

Combining Ability for Maize Grain Yield and Yield Component for Resistant to *Striga hermonthica* (Del) Benth in Southern Guinea Savannah of Nigeria

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Abstract : In 2014 and 2015, eight maize inbred lines resistant to *Striga hermonthica* (Del) Benth were crossed in 8 x 8 half diallel (Griffing method 11, model 1). The eight parent inbred lines were planted out in a Randomized Complete Block Design (RCBD) with three replications at two different *Striga* infested environments (Lafia and Makurdi) during the late cropping season. The objectives were to determine the combining ability of *Striga* resistant maize inbred lines and identify suitable inbreds for hybrids development. The lines were used to estimate general combining ability (GCA), and specific combining ability (SCA) effects for *Striga* related parameters such as *Striga* shoot counts, *Striga* damage rating (SDR), plant height and grain yield and other agronomic traits. The result of combined ANOVA revealed that mean squares were highly significant for all traits except *Striga* damage rating (SDR1) at 8WAS and *Striga* emergence count (STECOI) at 8WAS. Mean squares for SCA were significantly low for all traits. TZSTR190 was the highest yielding parent, and TZSTR166xTZSTR190 was the highest yielding hybrid (cross). Parent TZSTR166, TZEI188, TZSTR190 and TZSTR193 shows significant ($p < 0.05$) positive GCA effects for grain yield while the rest had negative GCA effects for grain yield. Parent TZSTR166, TZEI188, TZSTR190, and TZSTR193 could be used for initiating hybrid development. Also, TZSTR166xTZSTR190 cross was the best specific combiner followed by TZEI188xTZSTR193, TZEI80xTZSTR193, and TZSTR190xTZSTR193. TZSTR166xTZSTR190 and TZSTR190xTZSTR193 had the highest SCA effects. However, TZEI80 and TZSTR190 manifested a high positive SCA effect with TZSTR166 indicating that these two inbreds combined better with TZSTR166.

Keywords : combining ability, *Striga hermonthica*, resistance, grain yield

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