# EFFECT OF SELECTED TRAP CROPS ACCESSIONS ON GERMINATION AND ATTACHMENT OF *STRIGA HERMONTHICA* (DEL.) BENTH.ON SORGHUM (SORGHUM BICOLOR)

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## Abstract

Screen house studies were conducted in the northern Guinea Savanna of Nigeria to determine the ability of ten soyabeans genotype, cowpea genotype and groundnut genotype each for their ability to stimulate *Striga* suicidal germination in 2013 and 2014 cropping seasons at Federal University of Technology Minna GidanKwano Research farm in polybags. The experiment was 3 x 10 x 2 factorial laidout in a randomized complete block design. Factor A consists of string seed at three levels inoculation rate (0, 2.5 and 5g) mixed with 20g of sterilize soil respectively. Factor B was three trap crops, 10 varieties each. Factor C was sorghum variety consisting of resistance (ICSV1002) and susceptible (Local) varieties. All the treatments were replicated five times. Results indicate that sorghum variety I.CSV1002 significantly ($P < 0.05$) delayed *Striga* shoot emergence, supported fewer *Striga* density, produced taller plant heights and higher grain yield in all the test trap crops irrespective of planting years and sampling periods compared to the local sorghum variety. *Striga* emergence was significantly ($P < 0.05$) delayed in soyabeans varieties. Cowpea variety IT04K-333-2 and IT07K-25-3-3 in 2013 and 2014 respectively compared to other cowpea varieties and groundnut variety Chico and TES, QH 243 C, RMP-12 and RMP-91 in 2013 and 2014 respectively compared to other groundnut variety. Fewer *Striga* shoots were recorded in soyabeans variety TGX 1448-2E and TGX 1937 IF in 2013 and 2014 respectively, cowpea variety IT04K-217-5 in both years and groundnut variety RMP-91 compared to other varieties. Sorghum plant height was significantly ($P<0.05$) taller in soyabean variety TGX 1448-2E in both year. Cowpea variety ITO4K-217-5 and groundnut variety RMP-91 compared to other varieties grain yield was higher in soyabeans variety TGX 1448-2E, Cowpea variety ITO4K-339-1 and groundnut variety RMP-91 compared to other varieties. 0g *Striga* level (control) showed the best performance in sorghum plant height and grain yield compared to 2.5 and 5g *Striga* level in all the test trap crops.

**Key words**: Trap crops, suicidal germination, *Striga hermonthica* management

## INTRODUCTION

Production of sorghum is adversely affected by *Striga hermonthica,* a hemiparasitic weed that produces numerous seed that remain dormant in the soil for more than 30 years. The germination of *S. hermonthica,* a noxious root parasite of sorghum and other cereals, is stimulated by exudates from the roots of both host and non-host trap crops. Thus intercropping with selected non-host cultivars may have potential to control *S. hermonthica* legume-cereal intercropping can reduce density of witch weed (*Stirga hermonthica*) seeds in soil. However, legume species and cultivars vary greatly in ability to stimulate germination of *S. hermonthica* seeds of same or different populations, hence the need for simple method for routine characterization of these species and cultivars for germination of the parasite seeds.

*Striga hermonthica* (Del.) Benth is a major constraint not only to sorghum production, but also to other cereals and other crops (maize, millet, rice and sugacane) production in African sub-sahara (Parker and Riches, 1993). *Striga hermonthica* is the dominant parasitic weed species in the Nigeria savanna, it inhibits host growth by competing for nutrients and impairing photosynthesis. It is one of the most important biological constraints to sorghum production in sub-saharan Africa and can cause total crop loss in farmer's fields particularly under low fertility conditions (Kim et al; 2002, Merley et al; 2004). Incidence and severity of *S. hermonthca* and exceptionally high on sorghum, pearl millet and maize, the main staple foods for over 300 million people in sub-sahara Africa (Schols and Press 2008). Crop yield losses due to *Striga* parasitism amount to 1067 million tomes per years in sub-sahara Africa (Gressel et al., 2004). The weed is difficult to control because of the build-up of a large reserve of its seeds in the soil which remain viable for many years. The *Striga* problem continues to increase and as a result, farmers are forced to abandon *Striga* infested fields (Kanampius et al., 2003). Various methods have been

recommended for the control of *Striga* in sorghum including: cultural practices such as hand weeding and planting of trap crops, planting of *Striga* tolerant or resistant varieties and chemical or herbicide treatment. Despite these efforts, there has been limited success in elimination of *Striga* in sorghum. Some countries in Africa have identified or even developed *Striga* resistant or tolerant varieties. However, in most cases these varieties do not meet certain criteria for unde adoption by sorghum farmers.

Therefore, cost effective alternative control methods that are acceptable to small-scale farmers are needed. Such alternative approach is to identify technological practices that either inhibit or cause suicidal germination of *S. hermonthica*. The use of legume as a trap crop for *Striga hermonthica* control has been suggested by several authors.

Legume food crop including cowpea, soyabean and groundnut and some other non-host crop plants including cotton were reported to stimulate *Striga* seeds germination. Gbehounuou and Adango, (2003) reported that root exedates of some soyabean, cowpea and groundnut cultivars stimulate the germination of S. *hermonthica*. Bontanga *et al*., (2003) also reported 13.3 to 50.0% stimulation of *Striga* seed germination by cotton varieties. There is wide variability in their ability to stimulate suicidal germination of *Striga* seed, in view of wide variability among non-host species and their varieties in the stimulation of suicidal germination of different biotypes of *Striga hermonthica* it is important to evaluate the non-host crop varieties for trap cropping ability. Since early studies have confirmed differential virulence of *Striga hermonthica* biotype on different host crop genotypes. The objectives of this study was to generate information on the variability of ten soyabean genotypes, ten cowpea genotypes and ten groundnut genotypes with respect to their ability to induce suicidal germination of *S. hermonthica* seeds.

## MATERIAL AND METHOD

Screen house polybags studies were conducted during 2013 and 2014 cropping season, at the research farm of the Gidan Kwano campus of Federal University of Technology Minna, which has at an altitude of 281.1 meter above sea level, longitude between ($09^0$ 39'N and $06^0$ 28'E). Minna is located within the southern Guinea savanna ecological zone of Nigeria. The site has well drained sandy clay loam soil. *Striga* free soil was collected and sterilized for two hours. Each polybag was filled with 20g of sterilized soil and then inoculated with *Striga* seeds whose viability and germination percent had earlier been determined. The study was 3 x 10 x 2 factorial experiment laid out in Completely Randomized Design (CRD) replicated five times. Factor A consists of *Striga* seed at three levels inoculation rate (0, 2.5 and 5g) mixed with 20g of sterilize soil respectively. Factor B was 10 varieties of soyabean, cowpea and groundnut as trap crops factor C consisted of resistance (ICSV1002) and susceptible (local) sorghum varieties. The polybags were first filled three quarter way with soil, *Striga* seed sprinkled and the remaining soil added hence making the *Striga* seed to be placed at about 8cm below the soil surface. The polybags were watered carefully to avoid leakages from the polybags on the first day of infestation and then later after 5 days in order to condition the *Striga* seeds. Sowing of the soyabean, cowpea and groundnut was carried out one week later. After harvesting the trap crops, two sorghum varieties mention above were planted. Torn polybags at that time was carefully replaced with new one by lifting the old bags into the new ones to avoid losing the soil. The polybags was monitored and watered regularly. The sorghum seedlings were thinned down to two seedlings per bag. The sorghum varieties were repeated again in 2014.

Data that was collected on trap crop i.e. the soyabean, cowpea and groundnut include: days to first Striga emergence, trap crop plant height (mean of five plant) and dry mass. Data that were

collected on sorghum included: days of first Striga emergence, Striga count at 6 and 8 WAS per stand of sorghum and per polybag, plant height at 10 and 14 WAS, 1000 grain weight and grain yield. Data were analyzed using computer software Genstat (2010). Statistically difference between variable means were compared using least significant difference ($p< 0.05$).

**RESULT**

The effect of soyabean varieties and Striga level were significant ($p < 0.05$) in soyabean screening only. Soyabean TGX1448-2E recorded the tallest plant height and highest dry mass compared to other soyabean varieties (table 1). But highest grain yield was observed in soyabean variety TGX 1019-2EB compared to other varieties (table 1). In cowpea screening only, cowpea variety IT04K-217-5 recorded the tallest plant, highest grain yield and dry mass compared to other cowpea varieties (table 2) while in groundnut screening only, groundnut variety RMP-91 produced the tallest plant height and highest grain yield compared to other varieties while highest dry mass was observed in RMP-91 and RMP – 12 compared to other varieties (table 3).

**Table 1: Effect of soyabean variety and *striga* level on screened soyabean only.**

| Sorghum | 1 SSE | 6 SSC | 8 SSC | 10 PH | GY | SDM |
|---|---|---|---|---|---|---|
| Variety | | | | | | |
| TGX1937-1F | 0.00 | 0.00 | 0.00 | 27.70 | 3.63 | 4.63 |
| TGX1986-10F | 0.00 | 0.00 | 0.00 | 29.70 | 3.12 | 5.63 |
| TGX1986-10F | 0.00 | 0.00 | 0.00 | 27.30 | 3.42 | 4.43 |
| TGX1990-45F | 0.00 | 0.00 | 0.00 | 27.60 | 3.13 | 4.83 |
| TGX187-62F | 0.00 | 0.00 | 0.00 | 28.90 | 3.51 | 5.40 |
| TGX1987-96F | 0.00 | 0.00 | 0.00 | 28.80 | 3.53 | 4.63 |
| TGX1448-2E | 0.00 | 0.00 | 0.00 | 33.50 | 3.70 | 7.03 |
| TGX1835-10E | 0.00 | 0.00 | 0.00 | 30.30 | 3.42 | 6.10 |
| TGX1830-20E | 0.00 | 0.00 | 0.00 | 31.10 | 3.40 | 5.97 |
| TGX1019-2EB | 0.00 | 0.00 | 0.00 | 32.40 | 3.81 | 6.70 |
| Mean | | | | 27.64 | 3.23 | 5.16 |
| LSD (P < 0.005) | * | * | * | 1.11 | 0.30 | 0.51 |
| | | | | | | |
| *Striga* level | | | | | | |
| 0g | 0.00 | 0.00 | 0.00 | 29.80 | 3.42 | 5.65 |
| 2.5g | 0.00 | 0.00 | 0.00 | 29.70 | 3.48 | 5.44 |
| 5g | 0.00 | 0.00 | 0.00 | 29.70 | 3.49 | 5.52 |
| Mean | | | | 29.73 | 3.46 | 5.54 |
| LSD (P < 0.005) | * | * | * | 0.61 | 0.20 | 0.30 |

**SSE:** *Striga* shoot emergence, **SSC:** *Striga* shoot count, **PH:** Plant height, **GY** Grain yield, **SDM:** Soyabean dry mass

**Table 2: Effect of cowpea variety and *striga* level on screened Cowpea only**

| Sorghum | 1 SSE | 6 SSC | 8 SSC | 10 PH | GY | CDM |
|---|---|---|---|---|---|---|
| Variety | | | | | | |
| IT04K-217-55 | 0.00 | 0.00 | 0.00 | 59.30 | 3.70 | 6.33 |
| IT04K-227-4 | 0.00 | 0.00 | 0.00 | 48.87 | 2.93 | 3.50 |
| IT07K-210-1 | 0.00 | 0.00 | 0.00 | 45.37 | 2.55 | 2.90 |
| IT07K-25-3-3 | 0.00 | 0.00 | 0.00 | 57.30 | 3.40 | 4.60 |
| IT07K-237.2-1 | 0.00 | 0.00 | 0.00 | 43.93 | 2.61 | 2.83 |
| IT04K-333-2 | 0.00 | 0.00 | 0.00 | 50.97 | 3.04 | 3.73 |
| IT04K-339-1 | 0.00 | 0.00 | 0.00 | 55.73 | 3.11 | 4.40 |
| IT04K-405-5 | 0.00 | 0.00 | 0.00 | 42.77 | 2.52 | 3.03 |
| IT07K-293-3 | 0.00 | 0.00 | 0.00 | 47.17 | 2.62 | 3.63 |
| IT07K-318-2 | 0.00 | 0.00 | 0.00 | 42.77 | 2.30 | 2.53 |
| Mean | | | | 49.42 | 2.88 | 3.75 |
| LSD ($p < 0.05$) | * | * | * | 0.94 | 0.13 | 0.35 |
| | | | | | | |
| *Striga* Level(g) | | | | | | |
| 0 | 0.00 | 0.00 | 0.00 | 49.64 | 2.90 | 3.74 |
| 2.5 | 0.00 | 0.00 | 0.00 | 49.17 | 2.90 | 3.67 |
| 5 | 0.00 | 0.00 | 0.00 | 49.44 | 2.90 | 3.80 |
| Mean | | | | 49.42 | 2.90 | 3.74 |
| LSD ($p < 0.05$) | * | * | * | 0.52 | NS | 0.19 |

**SSE:** *Striga* shoot emergence, **SSC:** *Striga* shoot count, **PH:** Plant height, **GY** Grain yield, **CDM:** cowpea dry mass

**Table 3: Effect of groundnut variety and *striga* level on screened groundnut only.**

| Sorghum | 1 SSE | 6 SSC | 8 SSC | 10 PH | GY | GDM |
|---|---|---|---|---|---|---|
| Variety | | | | | | |
| TE3 | 0.00 | 0.00 | 0.00 | 15.67 | 3.00 | 8.00 |
| CHICO | 0.00 | 0.00 | 0.00 | 13.23 | 3.00 | 6.10 |
| KH 241D | 0.00 | 0.00 | 0.00 | 13.77 | 2.21 | 5.60 |
| QH 243C | 0.00 | 0.00 | 0.00 | 14.47 | 3.00 | 8.33 |
| CN 94C | 0.00 | 0.00 | 0.00 | 14.07 | 2.40 | 5.40 |
| RRB | 0.00 | 0.00 | 0.00 | 13.77 | 2.25 | 5.10 |
| RMP-12 | 0.00 | 0.00 | 0.00 | 16.50 | 3.10 | 9.00 |
| RMp-91 | 0.00 | 0.00 | 0.00 | 17.77 | 3.40 | 9.00 |
| Groundnut-23 | 0.00 | 0.00 | 0.00 | 15.63 | 3.00 | 7.33 |
| Groundnut-11 | 0.00 | 0.00 | 0.00 | 14.20 | 2.20 | 6.00 |
| Mean | | | | 14.91 | 2.76 | 6.99 |
| LSD (P < 0.05) * | | * | * | 0.90 | 0.10 | 0.60 |
| | | | | | | |
| *Striga* Level (g) | | | | | | |
| 0 | 0.00 | 0.00 | 0.00 | 14.88 | 3.00 | 7.00 |
| 2.5 | 0.00 | 0.00 | 0.00 | 14.91 | 3.00 | 7.00 |
| 5 | 0.00 | 0.00 | 0.00 | 14.93 | 3.00 | 7.00 |
| Mean | | | | 14.91 | 3.00 | 7.00 |
| LSD (P < 0.05) | | | | 0.50 | NS | NS |

**SSE:** *Striga* shoot emergence, **SSC:** *Striga* shoot count, **PH:** Plant height, **GY** Grain yield, **GDM:** groundnut dry mass

The effect of sorghum response to screened soyabean showed that sorghum ICSV1002 gave better performance in all the measured parameters compared to local sorghum variety (table 4). The effect of sorghum response to screened soyabeans showed that sorghum sown after soyabean TGX 1019-2EB and TGX 1448 – 2E delayed *Striga* emergence compared to other varieties in the planting years. *Striga* count was fewer in sorghum sown in soyabean TGX1448-2E and TGX 1990-45 polybags in both 2013 and 2014 compared to other soyabean varieties (table 4). On the effect of *Striga* level, fewer *Striga* count was observed in 2.5g *Striga* level compared to 0 and 5g *Striga* level in both years (2013 and 2014) throughout the sampling periods. 0g *Striga* level (control) produced taller sorghum plant height and higher sorghum grain yield compared to 2.5 and 5g Striga level (table 4).

The interaction effect of sorghum varieties, soyabean varieties and *Striga* level on response to screened soyabean were not significantly ($p< 0.05$) different in all the parameters measured (table 5).

**Table 4: Effect of sorghum response to soyabean screening**

| s | 2013 | | | | | | | 2014 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **ISSE** | **6SSC** | **8SSC** | **6PH** | **8PH** | **1000GW** | **GY** | **ISSE** | **6 SSC** | **8SSC** | **6PH** | **8PH** | **100GW** |
| 2 | 57.21 | 4.55 | 7.30 | 25.72 | 42.50 | 13.74 | 330.10 | 57.54 | 8.46 | 7.30 | 26.18 | 43.70 | 13.05 |
| ety | 57.29 | 7.78 | 11.78 | 24.78 | 42.19 | 12.59 | 306.80 | 57.42 | 10.30 | 11.78 | 24.76 | 41.03 | 11.94 |
| | 57.25 | 6.17 | 9.54 | 25.25 | 42.35 | 13.17 | 318.45 | 57.48 | 8.46 | 11.78 | 25.47 | 41.03 | 12.50 |
| 05) | NS | 0.28 | 0.21 | 0.42 | NS | NS | 6.12 | 0.10 | 0.25 | 0.12 | 0.14 | 0.46 | 0.19 |
| | | | | | | | | | | | | | |
| 1F | 56.25 | 7.40 | 12.05 | 23.77 | 42.03 | 10.18 | 265.80 | 55.99 | 6.10 | 12.05 | 13.30 | 36.57 | 9.20 |
| 10F | 57.55 | 6.15 | 8.90 | 24.43 | 42.90 | 12.90 | 323.10 | 57.75 | 7.25 | 8.90 | 24.37 | 43.73 | 12.93 |
| 10F | 56.20 | 8.20 | 13.35 | 23.80 | 40.10 | 9.81 | 248.00 | 55.99 | 7.05 | 13.35 | 22.80 | 35.93 | 8.28 |
| 45F | 56.15 | 7.05 | 11.45 | 24.60 | 40.30 | 11.70 | 315.40 | 55.99 | 6.15 | 11.45 | 24.03 | 40.20 | 11.36 |
| 2F | 57.40 | 6.70 | 10.05 | 25.10 | 41.50 | 11.89 | 312.20 | 57.50 | 12.05 | 10.05 | 25.50 | 41.03 | 12.01 |
| 96F | 56.15 | 7.25 | 11.45 | 24.13 | 40.23 | 10.42 | 316.70 | 55.99 | 8.90 | 11.45 | 24.23 | 37.70 | 9.52 |
| 2E | 58.05 | 3.60 | 6.35 | 27.57 | 44.07 | 17.18 | 364.90 | 59.30 | 13.35 | 6.35 | 29.63 | 48.47 | 17.76 |
| 10E | 57.70 | 6.20 | 7.90 | 25.40 | 42.63 | 13.30 | 338.60 | 58.00 | 11.45 | 7.90 | 25.30 | 44.23 | 13.68 |
| 20E | 58.35 | 5.25 | 7.35 | 26.60 | 45.00 | 14.46 | 343.20 | 58.95 | 10.05 | 7.35 | 27.67 | 46.73 | 14.99 |
| 2EB | 58.70 | 3.85 | 6.55 | 27.10 | 44.93 | 19.81 | 356.80 | 58.30 | 11.45 | 6.55 | 27.87 | 49.03 | 15.23 |
| ean | 57.25 | 6.17 | 9.54 | 25.25 | 42.37 | 13.17 | 318.47 | 56.78 | 9.85 | 9.83 | 26.30 | 43.22 | 12.86 |
| 05) | 0.47 | 0.62 | 0.48 | 0.93 | 2.24 | 3.76 | 13.69 | 0.22 | 0.55 | 0.48 | 0.32 | 1.02 | 0.44 |
| **el(g)** | | | | | | | | | | | | | |
| | 00.00 | 0.00 | 0.00 | 26.17 | 43.39 | 13.90 | 306.50 | 00.00 | 0.00 | 0.00 | 27.09 | 45.22 | 13.53 |
| | 57.35 | 5.33 | 8.57 | 25.04 | 42.65 | 13.07 | 312.00 | 310.08 | 8.41 | 8.57 | 25.12 | 42.31 | 12.46 |
| | 57.15 | 6.80 | 10.51 | 24.54 | 41.06 | 14.25 | 282.90 | 280.77 | 10.35 | 0.26 | 24.20 | 39.56 | 11.50 |
| | 57.25 | 6.10 | 9.54 | 25.25 | 42.37 | 13.74 | 300.47 | 216.11 | 9.38 | 6.12 | 26.11 | 42.36 | 13.00 |
| 05) | NS | 0.34 | 0.26 | 0.51 | 1.23 | NS | 7.50 | 4.34 | 0.30 | 0.26 | 0.18 | 0.56 | 0.24 |

1SSE = first *striga* shoot emergence, 6SSC= *Striga* shoot count at 6 WAS, 8 SSC= Strigs shoot count at 8 WAS, 6 PH. Sorghum plant height at 6 WAS. 8PH= Sorghum plant height at 8 WAS, GW= Grain weight, GY: Grain yield. NS= Not significant

**Table 4: Effect of sorghum response to soyabean screening**

| Treatments | 2013 | | | | | | | 2014 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| sorghum | **ISSE** | **6SSC** | **8SSC** | **6PH** | **8PH** | **1000GW** | **GY** | **ISSE** | **6 SSC** | **8SSC** | **6PH** | **8PH** | **100GW** | **GY** |
| ICSV 1002 | 57.21 | 4.55 | 7.30 | 25.72 | 42.50 | 13.74 | 330.10 | 57.54 | 8.46 | 7.30 | 26.18 | 43.70 | 13.05 | 329.97 |
| Local variety | 57.29 | 7.78 | 11.78 | 24.78 | 42.19 | 12.59 | 306.80 | 57.42 | 10.30 | 11.78 | 24.76 | 41.03 | 11.94 | 306.69 |
| Mean | 57.25 | 6.17 | 9.54 | 25.25 | 42.35 | 13.17 | 318.45 | 57.48 | 8.46 | 11.78 | 25.47 | 41.03 | 12.50 | 318.33 |
| LSD(P<0.05) | NS | 0.28 | 0.21 | 0.42 | NS | NS | 6.12 | 0.10 | 0.25 | 0.12 | 0.14 | 0.46 | 0.19 | 3.55 |
| Variety | | | | | | | | | | | | | | |
| TGX1937-1F | 56.25 | 7.40 | 12.05 | 23.77 | 42.03 | 10.18 | 265.80 | 55.99 | 6.10 | 12.05 | 13.30 | 36.57 | 9.20 | 263.16 |
| TGX1986-10F | 57.55 | 6.15 | 8.90 | 24.43 | 42.90 | 12.90 | 323.10 | 57.75 | 7.25 | 8.90 | 24.37 | 43.73 | 12.93 | 322.81 |
| TGX1986-10F | 56.20 | 8.20 | 13.35 | 23.80 | 40.10 | 9.81 | 248.00 | 55.99 | 7.05 | 13.35 | 22.80 | 35.93 | 8.28 | 239.16 |
| TGX1990-45F | 56.15 | 7.05 | 11.45 | 24.60 | 40.30 | 11.70 | 315.40 | 55.99 | 6.15 | 11.45 | 24.03 | 40.20 | 11.36 | 310.76 |
| TGX187-62F | 57.40 | 6.70 | 10.05 | 25.10 | 41.50 | 11.89 | 312.20 | 57.50 | 12.05 | 10.05 | 25.50 | 41.03 | 12.01 | 315.84 |
| TGX1987-96F | 56.15 | 7.25 | 11.45 | 24.13 | 40.23 | 10.42 | 316.70 | 55.99 | 8.90 | 11.45 | 24.23 | 37.70 | 9.52 | 309.97 |
| TGX1448-2E | 58.05 | 3.60 | 6.35 | 27.57 | 44.07 | 17.18 | 364.90 | 59.30 | 13.35 | 6.35 | 29.63 | 48.47 | 17.76 | 368.27 |
| TGX1835-10E | 57.70 | 6.20 | 7.90 | 25.40 | 42.63 | 13.30 | 338.60 | 58.00 | 11.45 | 7.90 | 25.30 | 44.23 | 13.68 | 339.66 |
| TGX1830-20E | 58.35 | 5.25 | 7.35 | 26.60 | 45.00 | 14.46 | 343.20 | 58.95 | 10.05 | 7.35 | 27.67 | 46.73 | 14.99 | 351.64 |
| TGX1019-2EB | 58.70 | 3.85 | 6.55 | 27.10 | 44.93 | 19.81 | 356.80 | 58.30 | 11.45 | 6.55 | 27.87 | 49.03 | 15.23 | 362.02 |
| Mean | 57.25 | 6.17 | 9.54 | 25.25 | 42.37 | 13.17 | 318.47 | 56.78 | 9.85 | 9.83 | 26.30 | 43.22 | 12.86 | 318.33 |
| LSD(P<0.05) | 0.47 | 0.62 | 0.48 | 0.93 | 2.24 | 3.76 | 13.69 | 0.22 | 0.55 | 0.48 | 0.32 | 1.02 | 0.44 | 7.93 |
| ***Striga* level(g)** | | | | | | | | | | | | | | |
| 0 | 00.00 | 0.00 | 0.00 | 26.17 | 43.39 | 13.90 | 306.50 | 00.00 | 0.00 | 0.00 | 27.09 | 45.22 | 13.53 | 354.14 |
| 2.5 | 57.35 | 5.33 | 8.57 | 25.04 | 42.65 | 13.07 | 312.00 | 310.08 | 8.41 | 8.57 | 25.12 | 42.31 | 12.46 | 310.08 |
| 5 | 57.15 | 6.80 | 10.51 | 24.54 | 41.06 | 14.25 | 282.90 | 280.77 | 10.35 | 0.26 | 24.20 | 39.56 | 11.50 | 280.77 |
| Mean | 57.25 | 6.10 | 9.54 | 25.25 | 42.37 | 13.74 | 300.47 | 216.11 | 9.38 | 6.12 | 26.11 | 42.36 | 13.00 | 315.00 |
| LSD)P<0.05) | NS | 0.34 | 0.26 | 0.51 | 1.23 | NS | 7.50 | 4.34 | 0.30 | 0.26 | 0.18 | 0.56 | 0.24 | 4.34 |

1SSE = first *striga* shoot emergence, 6SSC= *Striga* shoot count at 6 WAS, 8 SSC= Strigs shoot count at 8 WAS, 6 PH. Sorghum plant height at 6 WAS. 8PH= Sorghum plant height at 8 WAS, GW= Grain weight, GY: Grain yield. NS= Not significant

**Table 5: Interaction effect of sorghum, soyabean variety and *striga* level on soyabean response to screening**

| Treatments | | | 2013 | | | | | | | 2014 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sorghum | **Variety** | ***striga* level** | **ISSE** | **6SSC** | **8SSC** | **6PH** | **8PH** | **1000 GW** | **GY** | **ISSE** | **6 SSC** | **8SSC** | **6PH** | **8PH** | **1000 GW** | **GY** |
| ICSV 1002 | TGX1937-1F | 0 | 0.00 | 0.00 | 0.00 | 25.40 | 40.80 | 10.54 | 335.00 | 0.00 | 0.00 | 0.00 | 25.40 | 40.60 | 9.56 | 315.08 |
| | | 2.5 | 56.80 | 5.00 | 8.60 | 23.80 | 39.20 | 10.24 | 269.30 | 56.00 | 6.60 | 8.60 | 23.40 | 37.40 | 9.70 | 270.92 |
| | | 5 | 55.80 | 5.60 | 10.60 | 23.20 | 37.80 | 8.21 | 237.30 | 56.00 | 8.20 | 10.60 | 23.00 | 34.80 | 9.22 | 236.46 |
| | TGX1986-10F | 0 | 0.00 | 0.00 | 0.00 | 26.80 | 43.00 | 14.58 | 383.30 | 0.00 | 0.00 | 0.00 | 27.60 | 48.40 | 14.51 | 384.48 |
| | | 2.5 | 57.80 | 3.80 | 6.80 | 24.40 | 42.20 | 14.36 | 330.10 | 57.80 | 8.20 | 6.00 | 24.60 | 44.60 | 13.11 | 327.10 |
| | | 5 | 57.00 | 5.40 | 8.00 | 23.80 | 44.40 | 12.44 | 298.30 | 57.60 | 9.00 | 8.00 | 23.60 | 43.00 | 12.34 | 298.33 |
| | TGX1986-10F | 0 | 0.00 | 0.00 | 0.00 | 24.40 | 43.00 | 10.62 | 264.50 | 0.00 | 0.00 | 0.00 | 24.80 | 40.40 | 9.26 | 272.27 |
| | | 2.5 | 55.80 | 5.00 | 9.20 | 24.00 | 44.00 | 10.22 | 275.00 | 56.00 | 7.60 | 9.20 | 23.00 | 37.80 | 8.61 | 248.29 |
| | | 5 | 56.40 | 6.20 | 11.40 | 23.40 | 39.00 | 9.45 | 242.40 | 56.00 | 9.60 | 11.40 | 28.80 | 32.80 | 8.40 | 216.89 |
| | TGX1990-45F | 0 | 0.00 | 0.00 | 0.00 | 25.20 | 42.60 | 11.97 | 364.20 | 0.00 | 0.00 | 0.00 | 25.20 | 44.40 | 12.36 | 364.30 |
| | | 2.5 | 56.00 | 5.60 | 8.00 | 25.20 | 40.00 | 11.58 | 329.70 | 56.00 | 7.00 | 8.00 | 24.80 | 41.40 | 11.41 | 311.72 |
| | | 5 | 56.00 | 5.00 | 9.80 | 24.20 | 41.80 | 11.91 | 291.90 | 56.00 | 8.40 | 9.80 | 23.80 | 39.20 | 11.62 | 290.19 |
| | TGX187-62F | 0 | 0.00 | 0.00 | 0.00 | 26.20 | 42.20 | 12.67 | 365.00 | 0.00 | 0.00 | 0.00 | 28.00 | 45.00 | 13.01 | 376.98 |
| | | 2.5 | 57.60 | 4.60 | 7.00 | 25.00 | 42.60 | 12.18 | 310.00 | 56.60 | 8.60 | 7.00 | 25.80 | 42.20 | 12.26 | 320.09 |
| | | 5 | 57.40 | 5.20 | 9.20 | 24.40 | 44.80 | 12.14 | 306.00 | 57.60 | 10.60 | 9.20 | 24.20 | 39.60 | 12.21 | 301.53 |
| | TGX1987-96F | 0 | 0.00 | 0.00 | 0.00 | 25.20 | 43.60 | 11.07 | 359.80 | 0.00 | 0.00 | 0.00 | 26.60 | 41.40 | 10.75 | 343.08 |
| | | 2.5 | 56.20 | 5.00 | 7.00 | 24.60 | 46.60 | 11.20 | 329.50 | 56.00 | 6.00 | 7.00 | 24.60 | 39.20 | 10.15 | 324.96 |
| | | 5 | 56.40 | 5.60 | 9.80 | 23.40 | 42.40 | 9.50 | 300.30 | 56.00 | 8.00 | 9.80 | 23.00 | 36.80 | 8.84 | 295.34 |
| | TGX1448-2E | 0 | 0.00 | 0.00 | 0.00 | 28.40 | 44.00 | 20.75 | 436.80 | 0.00 | 0.00 | 0.00 | 32.60 | 54.20 | 20.82 | 439.78 |
| | | 2.5 | 58.40 | 1.60 | 3.80 | 28.60 | 40.20 | 19.11 | 374.40 | 59.40 | 9.20 | 3.80 | 30.00 | 50.40 | 19.40 | 374.35 |
| | | 5 | 56.80 | 2.60 | 5.80 | 29.20 | 40.40 | 17.16 | 338.20 | 59.40 | 11.40 | 5.80 | 29.20 | 46.40 | 16.74 | 336.14 |
| | TGX1835-10E | 0 | 0.00 | 0.00 | 0.00 | 27.60 | 41.00 | 14.98 | 415.20 | 0.00 | 0.00 | 0.00 | 28.00 | 49.20 | 15.40 | 415.21 |
| | | 2.5 | 58.00 | 4.80 | 5.40 | 25.80 | 42.80 | 13.65 | 330.40 | 58.00 | 8.00 | 5.40 | 25.40 | 44.60 | 14.06 | 330.35 |
| | | 5 | 57.60 | 7.00 | 6.40 | 25.20 | 42.60 | 13.16 | 299.70 | 58.00 | 9.80 | 6.40 | 25.20 | 43.40 | 12.97 | 308.74 |
| | TGX1830-20E | 0 | 0.00 | 0.00 | 0.00 | 27.80 | 43.00 | 16.25 | 383.90 | 0.00 | 0.00 | 0.00 | 29.40 | 50.60 | 17.33 | 416.88 |
| | | 2.5 | 58.80 | 2.60 | 4.00 | 26.60 | 47.00 | 13.67 | 336.00 | 59.20 | 7.00 | 4.00 | 27.80 | 47.80 | 15.35 | 346.71 |
| | | 5 | 57.60 | 4.40 | 7.00 | 27.20 | 46.20 | 15.45 | 318.20 | 59.20 | 9.20 | 7.00 | 28.40 | 44.60 | 14.41 | 315.24 |
| | TGX1019-2EB | 0 | 0.00 | 0.00 | 0.00 | 28.60 | 46.20 | 15.59 | 393.90 | 0.00 | 0.00 | 0.00 | 30.20 | 53.00 | 18.04 | 432.92 |
| | | 2.5 | 59.00 | 2.60 | 3.60 | 27.60 | 40.60 | 14.51 | 355.30 | 59.40 | 7.00 | 3.60 | 28.20 | 50.20 | 15.73 | 354.96 |
| | | 5 | 58.80 | 3.40 | 5.60 | 26.40 | 42.20 | 33.06 | 329.80 | 59.60 | 9.80 | 5.60 | 26.80 | 47.60 | 14.04 | 329.60 |
| Local variety | TGX1937-1F | 0 | 0.00 | 0.00 | 0.00 | 25.00 | 44.00 | 11.20 | 299.70 | 0.00 | 0.00 | 0.00 | 24.40 | 38.20 | 9.39 | 303.26 |
| | | 2.5 | 56.40 | 8.60 | 13.60 | 22.80 | 46.00 | 10.46 | 236.90 | 56.00 | 3.80 | 13.60 | 22.40 | 35.40 | 8.89 | 236.90 |
| | | 5 | 56.00 | 10.40 | 15.40 | 22.40 | 44.40 | 10.44 | 216.40 | 56.00 | 5.80 | 15.40 | 21.20 | 33.00 | 8.45 | 216.35 |
| | TGX1986-10F | 0 | 0.00 | 0.00 | 0.00 | 24.60 | 45.20 | 13.20 | 354.20 | 0.00 | 0.00 | 0.00 | 24.80 | 44.20 | 13.36 | 354.17 |
| | | 2.5 | 57.60 | 6.80 | 9.40 | 24.40 | 41.80 | 11.89 | 301.10 | 57.60 | 5.40 | 9.40 | 23.00 | 41.80 | 12.69 | 308.67 |
| | | 5 | 57.80 | 8.60 | 12.20 | 22.60 | 40.60 | 10.96 | 264.70 | 58.00 | 6.40 | 12.20 | 22.60 | 40.40 | 11.55 | 264.73 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | TGX1986-10F | 0 | 0.00 | 0.00 | 0.00 | 23.60 | 37.80 | 9.89 | 249.10 | 0.00 | 0.00 | 0.00 | 23.60 | 38.80 | 8.19 | 249.14 |
| | | 2.5 | 56.00 | 10.20 | 15.60 | 23.00 | 42.20 | 8.96 | 242.10 | 56.00 | 4.00 | 15.60 | 21.80 | 34.80 | 7.29 | 241.16 |
| | | 5 | 56.60 | 11.40 | 17.20 | 24.40 | 34.60 | 9.94 | 214.80 | 56.00 | 7.00 | 17.20 | 20.80 | 31.00 | 7.94 | 207.13 |
| | TGX1990-45F | 0 | 0.00 | 0.00 | 0.00 | 24.40 | 42.20 | 11.88 | 325.60 | 0.00 | 0.00 | 0.00 | 24.60 | 41.00 | 11.55 | 327.57 |
| | | 2.5 | 56.40 | 8.20 | 13.00 | 23.60 | 39.00 | 11.97 | 311.20 | 56.00 | 3.60 | 13.00 | 23.20 | 39.00 | 10.72 | 302.79 |
| | | 5 | 56.20 | 9.40 | 15.00 | 25.00 | 36.20 | 10.90 | 269.90 | 56.00 | 5.60 | 15.00 | 22.60 | 36.20 | 10.52 | 268.01 |
| | TGX187-62F | 0 | 0.00 | 0.00 | 0.00 | 26.80 | 42.40 | 12.54 | 355.90 | 0.00 | 0.00 | 0.00 | 27.20 | 42.20 | 12.23 | 355.31 |
| | | 2.5 | 57.40 | 7.60 | 11.00 | 25.00 | 40.40 | 10.84 | 291.10 | 57.40 | 13.60 | 11.00 | 24.80 | 40.40 | 11.28 | 290.64 |
| | | 5 | 57.20 | 9.40 | 13.00 | 23.20 | 36.80 | 10.99 | 244.90 | 57.40 | 15.40 | 13.00 | 23.00 | 36.80 | 11.05 | 250.48 |
| | TGX1987-96F | 0 | 0.00 | 0.00 | 0.00 | 25.40 | 38.80 | 9.70 | 330.50 | 0.00 | 0.00 | 0.00 | 25.60 | 38.80 | 9.99 | 317.15 |
| | | 2.5 | 56.20 | 8.00 | 13.60 | 23.80 | 36.00 | 9.94 | 314.30 | 56.00 | 9.40 | 13.00 | 23.60 | 36.00 | 9.62 | 312.46 |
| | | 5 | 55.80 | 10.40 | 15.40 | 22.40 | 34.00 | 11.11 | 265.90 | 56.00 | 12.20 | 15.40 | 22.00 | 34.00 | 7.78 | 266.83 |
| | TGX1448-2E | 0 | 0.00 | 0.00 | 0.00 | 28.00 | 47.60 | 17.31 | 393.00 | 0.00 | 0.00 | 0.00 | 30.80 | 47.60 | 18.57 | 424.44 |
| | | 2.5 | 58.20 | 4.80 | 7.00 | 25.60 | 48.00 | 15.05 | 326.80 | 59.20 | 15.60 | 7.00 | 28.00 | 48.00 | 16.32 | 322.80 |
| | | 5 | 58.80 | 5.40 | 8.80 | 25.60 | 44.20 | 13.69 | 320.30 | 59.20 | 17.20 | 8.80 | 27.20 | 44.20 | 14.73 | 312.12 |
| | TGX1835-10E | 0 | 0.00 | 0.00 | 0.00 | 25.60 | 45.60 | 14.14 | 390.50 | 0.00 | 0.00 | 0.00 | 26.00 | 45.60 | 14.43 | 388.00 |
| | | 2.5 | 57.40 | 5.20 | 9.60 | 24.60 | 42.60 | 12.46 | 322.10 | 58.00 | 13.00 | 9.60 | 24.00 | 42.20 | 13.16 | 318.07 |
| | | 5 | 57.80 | 7.80 | 10.20 | 23.60 | 41.20 | 11.41 | 273.90 | 58.00 | 15.00 | 10.20 | 23.20 | 40.40 | 12.04 | 277.56 |
| | TGX1830-20E | 0 | 0.00 | 0.00 | 0.00 | 26.20 | 46.60 | 14.40 | 394.90 | 0.00 | 0.00 | 0.00 | 28.00 | 49.80 | 15.63 | 394.45 |
| | | 2.5 | 58.60 | 6.60 | 8.20 | 25.80 | 44.80 | 13.94 | 319.80 | 58.00 | 11.00 | 8.20 | 26.40 | 45.40 | 14.54 | 331.57 |
| | | 5 | 58.60 | 7.40 | 10.20 | 26.00 | 42.60 | 13.06 | 306.20 | 58.60 | 13.00 | 10.20 | 26.00 | 42.20 | 12.73 | 305.01 |
| | TGX1019-2EB | 0 | 0.00 | 0.00 | 0.00 | 28.20 | 48.60 | 13.88 | 415.90 | 0.00 | 0.00 | 0.00 | 29.00 | 51.00 | 16.17 | 408.20 |
| | | 2.5 | 58.60 | 4.00 | 7.80 | 26.60 | 47.00 | 29.71 | 327.00 | 59.20 | 13.60 | 7.80 | 27.60 | 47.60 | 14.93 | 327.64 |
| | | 5 | 58.40 | 5.40 | 9.20 | 25.20 | 45.00 | 12.13 | 318.80 | 59.00 | 15.40 | 9.20 | 25.40 | 44.80 | 12.48 | 318.80 |
| Mean | | | 57.24 | 6.17 | 9.55 | 25.25 | 42.37 | 13.17 | 318.35 | 57.44 | 9.37 | 9.53 | 25.57 | 42.36 | 12.50 | 318.34 |
| LSD (P<0.05) | | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS | NS |

1SSE = first *striga* shoot emergence, 6SSC= *Striga* shoot count at 6 WAS, 8 SSC= Strigs shoot count at 8 WAS,

6 PH. Sorghum plant height at 6 WAS. 8PH= Sorghum plant height at 8 WAS, GW= Grain weight, GY: Grain yield. NS= Not significant

The effect of sorghum response to screened cowpea also showed that sorghum variety 1CSV1002 performed better than the local variety in all the measured parameters (table 6). The effect of cowpea varieties response of sorghum to screened cowpea. Showed that cowpea variety ITO4K-339-1 and IT07K-237-2-1 polybags sorghum delayed Striga emergence compared to other cowpea varieties polybags in 2013 and 2014 respectively (table 6).

Taller sorghum plant height was observed in cowpea varieties IT04K-217-5 in 2013 and 2014 throughout the sampling periods except at 8WAS on 2013 compared to other cowpea varieties (table 6). Cowpea variety IT04K-339-1 produced higher sorghum grain yield compared to other cowpea variety (table 6). Irrespective of the planting years 2.5g Striga level supported fewer Striga count compared to 5g Striga level. Sorghum plant height was higher at 0g Striga level compared to 2.5 and 5g. Consequently higher grain yield was recorded in 0g Striga level compared to 2.5 and 5g Striga level in 2013 and 2014 (table 6).

The interaction effect of sorghum varieties, cowpea varieties and Striga level on response to screened cowpea were not significantly ($p< 0.05$) different in all the parameters measured except *Striga* count at 6 WAS in 2014 (table 7) sorghum variety ICSV002 sown in cowpea variety IT04K-217-5 at 3.5g produced fewer *Striga* count compared to other varieties and treatment combination (table 7).

**Table 6: Effect of sorghum response to cowpea screening**

| **Treatments** | 2013 | | | | | | | 2014 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| sorghum | ISSE | 6SSC | 8SSC | 6PH | 8PH | 1000GW | GY | **ISSE** | **6 SSC** | **8SSC** | **6PH** | **8PH** | **100GW** | **GY** |
| ICSV 1002 | 56.58 | 5.42 | 8.52 | 26.15 | 44.80 | 21.36 | 444.50 | 56.87 | 4.80 | 8.46 | 25.693 | 43.98 | 20.83 | 444.69 |
| Local variety | 56.16 | 6.05 | 11.21 | 25.21 | 46.20 | 20.41 | 432.60 | 55.01 | 7.98 | 11.19 | 24.05 | 41.54 | 19.84 | 427.43 |
| Mean | 56.37 | 5.74 | 9.87 | 25.68 | 45.50 | 20.89 | 438.55 | 55.94 | 7.98 | 9.83 | 24.87 | 42.76 | 20.34 | 436.06 |
| LSD)P<0.05) | 0.21 | 0.29 | 0.24 | 0.62 | NS | 0.35 | 4.46 | | | | | | | |
| Variety | | | | | | | | | | | | | | |
| IT04K-217-55 | 56.55 | 4.36 | 5.75 | 27.07 | 45.90 | 25.14 | 468.30 | 56.5 | 3.4 | 5.5 | 27.57 | 46.27 | 25.35 | 469.28 |
| IT04K-227-4 | 55.76 | 5.18 | 9.40 | 25.40 | 44.80 | 21.04 | 438.70 | 55 | 6.75 | 9.3 | 24.87 | 43.33 | 20.54 | 440.75 |
| IT07K-210-1 | 56.11 | 7.26 | 12.75 | 25.80 | 43.30 | 20.58 | 431.20 | 55.45 | 8.85 | 12.7 | 25.07 | 41.17 | 19.04 | 242.83 |
| IT07K-25-3-3 | 56.76 | 5.71 | 6.30 | 26.93 | 45.30 | 23.82 | 450.50 | 56.75 | 3.8 | 6.15 | 26.67 | 46 | 23.79 | 451.27 |
| IT07K-237.2-1 | 55.71 | 5.81 | 12.25 | 25.87 | 44.60 | 21.29 | 447.00 | 55.5 | 6.8 | 12.25 | 24.03 | 40.4 | 17.37 | 423.71 |
| IT04K-333-2 | 57.06 | 4.63 | 8.30 | 25.87 | 44.60 | 21.29 | 447.00 | 56.5 | 5.15 | 8.1 | 25.63 | 43.93 | 21.24 | 449.05 |
| IT04K-339-1 | 56.81 | 5.06 | 7.50 | 26.27 | 44.70 | 22.09 | 484.30 | 56.7 | 4.99 | 7.55 | 26.3 | 44.43 | 21.84 | 494.58 |
| IT04K-405-5 | 56.21 | 6.36 | 12.00 | 24.63 | 44.00 | 18.33 | 411.00 | 55.5 | 7.9 | 11.95 | 22.33 | 40.67 | 17.37 | 399.86 |
| IT07K-293-3 | 56.51 | 6.36 | 11.90 | 24.60 | 43.70 | 20.33 | 433.40 | 56 | 7.8 | 12 | 24 | 42.13 | 20.03 | 431.21 |
| IT07K-318-2 | 56.21 | 6.66 | 12.50 | 24.60 | 43.10 | 17.75 | 391.10 | 55.5 | 8.45 | 12.75 | 22.23 | 39.27 | 16.79 | 376.05 |
| Mean | 56.37 | 5.74 | 9.87 | 25.70 | 44.40 | 21.17 | 440.25 | 55.94 | 6.39 | 9.83 | 24.87 | 42.76 | 20.34 | 417.86 |
| LSD)P<0.05) | 0.47 | 0.67 | 0.53 | 1.39 | NS | 0.79 | 9.98 | 0.40 | 0.32 | 0.44 | 0.50 | 0.76 | 0.31 | 5.81 |
| ***Striga* level (g)** | | | | | | | | | | | | | | |
| 0 | 0.00 | 0.00 | 0.00 | 26.75 | 45.70 | 21.60 | 464.00 | 0.00 | 0.00 | 0.00 | 27.54 | 46.43 | 21.24 | 465.44 |
| 2.5 | 56.14 | 6.28 | 8.98 | 25.61 | 44.20 | 20.78 | 433.10 | 56.0 | 5.9 | 8.96 | 24.6 | 42.4 | 20.21 | 431.25 |
| 5 | 56.37 | 7.09 | 10.75 | 24.69 | 46.70 | 20.28 | 418.60 | 55.5 | 6.88 | 10.69 | 22.47 | 39.45 | 19.57 | 411.48 |
| Mean | 56.37 | 5.73 | 9.87 | 25.68 | 45.53 | 20.89 | 438.57 | 37.17 | 4.26 | 6.55 | 24.87 | 42.76 | 20.34 | 436.06 |
| LSD)P<0.05) | 0.26 | 0.36 | 0.29 | 0.76 | NS | 0.43 | 5.47 | NS | 0.17 | 0.24 | 0.28 | 0.42 | 0.17 | 3.18 |

1SSE = first *striga* shoot emergence, 6SSC= *Striga* shoot count at 6 WAS, 8 SSC= Strigs shoot count at 8 WAS,
6 PH. Sorghum plant height at 6 WAS. 8PH= Sorghum plant height at 8 WAS, GW= Grain weight, GY: Grain yield. NS= Not significant

**Table 7: Interaction effect of sorghum, cowpea variety and *striga* level on sorghum response to cowpea screening**

| Treatments | | | 2013 | | | | | | | 2014 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| sorghum | Variety | *striga* level (g) | ISSE | 6SSC | 8SSC | 6PH | 8PH | 1000 GW | GY | ISSE | 6 SSC | 8SSC |
| ICSV 1002 | IT04K-217-55 | 0 | 0.00 | 0.00 | 0.00 | 27.60 | 48.60 | 26.51 | 540.60 | 0.00 | 0.00 | 0.00 |
| | | 2.5 | 57.60 | 5.20 | 4.40 | 28.20 | 46.60 | 25.88 | 457.70 | 58.00 | 1.60 | 4.20 |
| | | 5 | 57.00 | 4.40 | 5.60 | 26.80 | 45.60 | 24.81 | 441.70 | 58.00 | 2.80 | 5.40 |
| | IT04K-227-4 | 0 | 0.00 | 0.00 | 0.00 | 27.80 | 46.60 | 22.39 | 450.00 | 0.00 | 0.00 | 0.00 |
| | | 2.5 | 56.20 | 5.20 | 7.00 | 27.20 | 44.40 | 21.42 | 443.50 | 56.00 | 4.60 | 7.00 |
| | | 5 | 56.60 | 7.40 | 9.00 | 26.60 | 44.40 | 21.42 | 440.40 | 56.00 | 6.60 | 8.80 |
| | IT07K-210-1 | 0 | 0.00 | 0.00 | 0.00 | 28.00 | 45.40 | 21.09 | 466.00 | 0.00 | 0.00 | 0.00 |
| | | 2.5 | 56.60 | 6.60 | 10.80 | 25.60 | 42.80 | 20.30 | 429.40 | 56.00 | 6.20 | 10.60 |
| | | 5 | 56.20 | 7.00 | 12.40 | 24.20 | 42.20 | 21.31 | 424.00 | 55.80 | 7.00 | 12.40 |
| | IT07K-25-3-3 | 0 | 0.00 | 0.00 | 0.00 | 29.00 | 48.80 | 25.16 | 503.20 | 0.00 | 0.00 | 0.00 |
| | | 2.5 | 57.20 | 3.20 | 3.80 | 27.60 | 47.20 | 24.79 | 442.10 | 58.00 | 2.00 | 3.60 |
| | | 5 | 57.00 | 5.00 | 5.40 | 25.60 | 43.20 | 23.12 | 418.20 | 58.00 | 3.20 | 5.40 |
| | IT07K-237.2-1 | 0 | 0.00 | 0.00 | 0.00 | 26.80 | 45.40 | 19.97 | 436.00 | 0.00 | 0.00 | 0.00 |
| | | 2.5 | 56.00 | 4.60 | 9.20 | 25.60 | 43.20 | 18.89 | 424.00 | 56.00 | 3.80 | 9.20 |
| | | 5 | 55.80 | 5.80 | 12.00 | 26.40 | 40.60 | 19.35 | 414.90 | 56.00 | 5.80 | 12.20 |
| | IT04K-333-2 | 0 | 0.00 | 0.00 | 0.00 | 27.00 | 45.80 | 22.08 | 476.60 | 0.00 | 0.00 | 0.00 |
| | | 2.5 | 57.60 | 5.40 | 6.80 | 26.80 | 45.20 | 21.50 | 459.20 | 58.00 | 3.88 | 6.80 |
| | | 5 | 57.60 | 5.40 | 8.20 | 24.40 | 43.80 | 21.62 | 434.10 | 58.00 | 4.00 | 7.80 |
| | IT04K-339-1 | 0 | 0.00 | 0.00 | 0.00 | 27.40 | 47.60 | 22.51 | 502.60 | 0.00 | 0.00 | 0.00 |
| | | 2.5 | 57.80 | 3.60 | 5.60 | 26.40 | 44.80 | 22.61 | 491.90 | 58.00 | 2.60 | 5.40 |
| | | 5 | 56.80 | 3.60 | 5.60 | 26.40 | 44.80 | 22.61 | 491.90 | 58.00 | 5.20 | 7.00 |
| | IT04K-405-5 | 0 | 0.00 | 0.00 | 0.00 | 26.00 | 45.60 | 19.98 | 450.00 | 0.00 | 0.00 | 0.00 |
| | | 2.5 | 56.00 | 5.40 | 9.40 | 24.80 | 45.40 | 18.54 | 412.80 | 56.00 | 5.60 | 9.20 |
| | | 5 | 57.00 | 7.40 | 11.60 | 23.80 | 45.20 | 18.12 | 398.10 | 56.00 | 6.60 | 11.60 |
| | IT07K-293-3 | 0 | 0.00 | 0.00 | 0.00 | 25.80 | 45.80 | 21.75 | 443.20 | 0.00 | 0.00 | 0.00 |
| | | 2.5 | 57.40 | 6.60 | 9.00 | 25.00 | 43.40 | 20.44 | 440.00 | 56.80 | 6.00 | 9.00 |
| | | 5 | 56.00 | 6.40 | 11.60 | 24.20 | 42.00 | 19.93 | 418.00 | 56.80 | 6.00 | 11.40 |
| | IT07K-318-2 | 0 | 0.00 | 0.00 | 0.00 | 26.40 | 44.80 | 19.37 | 416.90 | 0.00 | 0.00 | 0.00 |
| | | 2.5 | 56.00 | 5.40 | 9.80 | 23.40 | 43.40 | 18.38 | 415.00 | 56.00 | 5.80 | 10.00 |
| | | 5 | 57.00 | 7.40 | 12.00 | 23.20 | 42.00 | 16.66 | 369.50 | 56.00 | 7.40 | 12.00 |
| Local variety | IT04K-217-55 | 0 | 0.00 | 0.00 | 0.00 | 25.60 | 45.80 | 25.18 | 522.50 | 0.00 | 0.00 | 0.00 |
| | | 2.5 | 55.60 | 6.20 | 6.00 | 27.20 | 45.60 | 24.04 | 428.10 | 55.00 | 4.00 | 5.60 |
| | | 5 | 56.60 | 5.40 | 7.00 | 27.00 | 43.40 | 24.40 | 419.20 | 55.00 | 5.20 | 6.80 |
| | IT04K-227-4 | 0 | 0.00 | 0.00 | 0.00 | 28.00 | 45.00 | 21.50 | 449.40 | 0.00 | 0.00 | 0.00 |
| | | 2.5 | 54.40 | 7.20 | 9.40 | 22.00 | 44.00 | 20.85 | 433.90 | 54.00 | 6.80 | 9.20 |
| | | 5 | 55.40 | 9.00 | 12.20 | 20.80 | 44.40 | 19.97 | 415.10 | 54.00 | 9.00 | 12.20 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| IT07K-210-1 | 0 | 0.00 | 0.00 | 0.00 | 25.80 | 45.00 | 20.49 | 443.90 | 0.00 | 0.00 | 0.00 |
| | 2.5 | 55.40 | 8.60 | 12.80 | 25.40 | 44.40 | 20.35 | 417.20 | 55.00 | 10.20 | 13.00 |
| | 5 | 55.80 | 10.60 | 15.00 | 24.80 | 39.80 | 19.92 | 406.60 | 55.00 | 12.00 | 14.80 |
| IT07K-25-3-3 | 0 | 0.00 | 0.00 | 0.00 | 27.60 | 45.60 | 24.07 | 509.30 | 0.00 | 0.00 | 0.00 |
| | 2.5 | 55.80 | 5.80 | 7.80 | 26.40 | 44.00 | 23.59 | 419.80 | 55.60 | 5.00 | 7.60 |
| | 5 | 56.60 | 6.20 | 8.20 | 25.40 | 43.20 | 22.16 | 410.30 | 55.40 | 5.00 | 8.00 |
| IT07K-237.2-1 | 0 | 0.00 | 0.00 | 0.00 | 25.60 | 44.60 | 18.57 | 448.40 | 0.00 | 0.00 | 0.00 |
| | 2.5 | 55.20 | 8.20 | 12.40 | 24.80 | 42.20 | 17.36 | 426.00 | 55.00 | 8.60 | 12.20 |
| | 5 | 55.40 | 8.40 | 15.40 | 24.80 | 118.20 | 16.89 | 434.00 | 55.00 | 9.40 | 15.40 |
| IT04K-333-2 | 0 | 0.00 | 0.00 | 0.00 | 26.00 | 45.40 | 21.69 | 448.60 | 0.00 | 0.00 | 0.00 |
| | 2.5 | 55.00 | 7.00 | 8.80 | 25.60 | 44.20 | 20.77 | 436.50 | 55.00 | 6.40 | 8.60 |
| | 5 | 56.40 | 6.80 | 9.40 | 25.40 | 43.40 | 20.09 | 436.50 | 55.00 | 6.40 | 9.20 |
| IT04K-339-1 | 0 | 0.00 | 0.00 | 0.00 | 27.20 | 45.20 | 22.25 | 493.70 | 0.00 | 0.00 | 0.00 |
| | 2.5 | 55.60 | 7.00 | 9.00 | 25.20 | 43.40 | 21.34 | 482.70 | 55.40 | 6.00 | 9.20 |
| | 5 | 56.60 | 7.40 | 9.00 | 25.40 | 42.40 | 21.55 | 458.10 | 55.40 | 6.20 | 8.60 |
| IT04K-405-5 | 0 | 0.00 | 0.00 | 0.00 | 25.40 | 44.00 | 19.71 | 429.70 | 0.00 | 0.00 | 0.00 |
| | 2.5 | 55.80 | 8.00 | 12.60 | 25.80 | 42.40 | 17.26 | 390.70 | 55.00 | 9.00 | 12.60 |
| | 5 | 55.60 | 8.40 | 14.40 | 22.80 | 41.40 | 16.36 | 384.60 | 55.00 | 10.40 | 14.40 |
| IT07K-293-3 | 0 | 0.00 | 0.00 | 0.00 | 25.80 | 44.60 | 20.14 | 448.60 | 0.00 | 0.00 | 0.00 |
| | 2.5 | 56.20 | 7.80 | 12.00 | 24.60 | 43.60 | 19.65 | 429.90 | 55.20 | 10.20 | 12.60 |
| | 5 | 55.40 | 8.40 | 15.00 | 22.20 | 42.80 | 20.09 | 420.40 | 55.20 | 9.00 | 15.00 |
| IT07K-318-2 | 0 | 0.00 | 0.00 | 0.00 | 26.20 | 43.40 | 17.54 | 401.60 | 0.00 | 0.00 | 0.00 |
| | 2.5 | 55.40 | 8.60 | 13.00 | 25.40 | 43.20 | 17.66 | 381.90 | 55.00 | 9.80 | 13.60 |
| | 5 | 56.00 | 9.00 | 15.20 | 23.00 | 42.00 | 16.86 | 361.50 | 55.00 | 10.80 | 15.20 |
| Mean | | 56.36 | 5.69 | 9.85 | 25.69 | 45.52 | 20.91 | 439.00 | 55.94 | 6.43 | 9.82 |
| | | NS | NS | NS | NS | NS | NS | NS | NS | 0.78 | NS |

1SSE= first *striga* shoot emergence, 6SSC= *Striga* shoot count at 6 WASs, 8 SSC= Strigs shoot count at 8 WAS,
6 PH. Sorghum plant height at 6 WAS. 8PH= Sorghum plant height at 8 WAS, GW= Grain weight, GY: Grain yield. NS= Not significant

Sorghum response to screened groundnut varieties showed that striga emergence was not significantly ($p<0.05$) different in 2013.but was in 2014,groundnut varieties TES, QH243C, RMP-12, and RMP-91 compared to other varieties in 2014.(table 8).

Sorghum sown in groundnut variety RMP-91 recorded fewer striga count in all the samply period in 2013 and 2014 compared to other varieties, taller sorghum plant height in all the samply periods

and highest grain yield was observed in groundnut variety RMP-91 in both years compared to other varieties (table 8).

*Striga* level at 2.5g recorded fewer striga count in all the samply periods in both years compared to 0 and 5g striga level. While higher plant height and grain yield was recorded in 0g striga level compared to 2.5 and 5g *Striga* level (table 8).

The interaction effect of sorghum varieties groundnut varieties and *Striga* level on response to screened soyabean were not significantly ($p<0.05$) different in *Striga* emergence and *Striga* count at 6 WAS in 2013 but was in 2014 (table 9).

Plant height and grain yield were not significantly ($p<0.05$) different in both 2013 and 2014 (table 9).

**Table 8: Effect of sorghum response to groundnut screening**

| **Treatments** | **2013** | | | | | | | **2014** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sorghum** | **ISSE** | **6SSC** | **8SSC** | **6PH** | **8PH** | **1000 GW** | **GY** | ISSE | 6 SSC | 8SSC | 6PH | 8PH | 1000 GW |
| ICSV 1002 | 38.23 | 4.84 | 7.49 | 24.43 | 45.21 | 31.28 | 468.85 | 37.87 | 4.71 | 7.47 | 24.78 | 44.13 | 30.49 |
| Suceptible | 36.77 | 5.48 | 8.60 | 23.27 | 43.12 | 31.11 | 458.56 | 36.59 | 5.60 | 8.63 | 23.05 | 42.20 | 29.73 |
| Mean | 37.50 | 5.16 | 8.05 | 23.85 | 44.17 | 31.20 | 463.71 | 37.23 | 5.16 | 8.05 | 23.92 | 43.17 | 30.11 |
| LSD(P<0.05) | 0.74 | 0.25 | 0.21 | 0.38 | 0.48 | NS | 2.29 | 0.01 | 0.14 | 0.12 | 0.23 | 0.24 | 0.17 |
| Variety | | | | | | | | | | | | | |
| TE3 | 37.80 | 4.37 | 6.93 | 23.93 | 45.07 | 31.70 | 491.43 | 37.67 | 4.00 | 6.80 | 24.43 | 44.33 | 31.40 |
| CHICO | 38.93 | 5.80 | 8.80 | 23.70 | 44.47 | 31.70 | 462.32 | 36.97 | 5.77 | 8.87 | 23.80 | 43.23 | 31.07 |
| KH 241D | 37.07 | 6.00 | 9.07 | 22.93 | 43.73 | 30.90 | 441.52 | 37.00 | 6.10 | 9.23 | 22.20 | 42.00 | 29.47 |
| QH 243C | 37.60 | 5.13 | 7.90 | 24.43 | 43.97 | 32.13 | 474.36 | 37.67 | 5.03 | 7.77 | 24.97 | 43.93 | 31.13 |
| CN 94C | 37.17 | 5.77 | 9.20 | 23.83 | 43.00 | 30.40 | 452.80 | 37.00 | 5.83 | 9.20 | 23.70 | 42.20 | 28.87 |
| RRB | 37.10 | 5.03 | 9.57 | 23.10 | 42.27 | 29.90 | 430.89 | 37.00 | 3.20 | 9.90 | 22.67 | 40.83 | 28.37 |
| RMP-12 | 37.63 | 4.10 | 6.10 | 24.50 | 45.47 | 31.87 | 487.67 | 37.67 | 3.90 | 6.27 | 25.63 | 44.80 | 30.77 |
| RMp-91 | 37.70 | 3.53 | 5.53 | 25.50 | 46.50 | 31.87 | 495.25 | 37.67 | 3.00 | 5.40 | 25.83 | 46.50 | 31.23 |
| Groundnut-23 | 36.90 | 5.37 | 8.23 | 24.40 | 44.63 | 32.50 | 470.09 | 36.67 | 5.33 | 7.90 | 24.20 | 43.30 | 32.20 |
| Groundnut-11 | 37.07 | 6.50 | 9.10 | 22.17 | 42.57 | 29.00 | 430.69 | 37.00 | 7.17 | 9.17 | 21.73 | 40.53 | 26.57 |
| Mean | 37.50 | 5.16 | 8.04 | 23.85 | 44.17 | 31.20 | 463.70 | 37.23 | 4.93 | 8.05 | 23.92 | 43.17 | 30.11 |
| LSD(P<0.05) | NS | 0.56 | 0.47 | 0.85 | 1.06 | 0.96 | 5.12 | 0.03 | 0.31 | 0.27 | 0.51 | 0.53 | 0.38 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Striga* level (g)** | | | | | | | | | | | | | |
| 0 | 0.00 | 0.00 | 0.00 | 25.36 | 45.56 | 32.05 | 474.16 | 0.00 | 0.00 | 0.00 | 26.36 | 45.40 | 31.45 |
| 2.5 | 55.99 | 6.88 | 11.27 | 23.83 | 43.98 | 31.15 | 462.06 | 55.84 | 6.53 | 11.23 | 23.77 | 42.84 | 29.94 |
| 5 | 55.94 | 8.60 | 12.86 | 22.36 | 42.96 | 30.38 | 454.89 | 55.85 | 8.93 | 12.92 | 21.62 | 41.26 | 28.93 |
| Mean | 37.50 | 5.16 | 8.04 | 23.85 | 44.17 | 31.19 | 463.70 | 37.23 | 5.15 | 8.05 | 23.92 | 43.17 | 30.11 |
| LSD)P<0.05) | 0.19 | 0.31 | 0.26 | 0.47 | 0.58 | 0.53 | 2.81 | 0.02 | 0.17 | 0.15 | 0.28 | 0.29 | 0.21 |

1SSE = first *striga* shoot emergence, 6SSC= *Striga* shoot count at 6 WAS, 8 SSC= Strigs shoot count at 8 WAS,
6 PH. Sorghum plant height at 6 WAS. 8PH= Sorghum plant height at 8 WAS, GW= Grain weight, GY: Grain yield. NS= Not significant

**Table 9: Interaction effect of sorghum, varieties and *striga* level on response of groundnut to groundnut screening**

| | | | 2013 | | | | | | | 20 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sorghum | **Variety** | ***striga* level (g)** | **ISSE** | **6SSC** | **8SSC** | **6PH** | **8PH** | **1000 GW** | **GY** | **ISSE** | **6SSC** | **8S** |
| ICSV 1002 | TE3 | 0 | 0.00 | 0.00 | 0.00 | 25.20 | 45.80 | 32.20 | 507.22 | 0.00 | 0.00 | 0 |
| | | 2.5 | 57.60 | 5.80 | 7.60 | 25.20 | 46.60 | 32.60 | 497.75 | 58.00 | 4.00 | 7 |
| | | 5 | 58.00 | 6.20 | 10.80 | 22.60 | 45.80 | 31.20 | 488.27 | 58.00 | 6.40 | 10 |
| | CHICO | 0 | 11.20 | 0.00 | 0.00 | 26.20 | 46.60 | 31.80 | 470.06 | 0.00 | 0.00 | 0 |
| | | 2.5 | 56.40 | 7.40 | 11.20 | 24.20 | 45.00 | 31.40 | 468.30 | 56.00 | 6.00 | 11 |
| | | 5 | 56.20 | 8.40 | 13.60 | 22.66 | 44.80 | 31.60 | 464.46 | 56.00 | 9.00 | 13 |
| | KH 241D | 0 | 0.00 | 0.00 | 0.00 | 25.00 | 48.20 | 32.00 | 451.27 | 0.00 | 0.00 | 0 |
| | | 2.5 | 56.20 | 6.80 | 13.40 | 23.60 | 43.80 | 32.00 | 445.63 | 56.00 | 7.00 | 13 |
| | | 5 | 56.00 | 9.60 | 13.60 | 22.80 | 43.00 | 31.20 | 441.02 | 56.00 | 10.00 | 14 |
| | QH 243C | 0 | 0.00 | 0.00 | 0.00 | 27.40 | 45.20 | 32.60 | 491.73 | 0.00 | 0.00 | 0 |
| | | 2.5 | 57.60 | 6.80 | 10.00 | 24.40 | 45.20 | 32.40 | 475.51 | 58.00 | 5.60 | 9 |
| | | 5 | 57.40 | 7.00 | 11.60 | 23.60 | 44.60 | 32.20 | 473.33 | 58.00 | 7.40 | 11 |
| | CN 94C | 0 | 0.00 | 0.00 | 0.00 | 25.20 | 45.00 | 30.80 | 467.19 | 0.00 | 0.00 | 0 |
| | | 2.5 | 56.00 | 7.20 | 12.60 | 24.40 | 44.60 | 29.20 | 453.47 | 56.00 | 6.60 | 12 |
| | | 5 | 56.60 | 9.40 | 14.00 | 24.00 | 44.20 | 30.60 | 455.81 | 56.00 | 9.60 | 14 |
| | RRB | 0 | 0.00 | 0.00 | 0.00 | 24.20 | 45.20 | 31.20 | 441.57 | 0.00 | 0.00 | 0 |
| | | 2.5 | 56.40 | 7.80 | 12.80 | 24.00 | 44.20 | 30.40 | 432.67 | 56.00 | 8.00 | 13 |
| | | 5 | 56.00 | 9.60 | 14.20 | 22.60 | 42.40 | 29.20 | 428.95 | 56.00 | 10.40 | 14 |
| | RMP-12 | 0 | 0.00 | 0.00 | 0.00 | 25.40 | 45.60 | 31.40 | 514.17 | 0.00 | 0.00 | 0 |
| | | 2.5 | 58.00 | 5.00 | 5.40 | 25.40 | 45.60 | 31.40 | 492.59 | 58.00 | 3.40 | 6 |
| | | 5 | 57.20 | 6.40 | 8.40 | 24.60 | 44.40 | 31.00 | 477.77 | 58.00 | 6.00 | 9 |
| | RMp-91 | 0 | 0.00 | 0.00 | 0.00 | 27.60 | 49.00 | 34.20 | 518.20 | 0.00 | 0.00 | 0 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2.5 | 57.60 | 3.80 | 5.40 | 25.60 | 47.20 | 32.20 | 507.50 | 58.00 | 2.60 | 5 |
| | | 5 | 58.00 | 5.00 | 9.00 | 24.80 | 46.20 | 30.80 | 487.67 | 58.00 | 4.60 | 8 |
| | Groundnut-23 | 0 | 0.00 | 0.00 | 0.00 | 27.00 | 46.20 | 30.80 | 480.54 | 0.00 | 0.00 | 0 |
| | | 2.5 | 56.00 | 6.60 | 11.00 | 24.60 | 45.80 | 31.80 | 471.11 | 56.00 | 5.80 | 9 |
| | | 5 | 56.20 | 8.40 | 13.40 | 23.40 | 43.80 | 32.00 | 466.90 | 56.00 | 8.60 | 12 |
| | Groundnut-11 | 0 | 0.00 | 0.00 | 0.00 | 24.80 | 43.60 | 30.00 | 438.16 | 0.00 | 0.00 | 0 |
| | | 2.5 | 56.00 | 7.20 | 13.00 | 22.20 | 43.00 | 27.00 | 431.50 | 56.00 | 0.80 | 12 |
| | | 5 | 56.20 | 10.80 | 13.60 | 20.40 | 41.60 | 25.60 | 425.04 | 56.00 | 11.40 | 13 |
| Local variety | TE3 | 0 | 0.00 | 0.00 | 0.00 | 27.20 | 45.60 | 30.80 | 496.17 | 0.00 | 0.00 | 0 |
| | | 2.5 | 55.40 | 7.00 | 10.60 | 22.80 | 44.20 | 31.40 | 484.60 | 55.00 | 6.40 | 10 |
| | | 5 | 55.80 | 7.20 | 12.60 | 20.60 | 42.40 | 31.00 | 474.53 | 55.00 | 7.20 | 12 |
| | CHICO | 0 | 0.00 | 0.00 | 0.00 | 25.20 | 45.00 | 32.80 | 461.93 | 0.00 | 0.00 | '0.0 |
| | | 2.5 | 54.80 | 9.00 | 13.20 | 23.20 | 43.60 | 31.80 | 456.60 | 54.80 | 9.00 | 13 |
| | | 5 | 55.00 | 10.00 | 14.80 | 20.80 | 41.80 | 30.80 | 452.55 | 55.00 | 10.60 | 14 |
| | KH 241D | 0 | 0.00 | 0.00 | 0.00 | 23.60 | 43.40 | 30.00 | 440.24 | 0.00 | 0.00 | 0 |
| | | 2.5 | 55.20 | 8.60 | 13.80 | 22.00 | 42.80 | 30.00 | 436.19 | 55.00 | 8.40 | 13 |
| | | 5 | 55.00 | 11.00 | 13.60 | 20.60 | 41.20 | 30.20 | 434.77 | 55.00 | 11.20 | 14 |
| | QH 243C | 0 | 0.00 | 0.00 | 0.00 | 25.40 | 44.80 | 32.60 | 472.20 | 0.00 | 0.00 | 0 |
| | | 2.5 | 55.60 | 7.20 | 13.80 | 23.80 | 42.80 | 31.40 | 470.33 | 55.00 | 7.60 | 12 |
| | | 5 | 55.00 | 9.40 | 13.60 | 22.00 | 41.20 | 31.60 | 463.06 | 55.00 | 9.60 | 13 |
| | CN 94C | 0 | 0.00 | 0.00 | 0.00 | 24.80 | 42.80 | 31.20 | 455.33 | 0.00 | 0.00 | 0 |
| | | 2.5 | 55.00 | 7.20 | 13.80 | 23.60 | 41.00 | 31.60 | 444.02 | 55.00 | 7.60 | 13 |
| | | 5 | 55.40 | 10.80 | 14.80 | 21.00 | 40.40 | 29.00 | 440.98 | 55.00 | 11.20 | 14 |
| | RRB | 0 | 0.00 | 0.00 | 0.00 | 23.60 | 42.40 | 30.80 | 432.53 | 0.00 | 0.00 | 0 |
| | | 2.5 | 55.40 | 5.40 | 14.60 | 22.40 | 39.40 | 29.20 | 424.08 | 55.00 | 5.20 | 14 |
| | | 5 | 54.80 | 7.40 | 15.80 | 21.80 | 40.00 | 28.60 | 425.55 | 55.00 | 7.60 | 16 |
| | RMP-12 | 0 | 0.00 | 0.00 | 0.00 | 25.40 | 46.80 | 32.80 | 504.13 | 0.00 | 0.00 | 0 |
| | | 2.5 | 55.20 | 6.20 | 11.00 | 24.00 | 44.40 | 31.60 | 479.71 | 55.00 | 6.20 | 10 |
| | | 5 | 55.40 | 7.00 | 11.80 | 22.20 | 42.40 | 30.60 | 457.67 | 55.00 | 7.80 | 11 |
| | RMp-91 | 0 | 0.00 | 0.00 | 0.00 | 25.60 | 47.40 | 32.40 | 509.24 | 0.00 | 0.00 | 0 |
| | | 2.5 | 55.20 | 5.20 | 8.20 | 25.40 | 45.40 | 31.20 | 483.08 | 55.00 | 4.40 | 8 |
| | | 5 | 55.40 | 7.20 | 10.60 | 24.00 | 43.80 | 30.20 | 465.80 | 55.00 | 6.40 | 10 |
| | Groundnut-23 | 0 | 0.00 | 0.00 | 0.00 | 25.00 | 45.00 | 33.20 | 476.67 | 0.00 | 0.00 | 0 |
| | | 2.5 | 55.20 | 7.60 | 11.60 | 24.20 | 43.40 | 32.80 | 466.23 | 54.00 | 8.00 | 11 |
| | | 5 | 54.00 | 9.60 | 13.40 | 22.20 | 43.00 | 32.20 | 459.10 | 54.00 | 10.80 | 13 |
| | Groundnut-11 | 0 | 0.00 | 0.00 | 0.00 | 23.40 | 43.40 | 31.80 | 454.55 | 0.00 | 0.00 | 0 |
| | | 2.5 | 55.00 | 9.40 | 14.00 | 21.60 | 41.60 | 31.60 | 420.33 | 55.00 | 10.00 | 14 |
| | | 5 | 55.20 | 11.60 | 14.00 | 20.60 | 42.20 | 28.00 | 414.56 | 55.00 | 12.80 | 15 |
| Mean | | | 37.50 | 5.15 | 8.07 | 23.85 | 44.10 | 31.10 | 463.70 | 37.23 | 5.02 | 8 |
| LSD (P<0.05) | | NS | NS | NS | 1.15 | NS | NS | NS | NS | 0.07 | 0.77 | 0.6 |

1SSE := first *striga* shoot emergence,  6SSC= *Striga* shoot count at 6 WAS,  8 SSC= Strigs shoot count at 8 WAS,
6 PH. Sorghum plant height at 6 WAS.,  8PH= Sorghum plant height at 8 WAS, GW= Grain weight, GY: Grain yield. NS= Not significant

## DISCUSSION

### *Striga* Emergence

The delayed in *striga* emergence in the resistant variety in all the trap crop screen (Soyabean and groundnut) in 2013 and 2014 could be attributed to the lower amounts of germination stimulants to their root exudates, leading to later attachment of the parasites to the host. This is confirmed by Gurney *et al*, (2002) that resistant variety produce lower amounts of germination stimulants to their root exudates, leading to smaller numbers of attached parasite and/or later attachment of the parasite to the host.

The delayed in *striga* emergence in soyabean varieties TGX1019 - 2EB in 2013 and TGX1448 - 2E and TGX1019 2EB again in 2014, cowpea varieties IT04k -333-2 in 2013 and IT07k -2 5 -3 -3 in 2014 and Groundnut varieties TES; QH343C, RMP -12 and RMP - 91 in 2014 compared to other might be due to variability in their *striga* stimulation potential. This is in agreement with the finding of Bontanga *et al*; (2003) that cotton and sorghum genotypes have similarly been found to vary unduly in ability to stimulate *S. hermonthica* seed germination.

### *Striga* count

The lower *striga* count in resistant sorghum vanity observed in all the trap crops (soyabean cowpea and groundnut) could be attributed to the resistant variety supported fewer *striga* short through delayed infection/attachment as suggested by Van Art and Bastiaans (2006).

The fewer *striga* count in soyabean varieties TGX 1990 - 45F and TGX 1448 - 2E, cowpea variety IT04K -217-5 and groundnut variety RMP -91 compared to other variety could be attributed to the effectiveness of the trap crop to reduce *striga*population due to stimulating the suicidal germination of the *striga*seeds. This confirms the work of Berner *et al*. (1996) that two

legume varieties has been found to cause suicidal germination of *striga* in screen house experiments.

The fewer *striga* count is 2.5g *striga* level compared to 5g *striga*level could be due to lower *striga* seed density resulting in production of lower member of emerged *striga* than the higher density of 5g. This confirms the report of Magani *et al*, (1994) that lower *striga* seed density affect the *striga* emergence and resulting in taller plant higher grain yield.

## Plant height

The resistant vanity (ICSV 1002 produced taller plant height compared to Local varietysusceptible varieties. This could be due to lower number of emerged *striga* associated with vanity ICSV1002 as a result of the resistant vanity producing little or no root exudates to stimulate seeds of *striga* hence reducing population. This is in agreement with the finding of Wilson et al,. (2000) that resistant host genotype may limit the number of *striga* plants that infect each host plant or may reduced the impact of *striga* on the host plant.

The tallest plant height produced in soyabean varieties TGX1448 - 2E, TGX 1830 - 20E and TGX 1019 - 2EB, cowpea varieties IT07K - 25-33 and IT04K -217-5 and groundnut vanity RMP-91 could be attributed to the ability of these varieties to cause suicidal germination and reduce *striga* emergence and attachment that other varieties this significantly result in tallest plant height. This confirms the finding of Carsky *et al*, (2000) and Schulz *et al*, 2003 that some varieties of cowpea groundnut and soyabean have potential to cause suicidal germination of *S. hermonthica* and improve soil fertility.

The tallest plant height in 0 g *striga* level (control) compared to 2.5g and 5g *striga* level could be due to complete zero *striga* emergence and attachment which allowed adequate quantities of both water and nutrients which gave the sorghum good establishment and growth.

This is confirm by the work of Ayongwa *et al.,* (2010) that parasitic weed competes for water and nutrients as a root parasite and in so doing, crop growth is stunted and yield are generally reduced.

## Grain yield

The highest grain yield in the resistant variety might be due to good resistance which gave the sorghum good establishment and growth hence higher grain yield. This is in agreement with the findings of Rodenburg *et at.,* (2006) that in *striga* infested areas cultivation with resistant crops resists in fewer *striga*plants and high crop yield than a non-resistant genotype of the cultivated plant would do.

The highest grain yield in soyabean variety TGX 1448- 2E, cowpea variety IT04k - 339 -1 and groundnut variety RMP - 91 compared to other varieties might be attributed to the lowering of *striga* population by these variety as a result of stimulation of suicidal *striga* germination hence allowing the sorghum, to established, grow and yielded well. This is in agreement with earlier findings of Kuchinda *et al.,* (2003) that the cob weight is a better indicator of the effect of *striga* on maize yield.

The highest grain yield in 0 g *striga* level compared to 2.5 g and 5 g *striga* level might be due to establishment and growth of sorghum plant under free *striga* environment value translate into higher yield as suggested by Kuchinda et al., (2003) that the cob weight is a better indicator of the effect of *striga* on maize yield.

## CONCLUSION AND RECOMMENDATIONS

Soyabean variety TGX 1448 -2E resulted in delayed *Striga* emergence, lower *Striga* count, higher plant height and increase grain yield, cowpea varieties IT 04K - 339-1 resulted in delayed *Striga* emergence and increased grain yield and IT04K - 27- 5 resulted in lower *Striga* count and higher plant height and Groundnut variety RMP - 91 resulted in delayed *Striga c*ount emergence, lower *Striga* count, higher plant height and increased grain yield. This shows that integrating the above mention varieties could help in reducing the capacity of increasing the *Striga* seed bank. The varieties should be further verified under field conditions.

The three trap crops (Soyabean, Cowpea and Groundnut) tested in the screen house were generally better in inducing germination of *S. hermonthica* seed but focus of researchers on screening legume crop cultivar for use in integration with cereals for *S. hermonthica* seed bank reduction has mostly been on soyabean (Alabi *et al.,* 1994; 2000, Berner *et al.,* 1996 to 2000; Di Umba *et al.,* 2001). Groundnut and Cowpea receives little or no attention. Bothe (2001) used the cut root and root exudates methods to evaluate several forage and legumes and found that the groundnut cultivars gave consistently lower *S. hermonthica* count. This indicated the need to devote more attention to screening cowpea and groundnut cultivars for capacity to stimulate suicidal germination of *Striga*seeds.