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ASSESSMENT OF *Striga hermonthica* INFESTATION AND EFFECTIVENESS OF CURRENT MANAGEMENT STRATEGIES IN MAIZE-BASED CROPPING SYSTEMS IN EASTERN UGANDA

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ABSTRACT

Striga is a major constraint to cereal production in the tropics, particularly on soils of low fertility. *Striga* causes 30 to 80% cereal crop losses in sub-Saharan Africa. The objective of this study was to assess farmers' perception of level of infestation and efficacy of current management options of Striga (*Striga hermonthica* (Delile) Benth) in maize-based cropping systems in eastern Uganda. A survey was conducted in Iganga district in eastern Uganda, involving 360 households. On the basis of the survey outputs, on-farm trials were conducted to assess the efficacy of a herbicide seed-coating technology, imazapyr herbicide resistant maize (IR-maize) variety, either as a sole crop or intercropped with soybean (*Glycine max*) or common beans (*Phaseolus vulgaris* L). The study revealed that *S. hermonthica* caused more than 50% maize (*Zea mays*) yield loss and farmers were dissatisfied with the existing control practices. Farmers' knowledge about *Striga* was mainly sourced from agricultural extension service providers. The on-farm trials revealed that IR-maize provided effective protection against *S. hermonthica* infestation. Also, intercropping Longe 6H maize variety with either soybean or common beans significantly reduced *Striga* infestation in farmers' fields. Longe 6H-soybean intercropping reduced *Striga* infestation by 32%; while Longe 6H-common bean intercropping reduced *Striga* infestation by 14%. Intercropping either IR-maize or Longe 6H hybrid (farmer-preferred) with the aforementioned legumes, reduced *S. hermonthica* infestation (30–50%) and improved maize yield parameters (20-30%). For effective management of *S. hermonthica* in the maize-based cropping systems in eastern Uganda, farmers should be encouraged to adopt the improved IR-maize and intercrop farmer-preferred maize varieties with legumes in order to improve maize yields.

Key Words: Imazapyr herbicide resistant maize, *Zea mays*

RÉSUMÉ

Le striga est une contrainte majeure à la production céréalière sous les tropiques, en particulier sur les sols peu fertiles. Le striga cause 30 à 80% de pertes de récoltes céréalières en Afrique sub-saharienne. L'objectif de cette étude était d'évaluer la perception des agriculteurs du niveau d'infestation et de l'efficacité des options de gestion actuelles du Striga (*Striga hermonthica* (Delile) Benth) dans les systèmes de culture à base de maïs dans l'Est de l'Ouganda. Une enquête a été menée dans le district d'Iganga, dans l'Est de l'Ouganda, auprès de 360 ménages. En se basant sur les résultats de l'enquête, des essais en milieu réel ont été menés pour évaluer l'efficacité d'une technologie d'enrobage des semences par un herbicide, une variété de maïs résistant à l'herbicide imazapyr (IR-maize), soit en culture unique, soit en association avec du soja (*Glycine max*). ou haricot commun (*Phaseolus vulgaris* L). L'étude a révélé que *S. hermonthica* causait plus de 50 % de perte de rendement du maïs (*Zea mays*) et que les agriculteurs n'étaient pas satisfaits des pratiques de contrôle existantes. Les connaissances des agriculteurs sur le Striga provenaient principalement des prestataires de services de vulgarisation agricole. Les essais en milieu réel ont révélé que le IR-maize assurait une protection efficace contre l'infestation par *S. hermonthica*. En outre, la culture intercalaire de la variété de maïs Longe 6H avec du soja ou des haricots communs a considérablement réduit l'infestation de Striga dans les champs des agriculteurs. La culture intercalaire de soja Longe 6H a réduit l'infestation de Striga de 32 % ; tandis que la culture intercalaire de haricot commun Longe 6H a réduit l'infestation de Striga de 14 %. La culture intercalaire du IR-maize ou de l'hybride Longe 6H (préféré par les agriculteurs) avec les légumineuses susmentionnées a réduit l'infestation par *S. hermonthica* (30 à 50 %) et amélioré les paramètres de rendement du maïs (20 à 30 %). Pour une gestion efficace de *S. hermonthica* dans les systèmes de culture à base de maïs dans l'Est de l'Ouganda, les agriculteurs doivent être encouragés à adopter le IR-maize amélioré et les varieties de maïs préférées des agriculteurs avec des légumineuses afin d'améliorer les rendements du maïs.

Mots Clés : Maïs résistant à l'herbicide Imazapyr, *Zea mays*

INTRODUCTION

Striga is a major constraint to cereal production in the tropics, especially in soils of low fertility; with the greatest impacts in sub-Saharan Africa (Ransom, 2000, Oswald and Ransom, 2001). *Striga hermonthica* in particular infests nearly 100 million hectares of cereal crops in Africa, often causing 30 to 80% crop yield losses on farmers' fields where effective management is absent (Lagoke *et al*., 1991) and sometimes total crop failure under cases of severe infestation. In Uganda, *S. hermonthica* infestation has been reported mostly in eastern Uganda, where maize cultivation is intense; and also spreads to parts of northern Uganda (MacOpiyo *et al*., 2009). The weed virtually affects all cereals grown in these areas, thereby threatening food security in the country (Namutebi *et al*., 2020).

A number of practices have been used to manage *S. hermonthica* with various levels of effectiveness; examples of these include hand and mechanical weeding (Traoré *et al*., 2001), application of manure (Vanlauwe *et al*., 2008) and fertilisers (Osman *et al*., 2013), use of trap and catch crops (Gbèhounou and Adango, 2003), intercropping and crop rotation (Khan *et al*., 2006a; Midega *et al*., 2010), seed treatment using herbicides (Traoré *et al*., 2001) and development of tolerant cultivars (Kim and Adetimirin, 1997; Schulz *et al*., 2003). It is now generally accepted that management of *S. hermonthica* is more likely to be achieved by combining a range of component technologies into integrated Striga control (ISC), aimed at providing a more flexible and sustainable control, over a wide range of biophysical and socio-economic environments (Hassan *et al*., 2010; Hasan *et* *al.*, 2015). Managing *S. hermonthica* is a long-term commitment, which makes it necessary to adopt approaches which are aimed at all farming communities within a specific area (NARO, 2015; Chikoye *et al*., 2020).

As part of the integrated management strategies, herbicides constitute a useful component recommended for controlling *S. hermonthica,* mostly at pre-flowering stage. However, herbicides are largely unavailable to smallholder farmers in sub-Saharan Africa, mainly because of high costs (Kanampiu *et al*., 2001). The most promising strategy that has been tried is seed coating, whereby maize seeds are coated with imazapyr herbicide, which is widely known as imazapyr-resistant maize (IR-maize) (Kanampiu *et al*., 2001). This novel approach is based upon inherited resistance of maize, to a systemic herbicide (imazapyr). The IR technology was introduced in Uganda by Woomer (2006) and is among the main strategies used by farmers to manage *S. hermonthica*. IR-maize is bred to confer resistance to imazapyr, a herbicide that is highly lethal to *S. hermonthica* (Kanampiu *et al*., 2001*)*.

This technology depletes the *Striga* seedbank so that subsequent *Striga* numbers are lower during the following season. Elsewhere, it has been considered as cost-effective and compatible with existing cropping systems (Kanampiu *et al*., 2002; Sibhatu, 2016; Lobulu *et al*., 2019). Despite this understanding, the use of IR-maize for control of *Striga*, has not been out scaled in Uganda owing to, among other things, paucity of knowledge about its efficacy relative to the existing practices already adopted by farmers. The objective of this study was to assess farmers' perception of level of infestation and efficacy of current management options of Striga (*Striga hermonthica* (Delile) Benth) in maize-based cropping systems in eastern Uganda.

MATERIALS AND METHODS

This study consisted of two components; namely a household survey and an on-farm trial to triangulate the Striga management options hitherto identified on farm. Both study components were conducted in Iganga district in eastern Uganda, where *S. hermonthica* devastates cereal production, particularly maize. The district lies at an altitude of about 1,138 m above sea level and just north of the Equator (0.6725 degrees latitude and 33.4669444 degrees longitude). The mean annual rainfall of the district ranges from 900 to 1,200 mm; and mean temperatures range from 25 to 35 ^{o}C (Meteorological Station, Iganga District, 2010, unpublished). The soils of the study site are predominantly ferralitic, with reddish brown sandy loams associated with the gneisses and granites as parent rocks (Meteorological Station, Iganga District, 2010, unpublished).

Field survey. The survey involved farming households from six sub-counties in Iganga district, with fields heavily infested with *S. hermonthica*. The six sub-counties were grouped into two categories based on the level of *S. hermonthica* infestation, namely high *Striga* infestation (>90 plants m^2 of fields infested); and low *S. hermonthica* infestation (0-29 plants m^2 fields infested). Sub-counties with high infestation were Buyanga, Nabitende, Nawandala and Nambale; while Igombe and Bulamagi had low infestation. The farmer sample size used was determined from the population in these sub-counties at the time of study and divided by the average household size of five persons per household (UBOS, 2022, www.ubos.org, unpublished). Considering that almost all households in the study area grew maize, the population of households that grow maize was estimated at 5000 households. At 5% level of precision, and guided by statistical summary tables (Israel, 1992), a sample of 360 farmers was randomly taken from maize growing households, that is, 180 in the high infested areas and 180 in the low infested areas. Four parishes were randomly selected in each sub-county and two villages in each parish. Systematic random sampling, with a random start was followed while sampling maize farmers in the villages. This sample size was aimed at ensuring adequate representation by capturing farmers' experiences within the two *S. hermonthica* infestation levels.

A semi-structured questionnaire was used for data collection. Quantitative data were entered from the questionnaire into the Statistical Package for Social Scientists (SPSS) software v 14 (Morgan *et al.*, 1988). Descriptive statistics (i.e. frequency/ percentages and means) were generated and comparison between groups (e.g. sub-county strata), and thereafter Chi-Square analysis was done.

On-farm trials. Ten test fields were purposively selected based on level of *Striga* infestation; namely, high *Striga* infestation (>90 plants m^{-2} of fields infested); and low *S. hermonthica* infestation (0-29 plants m^{-2} fields infested). *Striga* management options examined included Imazapyr-resistant maize (IR-maize) and a modified Push-Pull technology (intercropping maize-soybean or maize-common beans) that was based on common farmers practice in the study area. The selected management options were laid out in a randomised complete block design, with each farm as a replicate. The study was conducted across two rainy seasons (September–November, 2010B and March–July, 2011A). IR-maize variety (WS 303), which is resistant to *Striga* (Kanampiu *et al.*, 2007) was planted together with a high yielding, but *Striga* susceptible maize hybrid (Longe 6H) (Kanampiu *et al.*, 2018), as the check variety.

Each of the maize varieties (Longe 6H and IR-maize) was intercropped with either soybean (*Glycine max*) or common beans (*Phaseolus vulgaris* L.) as companion crops; since these were major legumes grown in eastern Uganda. The local bean variety, 'Nambaale', was used because it is popular among farmers due to its high yielding ability. Soybean variety 'Mak soy 1N', a high yielding variety, with 40% protein content and resistance to soybean rust, was also used as an intercrop component. All seeds, except for IR maize, were obtained from the local input shops. IR seeds were procured from Africa 2000 Network, an NGO operating in Eastern Uganda.

Plot dimensions were 6 m x 5 m each and these were separated by 1.5 m buffer strips. Maize was planted at 75 cm x 30 cm spacing, with a control plot of maize monocrop of each variety. The intercropped legumes (common beans or soybeans) were planted alternately with rows of maize, all at the beginning of each cropping season.

Two weeks after planting, maize plants were thinned to one plant per hill and each of the intercrops was thinned to two plants per hill. Weeds other than *Striga* were hand pulled three weeks after planting (WAP), and thereafter done more regularly. Diammonium phosphate (18-46-0) was applied during planting at the rate of 50 kg N and 128 kg P_2O_5 ha^{-1}, and top-dressing with calcium ammonium nitrate at a rate of 50 kg N ha^{-1} was done at 6 WAP.

Data collection were done every two weeks, on *Striga* emergence (*Striga* counts) and on maize plants (maize plant heights) starting from 6 WAP. The data collected included number of emerged *Striga* plants, counted from within a radius of 0.15 m of the selected maize plant. From this, the total number of *Striga* plants per plot was enumerated and expressed per unit area (m^{-2}). *Striga* measurements were restricted to the seedling growth stage to avoid flowering and seed production that would increase the *Striga* seed bank in the area. Maize plant height was measured from the base of the plant to the youngest fully developed leaf of each of the 30 randomly selected maize plants in each plot and recorded at 6, 8, 10, and 12 WAP.

Seasonal data were averaged for each treatment and subjected to a one-way (treatment) and two-way (treatment and season) analyses of variance (ANOVA), using GenStat software v 10 (Payne, 2009). Significant treatment means were separated using the Least Significant Differences (LSD).

RESULTS AND DISCUSSION

Level of *S. hermonthica* infestation. A total of 20 different weeds were reported to be commonly found in maize fields, and four of these accounted for 70% of the common weeds (Fig. 1A). The order of importance, based on farmers perception on the level of damage to the maize crop, was *S. hermonthica,* commonly referred to as *Kayongo* (25%), milkweed (*Asclepias* spp., locally known as Kafadanga) (24%), wandering Jew (*Tradescantis fluminensis*, also called *Commelina benghalensis*, locally known as Obukala) (18%), couch grass (*Elymus repens* also called *Digitaria scalarum,* locally known as Lumbugu) (7%), and other weeds (26%) (Fig. 1A). Thus, the ranking of weeds infestation indicates that farmers appreciated the Striga challenge and its impact in the maize-based cropping system.

Most of the respondents (86%) were aware of the S. *hermonthica* challenge and its effects on maize yields. This was through their own field observations and information from fellow farmers (61%) and extension workers (31%). Only 5% of the farmers got information from researchers; while 4% from non-government organisations (NGOs) and community-based organisations (CBO) staff (Fig. 1B).

In addition to maize, other crops which were reportedly affected by *S. hermonthica* included rice (*Oryza sativa*), sorghum (*Sorghum bicolor*), finger millet (*Eleusine coracana*), and cassava (*Manihot esculenta*) (Fig. 1D). Legumes, on the other hand, were perceived by smallholder farmers to be least affected by *Striga*. Intercropping of cereals with legumes such as cowpea (*Vigna unguiculata* L. Walp.), groundnut (*Arachis hypogaea* L.), mungbean (*Vigna radiata* L.), and soybean (*Glycine max*), has been shown elsewhere to reduce *S. hermonthica* infestation (Carsky *et al*., 1994, Silberg *et al*., 2020). Intercrops act as trap crops, by stimulating suicidal *S. hermonthica* germination or altering the microclimate of the crop and hence interfering with the weed germination and development (Sanginga *et al*., 2003, Odhiambo *et al*., 2011).

Striga hermonthica was reportedly a problem on cereals in the study area for more than ten years. Furthermore, 59% of the respondents noted that *S. hermonthica* was a major problem mainly during the wet seasons. Respondents asserted that the weed can reduce yields by more than a half of the expected yield; which results in several household challenges (Fig. 1F). The other challenges associated with the impact of *S. hermonthica* included a drastic reduction in household incomes (49%), a rise in food insecurity (28%), and famine (23%) (Fig. 1F). These challenges were not only a factor of loss in quantity of yields, but also of reductions in quality. Earlier findings point to the fact *that S. hermonthica* causes phototoxic effects by attaching to and wounding the outer root tissue of its host and thus absorbing its moisture, photosynthates, and minerals, which consequently leads to reduced crop growth and yield (Gurney *et al*., 1995; Frost *et al*., 1997; Gurney *et al*., 1999; Tenebe and Kamara, 2002; Ayongwa *et al*., 2010).

***Striga* management.** Respondents revealed several approaches to *Striga* management (Table 1), including crop rotation (26%), burning (18%) and early planting (15%) being the most frequent; while mulching (1%), fallowing (3%) and weeding (using hand hoes)

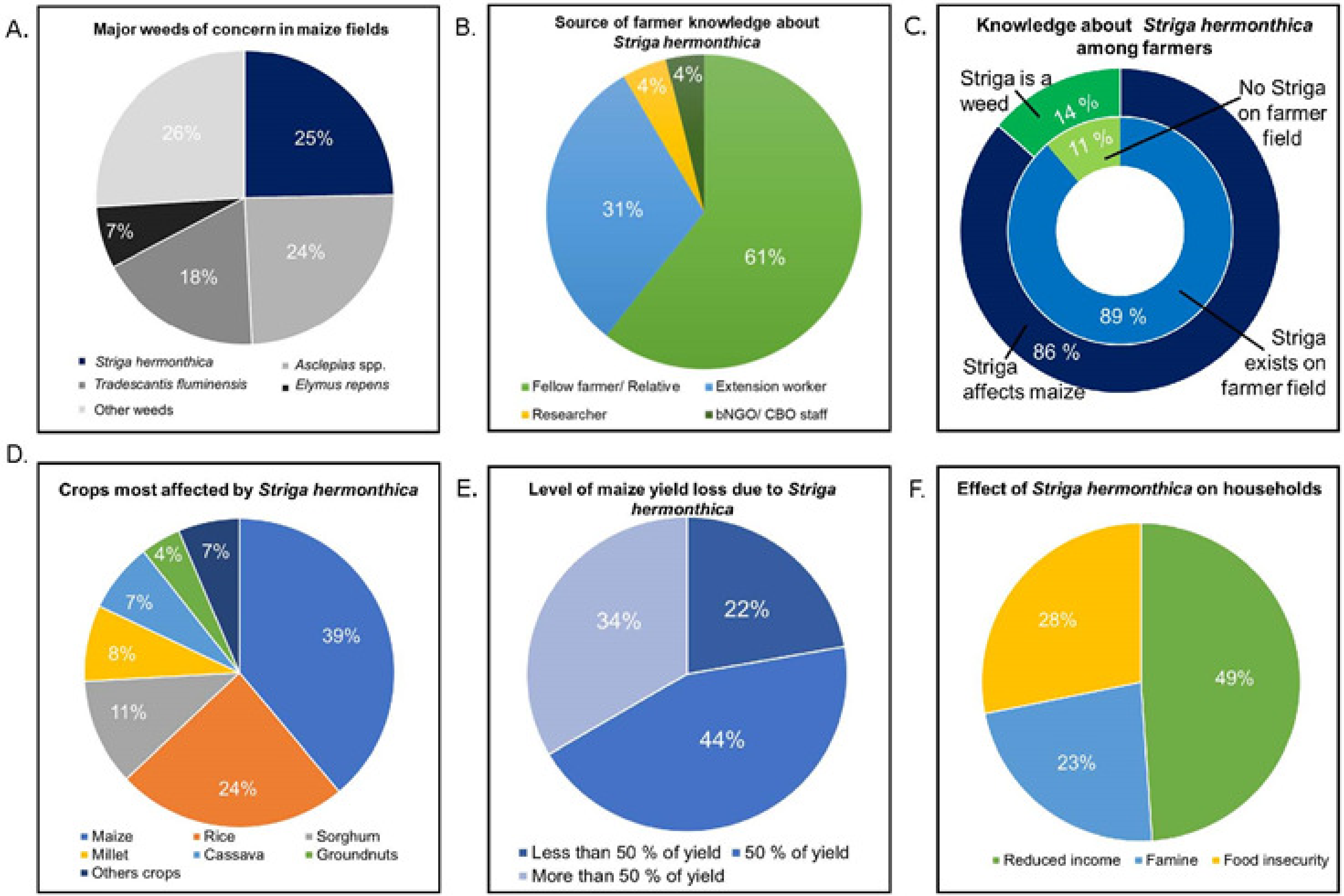

Figure 1. Farmer responses about the weeds affecting crop production and their perception of the existence of *Striga hermonthica* in maize-based cropping systems in Iganga district.

TABLE 1. Farmer perception of the status and management of *Striga hermonthica* in maize fields in Iganga district, Uganda

Variable	Response	Percentage
Awareness of how the crop gets infested with *Striga*	Yes	47
Different ways the crop fields get infested with *Striga*	Host seed	16
	Wind	4
	Soil and farming implements	79
When *Striga* is usually noticed	Before crop emergence from soil	0
	At crop emergence from soil	13
	Post crop emergence from the soil	87
If farmer has done anything to stop/ reduce effects of *Striga*	Yes	87
What the farmer has done to reduce adverse effects	Burning	18
	Burying	6
	Crop rotation	26
	Early planting	15
	Intercropping	12
	Mulching	1
	Weeding using a hoe	3
	Uprooting	12
	Fallowing	3
	Herbicide application	5

were the least effective approaches. Reasons for choice of a management strategy were based on ability of the method to suppress the weed growth, ease of use and cost effectiveness. This study (Table 2) and Oswald (2005) indicate that most of these methods are ineffective or have not been widely adopted by farmers, either due to lack of management skills or non-suitability to the farmer's socio-economic setting.

***Striga hermonthica* plant counts.** The combination of maize varieties with soybean or common beans as intercrops significantly ($P < 0.05$) reduced *S. hermonthica* counts over the control monocrops (Table 3). This confirms previous findings which demonstrated legumes to reduce *S. hermonthica* plant counts in maize fields (Khan *et al*., 2006b). A combination of herbicide-resistant maize varieties, intercropped with legumes (soybean and common beans), consistently registered the lowest *S. hermonthica* counts and was, therefore, a more effective control strategy for Striga weed than individual component technologies (Table 3). Therefore, herbicide-resistant maize integrated with legumes would bolster the reduction of *S. hermonthica* soil seedbank, as attested by previous studies (Makumbi *et al*., 2015). In another development, Kanampiu *et al*. (2002) noted that the IR-maize Striga management option delayed germination and seed setting of *S. hermonthica*. IR-maize technology should be incorporated into extension and knowledge sharing pathways,

TABLE 2. Current *Striga hermonthica* management methods and associated challenges in maize fields Iganga district, Uganda

Striga control method details	Response	Percentage
Heard of a certain management strategy but have not applied it	Yes	74
Method used to control *Striga* heard but not yet used	Chemical/herbicide use	97
	Uprooting	3
Reason for not using the method	Very expensive	68
	Difficult	3
	Not accessible	29
Source of information	Fellow farmer/ relative	82
	Extension worker (Government)	11
	NGO/CBO	7

to facilitate effective awareness as well as the role of legumes as intercrops in a combination with IR-maize for the management of obnoxious weeds such as Striga.

Generally, the *S. hermonthica* counts were higher in season 2 (2011A) than in season 1 (2010B) (Table 4). There was more variability in *S. hermonthica* counts in the experimental plots during season 2 (2011A), with counts ranging between 0.27 and 31.84 plants m^{-2}; compared to 4.54 and 11.24 plants m^{-2} for season 1 (2010 B) (Table 4). In the soil, imazapyr herbicide gradually dissipates and leaches down the soil profile, thus possibly making it less available for *S. hermonthica* control with time (Odhiambo *et al*., 2011). This is evidenced by the increased *S. hermonthica* emergence with time, from 8 to 12 WAP (Table 4).

Maize plant height. When intercropped with the legume crops, maize plants were significantly taller ($P < 0.05$) than the monocrops regardless of maize variety at flowering stage (Table 5). This could be due to the legume effects on soil fertility through nitrogen fixation, which enhanced maize growth in an intercrop. Also, the intercrop competition could have increased maize height. Legume effects on soil fertility and intercrop competition were not assessed as they were beyond the scope of the study. These results are in agreement with those of Odhiambo *et al*. (2011), who showed that growing maize in association with legumes and a monocrop of herbicide-resistant maize in the field results in lower emergence of *S. hermonthica*, hence leading to better performance of maize. Furthermore, legumes are known to contribute to suicidal germination of *Striga,* which eventually diminishes the *Striga* seedbank, thus reducing the effect of *Striga* on the cereal crop (Khan *et al*., 2002; Khan *et al*., 2006b).

Maize plant height did not significantly differ between highly Striga infested plots and the less infested plots during the two seasons. However, maize plants in highly infested plots were shorter (0.9 m for 2010B and 1.0 m for 2011A) as compared to those in the less infested plots (1.25 m for 2010B and 1.27 m for 2011A) (Table 6). Previous studies have shown that *S. hermonthica*, stresses the host plant leading to shorter plants or stunted growth due to limited supply of nutrients and moisture (Gurney *et al*., 1995). Overall, our findings demonstrated that intercropping

TABLE 3. *Striga hermonthica* counts at various weeks after planting (WAP) by rainy season in Iganga district, Uganda

Treatments	*Striga* stand count at different weeks after planting (m^{-2})[a]							
	6		8		10		12	
	2010 B[b]	2011 A	2010 B	2011 A	2010 B	2011 A	2010 B	2011 A
Longe 6H	0.87[a]	0.93[a]	5.00[a]	5.07[a]	17.55[a]	16.91[a]	31.58[a]	33.77[a]
Longe 6H + Soybean	1.25[a]	0.49[a]	3.83[a]	4.00[a]	8.31[b]	13.09[b]	6.54[b]	23.16[b]
Longe 6H + Beans	0.75[a]	0.64[a]	5.55[a]	5.33[a]	8.27[b]	16.94[b]	8.54[b]	28.62[b]
IR maize	0.23[a]	0.02[a]	0.62[a]	0.25[a]	1.05[c]	1.47[c]	1.57[c]	2.50[c]
IR maize + Soybean	0.01[a]	0.01[a]	0.18[a]	0.06[a]	0.67[c]	0.42[c]	1.03[c]	1.25[c]
IR maize + Beans	0.06[a]	0.01[a]	0.82[a]	0.34[a]	0.92[c]	0.62[c]	1.62[c]	0.98[c]
	NS	NS	NS	NS	6.4	6.4	6.4	6.4

LSD (5%) = 6.40; CV = 4.4%

[a]Means within a column followed by the same letter are not significantly different as indicated as NS according to LSD P = 0.05

[b]2010B and 2011A = second annual rainy season in 2010 and first annual rainy season in 2011

TABLE 4. *Striga hermonthica* plant counts in fields with high or low density at 12 weeks after maize planting (WAP)[a] in Iganga district, Uganda, in the 2010 and 2011 cropping seasons

Level of *Striga* infestation	Plot numbers	*Striga* plant counts	
		Season 1 (2010 B)	Season 2 (2011 A)
High	1	11.22[a]	31.84[a]
	2	13.56[a]	30.90[a]
	3	11.91[a]	18.25[b]
	4	12.53[a]	19.78[b]
Low	1	5.17[b]	8.31[c]
	2	4.42[b]	7.35[c]
	3	4.50[b]	3.66[d]
	4	4.54[b]	0.27[e]
LSD (P = 0.05)		2.67 (CV = 182.4)	4.02 (CV = 187.9)

[a]Means within a column followed by the same letter are not significantly different according to LSD P=0.05

TABLE 5. Maize plant height at flowering stage (12 WAP) in Iganga district, Uganda

Treatment	Plant height (m) at 12 WAP[a]	
	Season 1 (2010B)	Season 2 (2011A)
Longe 6H	0.66[a]	0.81[a]
Longe 6H + Soybean	0.85[a]	1.08[b]
Longe 6H + Beans	0.78[a]	1.10[b]
IR-maize	1.33[b]	1.17[b]
IR-maize + Soybean	1.38[b]	1.48[c]
IR-maize + Beans	1.46[b]	1.37[c]
LSD (P=0.05)	0.22	0.44

[a]Means within a column followed by the same letter are not significantly different according to LSD P=0.05

lowers the incidence of *S. hermonthica* and results in better performance of the associated maize. Therefore, farmers in Iganga district should be encouraged to integrate grain legumes into the cereal cropping systems as a means of controlling Striga. Including legumes in a continuous maize system could result in increased maize production, as the first line action for the control of *Striga* in their maize fields.

TABLE 6. Maize plant height in high and low striga infested plots in Iganga district, Uganda, 2010 and 2011

Level of Striga infestation	Plot numbers	Maize height (m)	
		Season 1 (2010B)	Season 2 (2011A)
High	1	0.89[a]	1.02[a]
	2	0.99[a]	1.01[a]
	3	0.89[a]	0.99[a]
	4	0.96[a]	1.03[a]
Low	1	1.14[a]	1.24[a]
	2	1.21[a]	1.26[a]
	3	1.21[a]	1.31[a]
	4	1.32[a]	
LSD (P=0.05)		0.45 (CV = 0.23)	0.32 (CV = 0.23)

CONCLUSION

This study has revealed that *S. hermonthica* causes heavy yield losses in maize-based cropping systems in Iganga district and that the available management strategies are variably efficacious. The main source of farmer knowledge about *Striga* control is from the extension service; however, this was not sufficiently effective in taming *S. hermonthica* spread in the eastern region. Based on the on-farm trials, IR-maize offers effective resistance against *S. hermonthica* infestation. Also, intercropping either IR-maize or Longe 6H maize variety with either soybean or common beans significantly reduces *S. hermonthica* infestation in farmers' fields. It is, thus recommended that farmers should be encouraged to adopt the improved IR-maize and intercrop farmer-preferred maize varieties with legumes in order to improve maize yields at low costs.

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