBOYEGA CHRISTOPHER ODEBODE², SAMUEL OLAKOJO³

¹*Babcock University, Biosciences and Biotechnology, Nigeria*

²*University of Ibadan, Botany, Nigeria*

³*Inst. of Agricultural Research and Training, Obafemi Awolowo University, Cereal Improvement Programme, Nigeria*

Abstract

The yield losses in maize production in tropical Africa including Nigeria are threatened by a number of unfavourable biotic agents of which *Striga lutea* is included. The activities of biotic factors depend on genetic constitution of the cultivars and stage of growth at the time of infection. Therefore, field experiments were carried out for two years in humid climate of *striga* endemic locations in Nigeria, to investigate the interaction of quality protein maize genotype \times concentration of arbuscular mycorrhiza fungi (AMF) on early maturing traits and yield related components under *striga* artificial infestation. The early and maturing traits include; number of days from sowing to: emergence (DSE), production of primary (DSP), secondary (DSS), tertiary leaflets (DST), tasseling (DT), 50 % silking (DSK) and yield related components: plant aspect, plant harvest, ear aspect, ear harvest and plant stand were evaluated using factorial split model according to the standard procedure. The genotypic and concentration influence produced highly significant ($p < 0.01$) effects for all the early and maturing traits except DSK and DSP in farm settlement. The interactive effect of genotype \times concentration were significant for all the early maturing traits, but non-significant for DSE, DSP, DT and DSK in farm settlement. The genotype \times concentration level of mycorrhizal interaction were significant for maturing traits except DSE, while significant effect were observed for DSS, DST and DT in farm settlement. The maize genotypes responded positively to the concentration of AMF and their interactions in most of the growth characters in arm settlement compared to Temidire. The level of concentrations in AMF treated plants also produced significant effect, but higher than uninoculated (control) in both locations. However, to improve maize production, selection of early maturing traits and concentration of bio-inoculants should be integrated into maize breeding programmes.

Keywords: Concentration, maize genotypes, mycorrhiza, striga