

## AWARD

### AWARD - Etude du déterminisme génétique de la résistance au Stem borer africain du maïs

#### ABSTRACT

The need for durable resistance for maize stem borer resistance in the sub-Saharan Africa remains great. Stem borer resistance is quantitatively inherited and progress in breeding for resistance through conventional methods has been slow. The mapping of the quantitative trait loci (QTL) associated with stem borer resistance would be an important step towards use of marker assisted breeding (MAB) for this polygenic trait. The objective of this study was to map the QTL associated with *Chilo partellus* Swinhoe and *Busseola fusca* Fuller maize stem borers' resistance. A total of 203 F2:3 individuals originating from a cross between susceptible inbred line CML442 and resistant multiple borer resistant inbred line CKSBL10026 were assayed with 152 single nucleotide polymorphism (SNPs) for QTL analysis. Phenotyping for resistance under artificial infestations were carried out in Kenya during the Mar-Sep 2011 season in six locations, three locations for each borer species. Data were collected on leaf damage, number of stem borer exit holes, cumulative tunnel length, stem lodging and grain yield. Low scores on leaf damage, stem borer stem exit holes and tunnel length were considered putative maize stem borer resistance components. PROC GLM procedure SAS package (2007) was used for analyzing the field data. JoinMap 4 software was used for linkage maps construction and MapQTL 6 used for the QTL detection. Interval mapping and multiple QTL mapping (MQM) an equivalent of composite interval mapping were used for QTL analysis. Combined analysis across locations revealed 1 major QTL for reduced stem tunneling (LOD 3.38) and 2 minor ones for reduced leaf damage (LOD 2.79) and number of exit holes (2.68) on chromosome 7. In the individual sites analysis, 2 QTL for leaf damage, 2 for stem exit holes and 4 for stem tunneling were.

**Keywords :** Agroecology, Microscopic (Gene/cell), Genetic mapping, QTL, Resistance, Corn

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