INTEGRATING LEGUME COVER CROPS AND STRIGA RESISTANT MAIZE VARIETIES IN THE CONTROL OF STRIGA ASIATICA IN COASTAL LOWLANDS OF KENYA

Striga is a serious parasitic weed of cereals and legumes, negatively affecting farming in the developing world. In coastal Kenya, it is known as ‘chitsai’ (a little witch) because of its weakening effect on maize (Zea mays L.). The species that parasitizes maize, in coastal Kenya is Striga asiatica. Integrated management including growing resistant varieties is the most economic way to manage striga especially for resource constrained farmers. Technologies within the reach of the small scale farmers need to be developed. The objectives of this study were to:

i. Evaluate the effectiveness of striga-resistant maize varieties in the control of S. asiatica

ii. Evaluate the effectiveness of cowpea (Vigna unguiculata) and mucuna (Mucuna pruriens) in the control of S. asiatica

iii. Evaluate the effect of interaction between striga resistant maize variety and legume cover crop (cowpea or mucuna) in the control of S. asiatica

iv. Evaluate the effect of spatial arrangement of intercropped cowpea in the control of S. asiatica

The study was conducted at KARI Matuga to investigate the effect of integrating striga resistant maize varieties and legume cover crops (mucuna and cowpea) on the control of S. asiatica in coastal Kenya, in 2012 and 2013. The legumes were intercropped with maize at planting and plots of sole cropped maize were included as the control. A randomized complete block design, with three replications, was used. Striga stand counts, striga seed density in soil, maize grain and stover yields were the parameters analyzed. Maize varieties differed significantly in their stover yield in 2012 and 2013 LR seasons. However, the results showed no significant effect of maize variety on striga stand counts at 7 and 9 WAP in 2012 and 2013 LR seasons. In 2013 legume intercropping significantly reduced maize grain yield by 17.25% and 18% under mucuna and cowpea, respectively. Spatial arrangement of intercropped cowpea significantly influenced maize grain and stover yields in 2013 LR season. Correlation analysis showed no meaningful correlation between striga stand counts and maize grain and stover yields since the coefficient of determination (r²) was less than 0.5. The results of the study showed that cowpea significantly reduced the striga seed density in soil after the end of season one (2012 LR season). The reduction in striga seed density in soil was associated with suicidal germination of the weed seed after stimulation by cowpea. However, there is need for further research to evaluate the effectiveness of cowpea planted either as an intercrop or a rotation crop with maize in the control of S. asiatica. Maize varieties V2 and V4 showed some tolerance to striga weed. These varieties are therefore recommended for multi-locational evaluation under the National Performance Trials (NPTs) to ascertain their superiority to the current commercial maize varieties. Within row spatial arrangement of cowpea in a maize-cowpea intercrop gave higher maize yields than the between row arrangement. Farmers are therefore likely to realize improved maize yields by adopting the within row spatial arrangement of intercropped cowpea.