ASSESSING THE GROWTH AND YIELD OF 30 MUNG BEAN (*Vigna radiata* L.) GENOTYPES IN OWERRI (FUTO), SOUTHEASTERN NIGERIA

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ABSTRACT
Thirty mungbean (*Vigna radiata* L. Wilczek) genotypes were collected from IITA and evaluated at the Center for Agricultural Research and Extension of the Federal University of Technology, Owerri, Nigeria. The experiment was laid out in a Randomized Complete Block Design with three replications. A spacing of 0.4 m × 0.15 m inter-row and between plants were utilized. Data were recorded on various morphological and agronomic characters including days to 50 percent emergence, days to 50 percent flowering, plant height, number of leaves, number of pods per plant, pod length, pod girth, pod weight, number of seeds per plant, 100-seed weight and yield per hectare. Data collected were subjected to Analysis of variance which revealed significant differences ($p<0.05$) among all the genotypes for the morphological and agronomic characters. Tvr-4 was the earliest genotype, taking 35 days to attain 50 % anthesis. Tvr-124 produced the highest number of pods per plant (18) followed by Tvr-3 (16). Tvr-109 produced the highest number of seeds per pod with a mean number of 11 seeds. This was closely followed by Tvr-124 and Tvr-55 with mean values of 10.67 and 10 seeds per pod, respectively. The 100-seed weight ranged from 5.08 g to 104.17 g with the highest value obtained from Tvr-110 and the lowest from Tvr-17. Tvr-109 had the highest mean yield with 1300.74 kg/ha which was closely followed by Tvr-3 with 1200.99 kg/ha. The lowest mean yield was 38.52 kg/ha obtained from Tvr-54. It is therefore recommended that farmers in Southeastern Nigeria cultivate mung bean genotypes that are well adapted to the agro-ecological zone such as Tvr-109 and Tvr-3.
Keywords: Genotype. Agronomic. Characters

INTRODUCTION
Mung bean (*Vigna radiata* L.) commonly known as green gram is an ancient and well-known pulse crop that belongs to family Fabaceae and sub-family Papilionoideae and originated from South East Asia (Mogotsi, 2006). Southeastern Nigeria is classed as an area supporting root and tuber crops and other starchy crops. It falls within the rainforest agro-ecology with over 9 months (mid March to late October) of rain and 3 months of dryness. There is also a short dry spell in August called "August break". The rain pattern and amount discourage the production of cowpea which grows vegetative at the expense of seed yield. Thus, much of the plant protein consumed are produced in the drier areas of Northern Nigeria. This trend has been considered and the need for developing and including mung bean crop into the agricultural system of the people. Mung bean is a short-duration crop (75 to 90 days) and has wider adaptability and it extensively grows on all types of soils. It grows greatly under most adverse arid and semi-arid conditions (Mogotsi, 2006 It is a highly nutritious crop and contains sufficient amounts of protein, dietary fiber, minerals, vitamins and significant amounts of bioactive compounds capable of meeting basic human nutritive requirements. It offers a vast array of health benefits such as its hypoglycemic, hypolipidemic and antihypertensive effects, in addition to its anticancer and immune boosting abilities. (Liyanage *et al.*, 2018, Ali *et al*., 2014, Guptar *et al.*, 2018, Chai *et al*., 2019). Due to its high nutrient content as well as possessing ample amounts of fibre, several mung bean products are also highly useful as livestock feed, which can be utilized either raw or processed (Vaidya, 2001). The protein and carbohydrates present in mung bean are more easily digestible than those from other legume sources, hence it provides fast release of these nutrients when consumed.

Mung bean is relatively unknown in Southeastern Nigeria as food or as crop in the agricultural system. The objective of this study therefore was to assess the growth and yield potential of various mung bean genotypes in order to determine the most suitable genotype that can perform optimally, provide excellent yield and thus be introduced in the diet and the cropping system of the people.

MATERIALS AND METHODS
Experimental Site and Location

The experiment was carried out at the Center for Agricultural Research and Extension, School of Agriculture and Agricultural Technology, Federal

University of Technology Owerri, Imo State. Owerri lies at latitude 05° 27°N and longitude 07° 02°E at an elevation of 55 meters above sea level and is in the tropical rainforest region of southeastern Nigeria. The area has a bimodal pattern of rainfall with peaks in July and September. It has a minimum and maximum annual temperature of 20°C and 32 °C respectively and mean annual rainfall of 2500 mm and relative humidity of 85-89 % (Nwosu and Adeniyi, 1980).

Experimental Design and Experiment

The experiment was laid out in a Randomized Complete Block Design (RCBD) with thirty mung bean varieties which was replicated three times. The mung bean genotypes assessed include Tvr-1, Tvr-2, Tvr-3, Tvr-4, Tvr-6, Tvr-7, Tvr-9, Tvr-10, Tvr-11, Tvr-12, Tvr-13, Tvr-17, Tvr-54, Tvr-55, Tvr-56, Tvr-61a, Tvr-63, Tvr-64, Tvr-65, Tvr-67, Tvr-68, Tvr-69, Tvr-61b, Tvr-72, Tvr-109, Tvr-110, Tvr-111, Tvr-117, Tvr-123 and Tvr-124.

An experimental field measuring 12.8 m x 5.6 m (71.68 m^2) was mapped out. The field was then subdivided into three blocks 1 m apart. Each block measured 12.8 m×1.2 m and contained 30 mung bean genotypes arranged in single row plots with 8 plants per genotype. The plants had an inter row and intra row spacing of 0.4m and 0.15m respectively. The genotypes were completely randomized within each block.

Data collected include days to 50% emergence, plant height, stem girth, number of leaves, days to 50% anthesis, pod length, number of pods per plant, pod weight, number of seeds, and seed weight.

Data analysis

All the data were subjected to Analysis of Variance (ANOVA) test using Genstat software while the mean separation was done using Least Significant Difference at 5% level of probability using the procedure described by Obi (2002).

RESULTS

The mean girth of the mungbean genotypes at 2, 4 and 6 weeks after planting is presented in Table 1. At 2 weeks after planting, there was a significant difference ($p<0.05$) among the genotypes and a grand mean of 0.84 cm was obtained. Tvr-1, Tvr-6, Tvr-13, Tvr-17, Tvr-54, Tvr-55, Tvr-63, Tvr-68, Tvr-72, Tvr-109, Tvr-117, Tvr-123, and Tvr-124 had mean girth values above the grand mean with the highest mean girth observed in Tvr-109 possessing a mean girth of 1.01 cm and closely followed by Tvr-123 with a mean girth of 1.00 cm. The lowest mean girth was observed in Tvr-110 with a mean girth of 0.7 cm.

At 4 weeks after planting, there was a significant difference ($p<0.05$) among the genotypes and a grand mean of 1.26 cm was obtained. Genotypes Tvr-2, Tvr-3, Tvr-11, Tvr-12, Tvr-55, Tvr-63, Tvr-68, Tvr-61b, Tvr-72, Tvr-109, Tvr-123, and Tvr-124 had mean girth values above the grand mean with the highest mean girth observed in Tvr-109 possessing a mean girth of 1.55 cm and closely followed by Tvr-72 with a mean girth of 1.55 cm. The lowest mean girth was observed in Tvr-111 with a mean girth of 1.12 cm.

At 6 weeks after planting, there was a significant difference ($p<0.05$) among the genotypes and a grand mean of 1.53 cm was obtained. Genotypes Tvr-1, Tvr-2, Tvr-3, Tvr-4, Tvr-10, Tvr-11, Tvr-68, Tvr-61b, Tvr-72, Tvr-109, Tvr-123, and Tvr-124 had mean girth values above the grand mean with the highest mean girth observed in Tvr-3 possessing a mean girth of 2.07 cm and closely followed by Tvr-109 with a mean girth of 2.05 cm. The lowest mean girth was observed in Tvr-61a with a mean girth of 1.10 cm.

Table 1: Mean Girth Values of the Mung Bean Genotypes at 2, 4 and 6 Weeks After Planting

	Plant girth at Bi-weekly measurement		
Gen	**2**	**4**	**6**
Tvr-1	0.85	1.23	1.68
Tvr-2	0.83	1.32	1.85
Tvr-3	0.83	1.38	2.07
Tvr-4	0.82	1.18	1.53
Tvr-6	0.85	1.13	1.40
Tvr-7	0.77	1.15	1.42
Tvr-9	0.82	1.15	1.43
Tvr-10	0.80	1.22	1.92
Tvr-11	0.83	1.30	1.80
Tvr-12	0.82	1.35	1.45

Tvr-13	0.90	1.25	1.50
Tvr-17	0.85	1.18	1.28
Tvr-54	0.87	1.20	1.28
Tvr-55	0.88	1.28	1.30
Tvr-56	0.82	1.17	1.33
Tvr-61a	0.80	1.15	1.10
Tvr-63	0.93	1.42	1.43
Tvr-64	0.82	1.15	1.38
Tvr-65	0.78	1.15	1.27
Tvr-67	0.82	1.23	1.45
Tvr-68	0.85	1.32	1.58
Tvr-69	0.80	1.15	1.30
Tvr-61b	0.82	1.48	1.80
Tvr-72	0.90	1.50	1.90
Tvr-109	1.01	1.55	2.05
Tvr-110	0.70	1.15	1.35
Tvr-111	0.80	1.12	1.30
Tvr-117	0.87	1.20	1.42
Tvr-123	1.00	1.33	1.62
Tvr-124	0.85	1.35	1.78
Mean	0.84	1.26	1.53
$LSD_{(0.05)}$	0.06	0.12	0.23

Table 2 shows the mean plant height of the 30 mung bean genotypes at 2, 4 and 6 weeks after planting. At 2 weeks after planting, there was a significant difference ($p<0.05$) among the genotypes and a grand mean value of 6.58 cm was obtained. Tvr-2, Tvr-3, Tvr-4, Tvr-7, Tvr-9, Tvr-10, Tvr-11, Tvr-12, Tvr-55, Tvr-56, Tvr-68, Tvr-61b, Tvr-72, Tvr-109, Tvr-117, Tvr-123 and Tvr-124 possess mean values equal to or greater than the varietal mean height with Tvr-61b having the highest mean value of 8.53 cm and the lowest mean value recorded in Tvr-61a with a mean value of 4.35 cm.

At 4 weeks after planting, there was a significant difference ($p<0.05$) among the genotypes and a grand mean value of 12.12 cm was obtained for all the genotypes. Genotypes with mean values above grand the mean value include Tvr-2, Tvr-3, Tvr-4, Tvr-7, Tvr-10, Tvr-11, Tvr-55, Tvr-56, Tvr-67, Tvr-68, Tvr-61b, Tvr-72, Tvr-109, Tvr-123 and Tvr-124. The highest and lowest mean values were observed in Tvr-109 with mean height value of 18.07 cm and Tvr-6 with mean height value of 8.30 cm.

At 6 weeks after planting, there was a significant difference ($p<0.05$) among the varieties and a grand mean value of 16.35 cm was obtained for all the varieties. Genotypes with mean values above grand the mean value include Tvr-2, Tvr-3, Tvr-10, Tvr-11, Tvr-61b, Tvr-72, Tvr-109, Tvr-123 and Tvr-124. The highest and lowest mean values were observed in Tvr-109 with mean height value of 29.27 cm and Tvr-61a with mean height value of 7.87 cm, respectively.

Table 2: Mean height values of Mung Bean Genotypes at 2, 4 and 6 Weeks after Planting

	Plant height at Bi-weekly measurement		
Gen	**2**	**4**	**6**
Tvr-1	6.40	9.57	12.10
Tvr-2	8.13	14.20	26.22
Tvr-3	7.20	14.53	26.07
Tvr-4	7.75	12.37	16.08
Tvr-6	5.37	8.30	11.28
Tvr-7	7.25	12.15	13.00
Tvr-9	6.58	11.45	11.37
Tvr-10	6.78	13.55	18.78
Tvr-11	7.17	14.28	20.18
Tvr-12	7.07	12.10	12.17
Tvr-13	6.27	10.82	12.98
Tvr-17	5.40	10.67	13.07
Tvr-54	5.00	9.17	10.10
Tvr-55	7.32	12.33	14.08
Tvr-56	7.42	13.02	14.40
Tvr-61a	4.35	8.75	7.87
Tvr-63	4.85	11.25	10.90
Tvr-64	4.87	9.58	12.00
Tvr-65	6.03	10.10	12.93
Tvr-67	6.02	12.67	14.78
Tvr-68	6.68	13.25	16.15
Tvr-69	5.92	8.97	11.72
Tvr-61b	8.53	16.47	25.18
Tvr-72	8.08	17.22	27.20
Tvr-109	8.28	18.07	29.27
Tvr-110	5.27	10.95	15.63
Tvr-111	5.57	8.78	11.93
Tvr-117	6.58	10.12	14.70
Tvr-123	8.13	14.60	22.47
Tvr-124	7.27	14.25	25.75
Mean	6.58	12.12	16.35
$LSD_{(0.05)}$	1.55	2.84	5.04

Results of the mean number of leaves at of the 30 mung bean genotypes at 2, 4 and 6 weeks after planting are shown in Table 3. At 2 weeks after planting, there was no significant difference ($p>0.05$) among the genotypes and a grand mean value of 1 was obtained. Tvr-1, Tvr-3, Tvr-4, Tvr-6, Tvr-7, Tvr-9, Tvr-10, Tvr-11, Tvr-13, Tvr-17, Tvr-54, Tvr-55, Tvr-56, Tvr-61a, Tvr-63, Tvr-65, Tvr-67, Tvr-68, Tvr-69, Tvr-61b, Tvr-72, Tvr-109, Tvr-110, Tvr-117, Tvr-123 and Tvr-124 possessed mean number of leaves equal to or greater than the grand mean value with the highest mean value of 1.33 obtained in Tvr-56 and the lowest mean value

of 0.83 obtained from varieties Tvr-2, Tvr-12 and Tvr-111.

At 4 weeks after planting, there was a significant difference ($p<0.05$) among the genotypes and a grand mean value of 2.93 was obtained. Genotypes which gave mean number of leaves value higher than the grand mean include Tvr-2,Tvr-3, Tvr-4, Tvr-6, Tvr-10, Tvr-11, Tvr-12, Tvr-67, Tvr-61b, Tvr-72, Tvr-109, Tvr-110, Tvr-123 and Tvr-124 with the highest mean number of leaves obtained from Tvr-109 and Tvr-124, each with mean values of 4. The lowest mean number of leaves was obtained from Tvr-61a with a mean value of 1.83.

At 6 weeks after planting, there was a significant difference ($p<0.05$) among the genotypes and a grand mean of 4.65 number of leaves was obtained. Genotypes Tvr-2, Tvr-3, Tvr-6, Tvr-10, Tvr-11, Tvr-68, Tvr-61b, Tvr-72, Tvr-109, Tvr-110, Tvr-123 and Tvr-124 possessed mean number of leaves value higher than the grand mean. The highest mean number of leaves of 6.83 was obtained in Tvr-3, while the lowest mean number of leaves was obtained in Tvr-61a with a value of 2.33.

Table 3: Mean Number of leaves of the 30 Mung bean Genotypes at 2, 4 and 6 weeks after Planting

	Number of Leaves at Bi-weekly measurement		
Gen	**2**	**4**	**6**
Tvr-1	1.00	2.50	4.00
Tvr-2	0.83	3.50	6.33
Tvr-3	1.00	3.67	6.83
Tvr-4	1.00	3.00	4.33
Tvr-6	1.00	3.00	5.67
Tvr-7	1.00	2.67	3.33
Tvr-9	1.00	2.83	4.00
Tvr-10	1.00	3.83	6.17
Tvr-11	1.00	3.33	6.00
Tvr-12	0.83	3.50	4.17
Tvr-13	1.17	2.83	4.33
Tvr-17	1.00	2.50	3.83
Tvr-54	1.00	2.33	3.00
Tvr-55	1.00	2.33	3.67
Tvr-56	1.33	2.50	3.83
Tvr-61a	1.00	1.83	2.33
Tvr-63	1.00	2.67	3.83
Tvr-64	0.83	2.00	3.83
Tvr-65	1.00	2.17	3.83
Tvr-67	1.00	3.00	4.00
Tvr-68	1.00	2.83	4.67
Tvr-69	1.00	2.50	3.83
Tvr-61b	1.00	3.67	6.50
Tvr-72	1.00	3.67	5.67
Tvr-109	1.00	4.00	6.33
Tvr-110	1.00	3.00	6.33
Tvr-111	0.83	2.83	4.17
Tvr-117	1.00	2.50	4.17

Tvr-123	1.17	3.00	5.17
Tvr-124	1.00	4.00	6.33
Mean	1.00	2.93	4.65
$LSD_{(0.05)}$	0.27	0.69	1.30

In Table 4, the earliness of the 30 mung bean genotypes with regards to the mean number of days to 50 % emergence and 50 % anthesis is presented.

The fastest emerging genotypes were Tvr-4, Tvr-7, Tvr-9, Tvr-72 and Tvr-117, taking a mean number of 2 days each to reach 50 % emergence; while genotypes Tvr-6, Tvr-63, Tvr-65, Tvr-67, Tvr-69, Tvr-72 and Tvr-110 took the longest mean number of days (4 days) to attain 50 % emergence. With a grand mean of 3.03, the genotypes all took an average of three days to attain 50 % emergence.

Among the different genotypes, Tvr-12 showed the latest flowering, taking 62 days to attain 50 % anthesis, closely followed by Tvr-9 which took about 61 days. The earliest genotype was Tvr-4, which attained 50 % anthesis in 35 days. Other early flowering varieties include Tvr-61a and Tvr-109, both taking 38 days to attain 50 % anthesis. On the other hand, no plant from Tvr-6, Tvr-7, Tvr-65 and Tvr-69 produced flowers. This could be as a result of the inability of these genotypes to adapt properly to the experimental environment.

Table 4: Shows the Earliness of the Mung Bean Genotypes evaluated

Gen	Days to 50% Emergence	Days to 50% Anthesis
Tvr-1	3	55
Tvr-2	3	57
Tvr-3	3	48
Tvr-4	2	35
Tvr-6	4	*
Tvr-7	2	*
Tvr-9	2	61
Tvr-10	3	57
Tvr-11	3	59
Tvr-12	3	62
Tvr-13	3	51
Tvr-17	3	48
Tvr-54	3	46
Tvr-55	3	60
Tvr-56	3	60
Tvr-61a	3	38
Tvr-63	4	42
Tvr-64	3	60
Tvr-65	4	*
Tvr-67	4	60
Tvr-68	3	58
Tvr-69	4	*
Tvr-61b	3	58
Tvr-72	2	58

Tvr-109	3	38
Tvr-110	4	50
Tvr-111	3	59
Tvr-117	2	58
Tvr-123	3	51
Tvr-124	3	60
Mean	3.03	53.42

Table 5 provides information on the mean number of pods per plant, pod length, pod girth as well as the weight of the pods produced by the mung bean genotypes. Number of pods per plant is a key factor for determining the yield performance in leguminous plants. The performance capacity of mung bean plant is ultimately considered by the number of pods per plant. Data from the table reveals that there was a significant difference ($p<0.05$) among the genotypes and the variety that produced the fewest number of pods was Tvr-61a, which produced an average of 1.67 pods per plant. On the other hand, Tvr-124 produced the highest number of pods, with an average of 18.33 pods per plant. This was closely followed by Tvr-3 which produced an average of 16.00 pods per plant.

Data about the pod length shows that there was a significant difference ($p<0.05$) among the genotypes and Tvr-109 on average produced the longest pods with a mean pod length of 9.15 cm, followed by Tvr-72 with a mean pod length of 8.21 cm. Tvr-54 produced the shortest pods on average with a mean pod length of 3.24 cm.

From the table also, there was a significant difference ($p<0.05$) among the genotypes and it is evident that Tvr-109 produced the thickest pods with a mean pod girth of 2.05 cm. This was closely followed by Tvr-63 with a mean pod girth of 1.89 cm. Tvr-10 produced the thinnest pods with a mean pod girth of 1.31 cm.

With respect to the pod weight, there was a significant difference ($p<0.05$) among the genotypes and Tvr-109 produced the heaviest pods with a mean total pod weight of 8.00 g while the total pods produced by Tvr-54 weighed 0.38 g.

Table 5: Mean number of pods, pod length, pod girth and pod weight of the 30 Mung bean Genotypes

Gen	Number of Pod	Pod length (cm)	Pod girth (cm)	PodWgt(g)
Tvr-1	2.33	6.17	1.82	1.66
Tvr-2	13.33	8.10	1.60	5.19
Tvr-3	16.00	7.10	1.79	7.27
Tvr-4	6.33	5.49	1.57	2.20
Tvr-6	*	*	*	*
Tvr-7	*	*	*	*
Tvr-9	5.33	7.20	1.45	2.04
Tvr-10	11.00	7.96	1.31	4.95
Tvr-11	9.00	8.01	1.43	3.09
Tvr-12	5.33	7.41	1.33	1.92
Tvr-13	2.00	6.12	1.85	0.97
Tvr-17	2.00	5.33	1.42	0.43
Tvr-54	2.00	3.24	1.43	0.38
Tvr-55	2.00	6.62	1.45	0.81
Tvr-56	3.00	6.37	1.60	1.01
Tvr-61a	1.67	4.88	1.47	0.31
Tvr-63	3.00	5.90	1.89	0.96
Tvr-64	4.33	5.90	1.35	1.02
Tvr-65	*	*	*	*

Tvr-67	2.00	6.18	1.37	0.41
Tvr-68	4.67	7.70	1.47	1.82
Tvr-69	*	*	*	*
Tvr-61b	7.33	7.72	1.57	3.36
Tvr-72	10.00	8.21	1.57	4.89
Tvr-109	13.00	9.15	2.03	8.00
Tvr-110	13.67	3.92	1.60	4.81
Tvr-111	5.67	7.63	1.47	2.20
Tvr-117	5.67	6.52	1.57	2.37
Tvr-123	10.00	7.11	1.74	3.96
Tvr-124	18.33	8.07	1.60	6.02
Mean	5.97	5.80	1.36	2.40
$LSD_{(0.05)}$	5.16	1.02	0.11	2.22

Information regarding number of seeds per pod, 100 seed weight and yield per hectare are shown in Table 6. There was a significant difference ($p<0.05$) in the number of seeds produced by the genotypes and a grand mean value of 6.42 was obtained. Tvr-109 produced the highest number of seeds per pod with a mean number of 11 seeds. This was closely followed by Tvr-124 and Tvr-55 with mean values of 10.67 and 10 seeds per pod respectively. Tvr-6, Tvr-7, Tvr-65 and Tvr-69 produced no pod and as such there were no seeds.

There was a significant difference ($p<0.05$) in the 100 seed weight produced by the genotypes. The 100 seed weight ranged from 5.08 g to 104.17 g with the highest value obtained from Tvr-110 and the lowest from Tvr-17. The mean 100 seed weight recorded from the genotypes was 33.57 g.

On yield per hectare (kg), there was a significant difference ($p<0.05$) among the genotypes and a grand mean of 387.01 kg/ha was obtained. Tvr-109 had the highest mean yield with 1300.74 kg/ha which was closely followed by Tvr-3 with 1200.99 kg/ha. The lowest mean yield was 38.52 kg/ha obtained from Tvr-54.

Table 6: Mean Number of seeds, 100 seed weight and the yield per hectare of the 30 Mung bean Genotypes

Gen	NumSeed	100seedwgt(g)	Yield/ha(Kg)
Tvr-1	7.33	17.10	183.70
Tvr-2	8.67	53.02	697.78
Tvr-3	9.00	97.39	1200.99
Tvr-4	6.67	46.86	483.95
Tvr-6	*	*	*
Tvr-7	*	*	*
Tvr-9	9.00	26.52	353.58
Tvr-10	5.00	87.20	645.93
Tvr-11	8.33	34.47	430.62
Tvr-12	8.00	15.50	183.70
Tvr-13	6.33	13.61	134.32
Tvr-17	5.67	5.08	42.96
Tvr-54	3.33	8.00	38.52
Tvr-55	10.00	6.67	112.59

Tvr-56	7.00	13.71	153.58
Tvr-61a	5.00	6.80	50.37
Tvr-63	4.33	22.85	150.12
Tvr-64	6.33	15.56	145.19
Tvr-65	*	*	*
Tvr-67	7.00	6.35	63.70
Tvr-68	9.00	19.57	255.31
Tvr-69	*	*	*
Tvr-61b	8.67	47.84	627.16
Tvr-72	9.67	68.17	959.01
Tvr-109	11.00	79.82	1300.74
Tvr-110	6.00	104.17	925.93
Tvr-111	9.67	28.38	414.32
Tvr-117	5.33	51.09	454.32
Tvr-123	5.67	68.96	603.95
Tvr-124	10.67	62.35	998.02
Mean	6.42	33.57	387.01
$LSD_{(0.05)}$	2.00	45.64	521.34

DISCUSSION

The study shows that the height of the mung bean genotypes ranged from 7.87 cm (observed in Tvr-61a) to 29.27 cm (observed in Tvr-109) at maturity. This is consistent with results from Lambrides and Godwin, (2006) and Mogotsi, (2006) who reported that mung bean reaches a height of 15 to 125 cm. The yield obtained from the genotypes ranged from 38.52 kg/ha gotten from Tvr-55 to 1300.74 kg/ha gotten from Tvr-109, with an average of 387.01 kg/ha obtained from the varieties. This average yield is not so different from the average yield of 400 kg/ha which Nair *et al.*, (2013) reported to be produced from Asia. Yields obtained from parts of Ethiopia have been reported to stand at around 1235kg/ha (CSA, 2018) to as high as 1650 kg/ha (Asrate *et al.,* 2018).

The varying performance of the genotypes under the same environmental is as a result of the innate genetic differences and the interaction with the environment which is very vital as it aids the breeder in making excellent decisions concerning selection method in crop breeding (Ngwuta, 2008) as those that have performed optimally can be grown indigenously and those that have other desirable traits can be harnessed in breeding programs. From the research, it can also be seen that there was significant difference ($P<0.05$) in the hundred seed weight produced by each variety, as the highest hundred seed weight was obtained from Tvr-110 with a weight of 104.17 g, and lowest weight of 5.08 g obtained from Tvr-17. This is consistent with findings from Deresa *et al.*, (2018) and Dame and Tasisa (2019) who both observed varying hundred seed weights for common bean and soybean respectively.

CONCLUSION

The Tvr-124 produced a mean of 18.33, which was observed to be the highest number of pods produced by the genotypes. Tvr-110 had the heaviest hundred seed weight of 104.17 g which was followed by Tvr-3 with 97.39 g. With regards to the yield, Tvr-109 has proven to be the highest yielding genotypes amongst the thirty studied, with a yield of 1300.74 kg/ha, closely followed by Tvr-3, with a yield of 1200.99 kg/ha. Tvr-55 was the lowest yielding genotypes with a yield of 38.52 kg/ha.

Considering the apparent need for alternative sources of plant protein in Southeastern Nigeria so as to reduce the over dependence on the very expensive animal protein and protein sources from other regions in the country, the researcher therefore recommends that farmers in the Southeastern part of Nigeria cultivate mung bean genotypes that are well adapted to the agro-ecological zone such as Tvr-109 and Tvr-3. Mung beans can be sown alone or intercropped with other crops, such as other legumes, sugarcane, maize and sorghum.

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