عنوان مقاله:

Determination of levels of Striga germination Stimulants for maize gene bank accessions and elite inbred lines

محل انتشار:

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نویسندگان:

.H. Karaya - *International Maize and Wheat Improvement Center (CIMMYT), P.O. Box ۱۰۴۱-۰۰۶۲۱, Nairobi Kenya*

.K. Njoroge - *University of Nairobi, Faculty of Agriculture, Upper Kabete Campus, P.O. Box ۲۹۰۵۳-۰۰۶۲۵, Nairobi Kenya*

.S. Mugo - *International Maize and Wheat Improvement Center (CIMMYT), P.O. Box ۱۰۴۱-۰۰۶۲۱, Nairobi Kenya*

.E. S. Ariga - *University of Nairobi, Faculty of Agriculture, Upper Kabete Campus, P.O. Box ۲۹۰۵۳-۰۰۶۲۵, Nairobi Kenya*

خلاصه مقاله:

Parasitism by Striga hermonthica (Del) Benth is a severe constraint in maizeproduction in sub-Saharan Africa. Varying levels of tolerance to Striga attack havebeen identified and exploited in breeding programs of several crops. However, thelevel and stability of the tolerance is generally unacceptable in field-practice. Onlylimited exploration has been undertaken among the farmers' landraces to find thepresence of viable sources of resistance to Striga. The objective of this study was toexamine and document the presence of the Striga germination stimulants from acollection of some 420 maize landraces, populations and elite inbred lines. Thegenotypes were variously sourced from International Maize and Wheat ImprovementCenter (CIMMYT), International Institute for Tropical Agriculture (IITA) and KenyaAgricultural Research Institute (KARI). The ability to effect germination as ameasure of the amount of germination stimulant produced was used to assess thematerials, using the standard procedures. Data were recorded on Striga germinationby counting Striga seeds with protruding radicle. Highly significant (P=0.001)differences were observed among the germplasm screened. Several landraces werefound to stimulate low levels of Striga germination compared to the commercialchecks. Landraces CRIC 51, CUBA T-31, BRAZ 1758, BRAZ 1279 and VERA 217exhibited the lowest Striga germination, an indication of high level of resistance toStriga. The inbred lines were found to have a higher Striga germination percentcompared to the landraces, a likelihood of a higher concentration of strigol, thestimulant causing chemical. CIMMYT lines CML 202 IR, CML 445 IR and CML204 IR induced the least amount of Striga seeds to germinate. Higher levels ofgermination of Striga seeds were found in the IITA lines which are known to be resistant, depicting a probable avoidance root architecture mode of resistance asopposed to low production of strigol. It was concluded that the landraces with lowStriga germination percent can be used by breeders in the extraction of new Strigaresistant inbred lines. The resistant inbred lines can be recommended for direct use .inthe formation of maize synthetics and hybrids resistant to S. hermonthica

کلمات کلیدی:

Striga hermonthica, Maize landraces, Tolerance to Striga, Resistance to Striga, Striga germination stimulant