Identification of genomic regions for *Striga* resistance in tropical maize inbred lines.

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Striga hermonthica parasitism militates against increased maize production and productivity in savannas of sub-Saharan Africa (SSA). The objective of this study was to identify genomic regions significantly associated with grain yield and other agronomic traits under artificial *Striga* field infestation. A panel of 132 early-maturing maize inbreds were phenotyped for key agronomic traits under *Striga*-infested and *Striga*-free conditions. The inbred lines were genotyped using 47,440 DArTseq markers from which 7224 markers were retained for population structure analysis and genome-wide association study. The inbred lines were grouped into two major clusters based on structure analysis as well as the neighbor-joining hierarchical clustering. A total of 24 SNPs significantly associated with grain yield, *Striga* damage at 8 and 10 weeks after planting (WAP), ears per plant and ear aspect under *Striga* infestation were detected. Three markers physically located close to the putative genes GRMZM2G164743 (bin 10.05), GRMZM2G060216 (bin 3.06) and GRMZM2G103085 (bin 5.07) were detected, linked to grain yield, *Striga* damage at 8 and 10 WAP and number of ears per plant under *Striga* infestation, explaining 9 to 42% of the phenotypic variance. Significant loci identified on chromosomes 9 and 10 of maize were closely linked to ZmCCD1 and amt5 genes, respectively and may be related to plant defense mechanisms against *Striga* parasitism. After validation, the identified loci could be targets for breeders for marker-assisted selection to accelerate genetic enhancement of maize for *Striga* resistance in the tropics, particularly in SSA, where the parasitic weed is endemic.

Biography

Dr. Samuel Adewale is a researcher at the International Institute of Tropical Agriculture, Nigeria. He obtained his PhD degree last year form the Obafemi Awolowo University/International Institute of Tropical Agriculture, Nigeria. Samuel's areas of research interest include plant breeding, genetics and molecular biology. He has published 9 research articles in reputable peer-reviewed journals.

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