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INFLUENCE OF INORGANIC FERTILIZER AND SPACING ON GROWTH AND YIELD OF TWO MAIZE CULTIVARS UNDER *Striga hermonthica* INFESTATION

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ABSTRACT
Field experiment was conducted during the 2013 rainy season at Lapai and Mokwa in the Southern Guinea savanna of Nigeria, to evaluate the reactions of maize cultivars to nitrogen and intra-row spacing in a Striga hermonthica infested field. The treatments consisted of two maize cultivar (Local (kabako) and SAMMAZ 16), four levels of nitrogen fertilizer (0, 60, 120 and 180 kg N ha^{-1}) and three intra-row spacing (20, 25 and 30 cm). The treatments were factorial combined and laid out in a Randomized Complete Block Design and replicated three times. Results revealed that plant height, number of leaves and days to 50 % anthesis of Local maize cultivars responded significantly with 60 kg N ha^{-1} at 9 WAS. 180 kg N ha^{-1} and 25cm intra-row spacing in combination with SAMMAZ 16 recorded the highest grain yield, 100 grain weight, stover yield, shelling percentage and harvest index. The local cultivars supported greater Striga infestation at 20 cm intra-row spacing and 180 kg N ha^{-1} was found remarkable for Striga suppression at 9 WAS in this study. From these findings, it could be concluded that the above combinations can be used for effective management of Striga hermonthica for optimum yield of maize.

Key words: spacing, maize cultivar, nitrogen fertilizer, *Striga* hermonthica

INTRODUCTION
Maize (*Zea mays* L.) belongs to the family Poaceae and has its centre of origin in Mexico (Chhidda *et al*., 2003). It is one of the oldest and most important crops in the world with multiple uses (Monlruzzaman *et al*., 2009). It is ranked third as most important cereal in the world after wheat and rice in terms of grain production (Asghar *et al*., 2010). Morris (2001) reported that maize is the world's most widely distributed crop from the tropics to the temperate zone. It is produced on nearly 100 million hectares in developing countries, with almost 70% of the production in the developing world coming from low and lower middle income countries (FAOSTAT, 2010). Global average yield in 2009 was estimated at 5 t/ha (Edgerton, 2009), while yield obtained in developing countries are still behind world average (Pixley *et al*., 2009). Maize grain yields in Nigeria varied from 0.8 t/ha to 8.0 t/ha depending on cultivars used, ecology, farming system adopted and management practices involved (Olakojo and Olaoye, 2007). In Nigeria, two types of maize cultivars are grown, the yellow and white and due to its adaptability, it is grown as rain fed and irrigated. Some of the major producing states in Nigeria are Adamawa, Bauchi, Borno, Yobe, Jigawa, Gombe, Taraba, Plateau, Sokoto, Kebbi, Katsina, Nasarawa, Niger and Zamfara (FORAMINIFERA, 2013).

The parasitic *Striga* spp is said to be a treat to farmers in maize producing belts and is becoming endemic. Matata *et al*. (2011) reported that the most economically important *Striga* (Witch weed) species infesting food crops in Africa are *Striga hermonthica* (Del.) Benth, *Striga asiatica* (L.) Kuntze and *Striga gesnerioides* (Willd.). Among the three *Striga* parasitic weed species, *S. hermonthica* is reported to be the species that causes the greatest damage to cereal crops causing huge losses in grain yield (Atera *et al.* 2013). Liman and Mathew (2013) reported one of the characteristics of the parasitic witch weed to be its damages to host plant before emergence above

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ground. The economic losses due to *Striga spp.*, according to Runo *et al.* (2012) are enormous with cereal food crops such as maize, sorghum, millet, wheat and upland rice. Globally, it was reported that several million hectares of arable land are infected by *Striga* species and causes huge losses to farmers in Sub-Saharan Africa (SSA) (Parker, 2008). The weed is capable of reducing yields by between 30 and 70% and sometimes results in total crop failure especially in the endemic areas of maize production (Anjorin *et al*., 2013). The devastating damages caused by *Striga* infestation has forced maize farmers to abandon their farm lands to *Striga,* or forced change to production of less susceptible crops (Olakojo and Olaoye, 2007). The decline in soil fertility has been reported to have favored *Striga* proliferation (Kanampiu *et al*., 2003; Oswald, 2005). Several control measures of *Striga* spp. have been recommended such as manual hand pulling, use of catch and trap crops, use of N fertilizer, application of post emergence herbicide, cereal-legume rotation and host plant resistance (Dugje *et al*., 2010). To this effect, technique of adopting different levels of nitrogen fertilizer and intra-row spacing were evaluated in order to determine how *Striga* can be minimized to obtain reasonable maize yield. The objective of this study is to evaluate the response of maize cultivars to nitrogen fertilizer levels and intra-row spacing under artificial *Striga hermonthica* infestation.

MATERIALS AND METHODS

Field trials were carried out in two locations – Lapai and Mokwa, Niger State in the Southern Guinea Savanna of Nigeria–during the 2013 cropping season.(June–September). Lapai and Mokwa lies between latitude 9^0 2' N and 9^0 18' N, longitude 6^0 34' E and 5^0 04'E in the Southern Guinea Savanna of Nigeria respectively (Adetimirin *et al.*, 2000 and Isah *et al*., 2011). Zubairu and Jibrin (2014) reported that, Niger State is located in the Southern Guinea Savanna zone of Nigeria with mean annual precipitation of 1,300mm taken from a long record of 50 years. The highest mean monthly rainfall is September with almost 3000mm, and the rainy season starts on average in April and lasts between 190-200 days. Composite soil samples were collected from the experimental fields at different portion and analyzed and the result was tested to be sandy loam with pH of 5.46 and 5.44 in Lapai and Mokwa respectively. The treatments consisted of factorial combination of two Maize cultivars - Local (Kabako) and SAMMAZ 16 (Improved *Striga* resistant cultivar). Four levels of Nitrogen fertilizer in the form of Urea (0, 60, 120 and 180 kg N ha^{-1}) and spacing (20, 25 and 30 cm) was used and arranged in a randomized complete block design replicated three times. The plant population in this study is 6,666.67, 5,333.33 and 4,444.44 per hectare representing 20, 25 and 30 intra-row spacing at 75cm inter-row spacing. Each plot size contained 5 ridges at 3.75m by 3m (11.25 m^2) and one seed each per hole was sown. SAMMAZ 16 was obtained from the Institute for Agricultural Research (IAR) Zaria, Kaduna state while the Local cultivar was obtained from a maize grower in the study area. Sowing and harvesting of maize cultivars was conducted in June and October, 2013 respectively. *Striga hermonthica* was artificially inoculated uniformly in each hole using coca-cola bottle cap of sand and *Striga* mixture before sowing (Ezeaku and Gupta, 2004).

Weeding was done manually with hoe at 3 weeks after sowing (WAS) and subsequently with hand pulling, this was to ensure survival of emerged *Striga* seeds and the test crop. Side placement of half dose of nitrogen fertilizer (0, 60, 120 and 180 kg N ha^{-1}) in the form of Urea (46%) together with 60 kg ha^{-1} each of P_2O_5 and K_2O were applied three weeks after sowing, second half dose of N fertilizer was later applied by side placement at 6 weeks after sowing (WAS). A treatment (0 kg N ha^{-1}) was established to serve as a control. At harvest, the cobs were plucked, dehusked and then weighed. The cobs were dried, threshed and winnowed to obtain clean grains. The data collected were subjected to analysis of variance (ANOVA) using statistical analysis software (SAS, 2002) at 5% level of probability.

RESULTS AND DISCUSSION

Effect of nitrogen fertilizer and spacing on the growth parameters of maize under *Striga* infestation in the 2013 rainy season.

The effect of Nitrogen and Spacing on the growth of maize cultivars showed a significant response to treatments. There was a significant difference in plant height, number of leaves and 50 % anthesis at 9 WAS (Table 1). Plant stand count and days to 50% silking observed in this study was not significantly different at 9 WAS in both locations. Plant height at 9 WAS showed significant differences in both locations, such that the Local cultivars produced significantly taller plants than SAMMAZ 16 cultivars. The difference in plant height could be linked to genetic make-up inherent of the cultivars. This finding corroborates that of Majambu *et al*. (1996) who attributed the differences in growth indices of crops to the genetic constitution and Raemaekers (2001) who also reported that local cultivars are taller than the improved cultivars. Number of leaves and days to 50 % anthesis at Lapai and Mokwa differed significantly such that the Local cultivar produced more numbers of leaves with early days to anthesis. The reason could be attributed to difference in growth characters as may be influenced by the genetic characteristics of the maize cultivars. This is in line with the study of Enujeke (2013) who attributed an increase in number of leaves to growth characters engineered by the genetic make-up of the plants. There was an Interaction between maize cultivars and nitrogen fertilizer in terms of plant height in Lapai at 9 WAS. The result shows that Local cultivar significantly produced taller plants at 60 kg N ha^{-1} which is similar to the result obtained at 120 kg N ha^{-1} while SAMMAZ 16 produced shorter plants consistently at all levels of nitrogen application, although at par with the local cultivar at 0 kg N ha^{-1} (Table 2). However, the significant increase observed with maize cultivars in terms of plant height under *Striga* infestation could be attributed to the importance of N application which plays a vital role in *Striga* suppression which resulted in adequate crop growth and development. This result was similar to the findings of Prasad and Singh (1990) who observed a significant increase in growth parameters of maize with increase in fertilizer application. The interaction between nitrogen and spacing on number of leaves at 9 WAS in Lapai differed significantly. The result shows that spacing of 20 cm produced the higher number of leaves which was obtained with application of 180 Kg N ha^{-1}, and the result is at par with other treatments. The spacing of 20 cm at 0 Kg N ha^{-1} produced the lowest number of leaves (Table 3). This could be attributed to insufficient nutrient status of the soil which might have stimulated the growth of *Striga* that lead to lower number of leaves due to its devastating effect. Our findings is in consonance with the observations of Gacheru and Rao (2011) who reported that declining soil fertility increases *Striga* infestation due to lack of N. Franke *et al*. (2006) also reported *Striga* abundance is clearly favored by low soil fertility. The interaction of cultivars and nitrogen fertilizer levels on days to 50 % silking at Lapai was highly significant ($p<0.01$) (Table 4). The shortest days to silking was recorded at 0 kg N ha^{-1} in both locations (Table 4). All other combinations on this parameter produced similar shortest days to silking in both locations, but at par with the *Striga resistant* cultivar (SAMMAZ 16) at Mokwa in all levels of N evaluated. The results on days to 50% silking is in conformity with the report of Anjorin *et al*. (2013) who indicated that maize cultivars respond significantly to different levels of N especially for days to 50% silking.

Effect of nitrogen fertilizer levels and intra-row spacing on yield parameters of maize cultivars during the 2013 rainy season

Yield parameters of maize cultivars such as grain yield, 100grain weight, stover yield, shelling percentage and harvest index differed significantly. SAMMAZ 16 maize cultivar consistently produced the highest result in both locations in terms of grain yield, 100 grain weight, stover yield, shelling percentage and harvest index, but the result at Lapai in terms of stover yield and harvest index was not significant (Table 5). This result agreed with the report of Kureh *et al*. (2003) who reported *Striga* tolerant maize cultivars supported lower *Striga* incidence and infestation. Application of N at different levels played a role in terms of yield. The use of 180 kg N ha^{-1} consistently produced the highest grain yield, 100 grain weight, stover yield, shelling percentage and harvest index. However, the lowest result obtained with all yield parameters in this study was recorded in plots without fertilizer application (0 kg N ha^{-1}). The highest grain yield recorded with SAMMAZ 16 suggested that the improved cultivar utilizes greater amount of soil resources than the Local cultivar, this agreed with the finding of Tiamiyu (2011) who reported that improved cultivars have good conversion ability from source to sink resulting to high yield. Spacing had no significant effect on stover yield and harvest index, but significant differences were observed with grain yield and shelling percentage at Lapai and 100grain weight at Mokwa such that 25 cm intra-row spacing was found adequate for the higher yield obtained with SAMMAZ 16 than with the Local cultivar. These increases in yield might be due to optimum spacing with less *Striga* infestation. This is in conformity with Iken and Amusa (2004) who reported greater yield at 25cm intra-row and 75cm inter-row spacing at one plant per stand. In Table 6, the interaction of cultivars and nitrogen on grain yield was highly significant ($p<0.01$) at Lapai, and $p<0.05$ at Mokwa such that SAMMAZ 16 produced the highest grain yield with application of 180 kg N ha^{-1} though similar result were obtained at Mokwa favoring the improved cultivar. Application of 180 kg

N ha^{-1} produced the highest stover yield in Lapai and shelling percentage in both locations in combination with SAMMAZ 16. The 100 grain weight in combination with the Local cultivar at 180 kg N ha^{-1} was the highest. The highest result obtained in grain yield, stover yield and shelling percentage with SAMMAZ 16 was a demonstration of the superiority of the improved cultivar over the Local cultivar and the higher dose of N at 180 kg N ha^{-1} which played a greater role of *Striga* suppression to obtain higher yield due to less *Striga* damage to host plant. This revealed the importance of N in *Striga* control and maize high yield. This result confirmed the report of Esilaba *et al*. (2000) who reported that application of nitrogenous fertilizer increases grain yield of the host crop under *Striga* pressure. The Local (Kabako) cultivar showed the lowest values in all yield parameters evaluated in this study

Table 1: Effect of nitrogen levels and intra-row spacing on growth parameters of maize cultivars under *Striga hermonthica* infestation at 9 WAS in the 2013 rainy season.

	Plant stand count		Plant height		No. of leaves		50% anthesis		50% silking	
	Lapai	Mokwa	Lapai	Mokwa	Lapai	Mokwa	Lapai	Mokwa	Lapai	Mokwa
Cultivars										
Local Kabako	88.91	88.49	208.80a	216.94a	9.49a	10.03	64.75	61.89a	64.81	63.17
SAMMAZ 16	90.74	89.78	161.29b	187.46b	9.11b	10.02	62.72	56.78b	69.28	63.89
SE±	0.95	0.82	3.47	3.45	0.11	0.11	1.52	0.42	2.67	2.04
N. fertilizer										
0	86.52b	85.72b	162.60c	180.07b	8.79b	9.28b	64.56	62.39a	56.94b	57.50
60	91.94a	90.07a	200.06a	206.49a	9.43a	10.19a	63.00	58.50b	69.89a	65.94
120	90.67a	90.52a	197.51a	214.13a	9.53a	10.24a	63.00	58.72b	70.94a	65.89
180	90.17	90.22a	180.01b	208.10a	9.44a	10.40a	64.39	57.72b	70.39a	64.78
SE±	1.34	1.16	4.90	4.88	0.16	0.16	2.14	0.60	3.78	2.88
Spacing										
20	90.11ab	88.22	190.94	200.61	9.25	10.09	65.29	59.88	68.63	60.75
25	91.74a	90.02	184.76	200.52	9.19	9.89	61.17	59.58	64.42	63.88
30	87.63b	89.17	179.43	205.46	9.46	10.10	64.75	58.54	68.08	65.96
SE±	1.16	1.0	4.24	4.23	0.14	0.14	1.86	0.52	3.28	2.49
Interaction										
V × N	NS	NS	*	NS	NS	NS	NS	NS	**	NS
V × S	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
N × S	NS	NS	NS	NS	*	NS	NS	NS	NS	NS
V × N × S	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Means with the same letter (s) in a treatment column are not significantly different using Duncan Multiple Range test (DMRT) at 5 % level of probability. NS=not significant at 5 % level, *=significant at 5 % level, **= highly significant at 1 % level.

Table 2: Interaction of nitrogen fertilizer rate and intra-row spacing on plant height under *Striga hermonthica* infestation in Lapai at 9 WAS during the 2013 rainy season.

	Nitrogen fertilizer rate (Kg ha^{-1})			
Treatment	0	60	120	180
Cultivars				
Local (Kabako)	171.4bc	234.7a	226.9a	202.1ab
SAMMAZ 16	153.8c	165.4c	168.1c	157.9c
SE±			0.69	

Means with the same letter (s) are not significantly different at 5 % level of probability using Duncan Multiple Range test (DMRT).

Table 3: Interaction of nitrogen fertilizer rate and intra-row spacing on number of leaves under *Striga hermonthica* infestation in Lapai at 9 WAS during the 2013 rainy season.

	Intra-row spacing (cm)		
Treatments	20	25	30
Nitrogen fertilizer (Kg ha^{-1})			
0	8.13d	8.97c	9.27a-c
60	9.43a-c	9.33a-c	9.53a-c
120	9.47a-c	9.40a-c	9.73ab
180	9.97a	9.07bc	9.30a-c
SE±		0.27	

Means with the same letter (s) are not significantly different at 5 % level of probability using Duncan Multiple Range test (DMRT).

Table 4: Interaction of nitrogen fertilizer rate and intra-row spacing on days to 50 % silking under *Striga hermonthica* infestation in Lapai during the 2013 rainy season.

	Varieties			
Treatment	Local (Kabako)	SAMMAZ 16	Local (Kabako)	SAMMAZ 16
Nitrogen fertilizer.				
0	42.33b	71.56a	48.11b	66.89ab
60	71.33a	68.44a	68.44a	63.44ab
120	72.56a	69.33a	68.33a	63.44ab
180	73.00a	61.78ab	67.78a	61.78ab
SE±		5.35		4.07

Means with the same letter (s) are not significantly different at 5 % level of probability using Duncan Multiple Range test (DMRT).

Table 5: Response of yield parameters of maize cultivars to nitrogen levels and intra-row spacing in the 2013 rainy season.

	Grain yield Kg ha^{-1}		100 grain weight (g)		Stover yield Kg ha^{-1}		Shelling %		Harvest index	
	Lapai	Mokwa	Lapai	Mokwa	Lapai	Mokwa	Lapai	Mokwa	Lapai	Mokwa
Cultivars										
Local Kabako	964.20b	1174.90b	20.39b	21.19b	1431.69	1721.81b	73.09b	76.25b	38.82	40.15b
SAMMAZ 16	1170.17a	1446.91a	22.35a	23.25a	1535.80	1863.79a	77.98a	82.54a	41.60	43.51a
SE±	16.87	15.57	0.49	0.23	37.72	26.55	1.27	0.90	1.16	0.42
N. fertilizer										
0	621.40d	991.77d	14.06c	13.81d	1144.86c	1596.71c	67.31c	72.76c	34.37c	35.05c
60	995.91c	1204.94c	20.16b	20.80c	1445.27b	1755.56b	74.60b	76.58b	41.35b	40.65b
120	1141.56b	1439.51b	24.99a	26.11b	1587.65b	1850.21b	75.95b	82.47a	39.08b	43.63a
180	1509.86a	1607.41a	26.26a	28.18a	1757.20a	1968.73a	84.30c	85.76a	46.05a	44.98a
SE±	23.85	22.03	0.69	0.32	54.34	37.55	1.79	1.28	1.63	0.60
Spacing										
20	975.31b	1287.04	21.01	21.35b	1453.09	1763.58	71.12b	79.39	38.77	41.82
25	1091.67a	1316.67	21.69	22.69a	1459.26	1785.18	77.00a	79.86	42.29	42.05
30	1134.57a	1329.01	21.41	22.63a	1538.89	1829.63	78.51a	78.93	39.57	41.62
SE±	20.66	19.08	0.60	0.28	46.19	32.52	1.55	1.11	01.42	0.52
Interaction										
V × N	**	*	*	NS	*	NS	*	*	NS	NS
V × S	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
N × S	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
V ×N × S	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Means with the same letter (s) in a treatment column are not significantly different using Duncan Multiple Range Test (DMRT) at 5 % level of significance. NS = not significant, * = significant at 5 % level, ** = highly significant at 1 % level

Effect of nitrogen fertilizer levels and spacing on *Striga* parameters at 9 WAS during the 2013 rainy season.

Maize cultivars responded to *Striga* shoot count and incidence in both locations. The local cultivar which is susceptible to *Striga hermonthica* infestation in both locations supported the highest number of *Striga* shoot count and incidence (Table7), while SAMMAZ 16, because of its superiority over the local cultivar supported lower *Striga* shoot count and incidence in both locations. This result might be due to the superiority of the improved cultivar over the susceptible Local maize cultivar. The result agreed with the report of Menkir and Kling (2007) who reported susceptible cultivars supported the highest number of emerged *Striga*. Application of nitrogen fertilizer played a vital role in *Striga* suppression in both locations plots with no fertilizer application (0 kg N ha^{-1}) had the highest *Striga* shoot count and incidence at both locations at 9 WAS while 180 kg N ha^{-1} was found to be adequate as there was less *Striga* shoot count, while *Striga* incidence was reduced by 120 kg N ha^{-1}. This result reflect the report of Kamara *et al*. (2008b) who reported higher dosages of nitrogen fertilizer rate and organic materials can reduce *S. hermonthica* damage in maize and a high level of nitrogen application above 120 kg N ha^{-1} would be required to achieve a significant reduction in *Striga* emergence (Franke *et al*., 2006). Intra-row spacing of 20cm statistically produced the highest *Striga* incidence at 0 kg N ha^{-1} in Lapai. Increase in number of *Striga* incidence could be as a result of closer spacing which makes it easier for *Striga* to host plant attachment. The result agreed with the findings of Ibikunle *et al*. (2009) who reported that intra-row spacing of 20cm produced the highest *Striga* emergence counts in a field trial.

Table 6: Interaction of nitrogen fertilizer levels and intra-row spacing on yield parameters of maize cultivars in the 2013 rainy season at Lapai and Mokwa.

	Nitrogen fertilizer rate (Kg ha^{-1})		120	180
Treatment	0	60		
		Grain yield at Lapai		
Local (kabako)	408.20e	944.90cd	1050.00c	1454.00a
SAMMAZ 16	834.60d	1047.00c	1233.00b	1566.00a
SE±		33.74		
		Grain yield at Mokwa		
Local (kabako)	786.80e	1124.00d	1299.00c	1490.00b
SAMMAZ 16	1197.00cd	1286.00cd	1580.00ab	1725.00a
SE±		31.15		
		100 grain weight at Lapai		
Local (kabako)	11.88e	18.44cd	24.42ab	26.18a
SAMMAZ 16	16.24de	21.88bc	25.57ab	25.71ab
SE±		0.97		
		Stover yield at Lapai		
Local (kabako)	926.80c	1460.00ab	1623.00ab	1717ab
SAMMAZ 16	1363.00b	1430.00b	1552.00ab	1798.00a
SE±		75.43		
		Shelling % at Lapai		
Local (kabako)	61.63c	76.01ab	72.32bc	82.99ab
SAMMAZ 16	72.99bc	73.19bc	79.57ab	86.18a
SE±		2.19		
		Shelling % at Mokwa		
Local (kabako)	67.44c	76.40b	77.57b	83.58ab
SAMMAZ 16	78.08b	76.76b	87.37a	87.94a
SE±		1.80		

Means with the same letter in a treatment group are not significantly different using Duncan Multiple Range Test (DMRT) at 5 % level of probability.

Table 7: Effect of nitrogen fertilizer levels and intra-row spacing on *Striga* shoot counts and *Striga* incidence in the 2013 rainy season at Lapai and Mokwa.

	Striga shoot count		*Striga* incidence	
	Lapai	Mokwa	Lapai	Mokwa
Cultivars				
Local cultivars	6.69a	8.39a	4.56a	5.47a
SAMMAZ 16	3.78b	5.25b	2.75b	3.97b
SE±	0.31	0.45	0.16	0.20
Nitrogen kg N ha^{-1+}				
0	10.17a	11.61a	6.50a	8.28a
60	4.89b	8.11b	3.39b	5.22a
120	3.61c	5.17c	2.56c	3.67c
180	2.78d	2.39d	2.17c	1.72d
SE±	0.44	0.63	0.23	0.41
Spacing (cm)				
20	5.58	6.71	4.08a	4.96
25	4.79	7.17	3.42b	4.96
30	5.33	6.58	3.46b	4.58
SE±	0.38	0.55	0.20	0.35
Interaction				
V x N	NS	NS	NS	NS
V x S	NS	NS	NS	NS
N x S	NS	NS	NS	NS
V x N x S	NS	NS	NS	NS

Means with the same letter(s) in a treatment column are not significantly different at 5 % level of probability using Duncan Multiple Range Test (DMRT

CONCLUSION

From the Information gathered in this study, an appropriate use of 180 kg N ha^{-1} for SAMMAZ 16 at 25cm intra-row spacing and one seed per hole is adequate to minimize *Striga* infestation in maize field. SAMMAZ 16 supported lower *Striga* infestation compared to the local cultivar (Susceptible to *Striga hermonthica*) which recorded the highest number of *Striga* infestation. However, going by the results obtained in this study, farmers could be advised to use the above combination and N rates for optimum growth and yield of maize under *Striga hermonthica* infestation.

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