Cereals, mainly maize, sorghum, millet, and rice, are the main staple and cash crops for small-scale farmers in Kenya contributing to food and nutrition security. However, the yields of these crops are under threat from the Fall armyworm (FAW), Spodoptera frugiperda (J E Smith) which invaded East African region in 2017 and caused substantial damage to cereals’ production systems in the East African region (Kumela et al. 2018). The push-pull technologies for pest, soil fertility and striga weed control (Khan et al, 2007) have been cited as a promising method of FAW control in the East African region (Midega et al., 2018). The PPT involves the use of forage legumes (Desmodium spp, Clitoria ternatea and Lablab purpureus) as a repellent of moth (push) and bordering fodder grass (Brachiaria species, Panicum spp, and Napier grass) to attract the moth (pull) (Njunie et al, 2014). The inclusion of fodder crops in the PPT system implies that the technology has potential of reversing seasonal feed shortages in mixed farming systems.

Objectives: To validate FAW push-pull technologies on station and on-farm and assess the effect of specific intercrop systems on cereal and forage production

Materials and Methods

The study was carried out in coastal lowland Kenya in CL3, CL4 and CL5 agro-ecological zones. Two levels of fertilizer rate was applied (no fertilizer and half recommended manure/fertilizer rates). The five cropping systems studied were: sole maize, sole cowpea, maize-cowpea intercrop, maize-clitoria intercrop and maize-cowpea-clitoria intercrop. The cropping systems were planted with or without a brachiaria Mulatto II grass border around the cropping system. (the “pull” crop). Clitoria (the “push” legume crop) was sown between every third and fourth rows of maize. The trial was laid in a Split plot design with fertilizer rates as the main plots and cropping systems as the subplots. The design was Randomized Complete Block Design (RCBD).

Results and discussions

Fall armyworm (FAW): Based on the rating scale by Midega et al, 2018, rating of FAW incidence ranged from none to low (0 to <25% plants with fall armyworm larvae) to high (>75% plants incidence). Very high incidence (>75%) was observed in all sole maize cropping systems without the PPT component crops. There was low incidence of FAW in nearly all the cropping systems with full PPT (maize-clitoria-brachiaria grass border) implies that this PPT system was effective in FAW control.

Effect of cropping system on fodder yield: The yields of border rows were not significantly influenced by the cropping system. As expected, higher yields were recorded in the more sub-humid Agro ecological zone CL3 compared to the semi arid CL5 (means CL3=4.9; CL5 = 0.3 t ha⁻¹). The forage legume was much lower than the grasses due to competing effects of component crops (means CL3=1.0; CL5 = 0.6 t ha⁻¹).

Conclusion and recommendations

The results clearly show that the push legume clitoria and pull grass brachiaria were effective in controlling FAW in the maize cropping systems and therefore improve cereal production. It is hereby suggested that the PPT be promoted for integrated pest and soil fertility management in cereals, along with increased forage and food production. In a crop –livestock production system

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