ABSTRACT

Lepidoptera stem borers are major maize insectpests estimated to be responsible for annual losses of around 15% in sub-Saharan Africa and 13.5% in Kenya. The spotted stem borer (Chilo partellus Swinhoe, Lepidoptera: Crambidae) is the most widespread and damaging field pest. The objective of this study was to evaluate the resistance of commercial maize hybrids and open-pollinated varieties (OPVs) to C. partellus. Eighty-five hybrids, 15 OPVs, and selected stem borer-resistant hybrids were evaluated for resistance to stem borers using artificial infestation in the field for two seasons at KARI Kiboko Centre, Kenya. The α-lattice design replicated three times was used in 2 × 5 m row plots spaced at intervals of 0.75 × 0.25 m. Ten plants in each plot were artificially infested with five stem borer neonates 3 weeks after planting. The remaining plants were concurrently treated with a pesticide. Data were collected on leaf damage score, stem borer exit holes, stem tunnelling, plant height and grain yield. A selection index based on damage parameter traits was computed and used to group the genotypes into susceptible and resistant categories. Data were analysed using the SAS package and means were separated using Fisher's protected least significance difference (LSD) at $P < 0.05$. The genotypes differed significantly ($P < 0.05$) in stem borer resistance. The CIMMYT resistant hybrid controls showed the highest resistance with a selection index of 0.61. Commercial hybrids DHO1, PH1 and PH3253, and OPVs ECA-STRIGOFFVL- 102-#-#, KDV1-1 and KDV1-2, were the most resistant with a selection index of 0.77. It was concluded that commercial hybrids and OPVs grown in Kenya display an appreciable level of resistance to maize stem borer. The new CIMMYT genotypes from the Insect Resistant Maize for Africa (IRMA) project, developed for borer resistance, remain the most superior in resistance. The resistant genotypes should be promoted for production and exploited for breeding in the relevant maize-growing ecologies.