International Journal of Plant Science and Ecology
Vol. 7, No. 3, 2021, pp. 48-54
http://www.aiscience.org/journal/ijpse
ISSN: 2381-6996 (Print); ISSN: 2381-7003 (Online)

Effect of Saw Dust and Compost from Selected Weeds on the Growth and Yield Parameters of Three (3) Selected Bambara Groundnut Species (*Vigna Subteranea*)

Olasan Joseph Olalekan, Aguoru Celestine Uzoma, Emmanuel Simon, Ekeruo Godspower Chibuike, Teramee Kelvin Terhemba*

Plant Science and Biotechnology Unit, Federal University of Agriculture, Makurdi, Makurdi, Nigeria

Abstract

The Effects of the compost of saw dust and two selected weeds (*Tridax Procumbeans and Sida acuta*) on growth and germination of bambara groundnut using three different varieties (bambara, bean, earth pea, Congo Goober) were investigated in Makurdi, Benue State, Nigeria. The experimental design was facture using completely randomized (CRD). Growth parameters, germination rate and seedling vigor indices were measured Tin interaction of bambara groundnut variety with different treatments were observed in significant differences (P.30 OT) germination cannot and germination percentage was highest in bambara nut with the mixed compost of saw and weeds (SD + WCP (300g) which recorded 100% termination. The lowest germination percentage (50%) was however accorded across the three varieties of different manure application. Seedling vigor was however (27.73 ± 0.32 in bambara nut treated with NPLC (25g), Earth pea recorded lowest seedling vigor (11.10 ± 0.13) under control experiment. It was however deducted in a better germination and growth performances was recorded in the earth pea varieties treated under with NPK fertilizer followed by the combined compost of saw dust and weeds at 150g application treatment compared to the use of saw dust and weeds compost. Therefore further recommended were made that the species of wood in which dust is to be plant and weed species should be known, in order to ensure that plant and weed species with all allopathic substances are not incorporated into the soil as organic manure as this inhibit the germination of growth of the plant with the abaci saw dust and weed compost are also recommended as mulching material instead of direct organic manure.

Keywords

Bambara Groundnut, Growth and Yield Parameters, Manure

Received: June 26, 2021 / Accepted: August 3, 2021 / Published online: August 23, 2021

1. Introduction

Bambara groundnut is an indigenous African leguminous crop grown primarily for its seeds and has diverse uses. Reports in literature indicate that the mature seeds are a rich source of crude protein (17.5-21.1%) carbohydrate (53-60.8%) and crude fat (7.3-8.5%) [1]. It is the third crop after groundnut (*Arachis hypogaea L.*) and Cowpea (*Vigna Unguiculata [L] Walp*) in a most of the Semi-arid regions of Africa. In addition to Sub-Sahara Africa, it is now found in many parts of South America, Asia Oceania it has an annual, bunchy or trailing habit. The leaf has three leaflets, it also has yellowish-white flowers which grow in pairs the pods are round which usually have one seed and the seeds are round

* Corresponding author
E-mail address: kelvinteramee@gmail.com (T. K. Terhemba), olasan.olalekan@uam.edu.ng (O. J. Olalekan)

and of many colours [2]. Bambara groundnut is a hardy crop particularly well suited to the growing conditions found in the Savanna with a Sudanese and Sudano-Guinean Climate [3]. It does well in a hot climate and does better than most offer bean crop poor soils. It also grows best with moderate rainfall and sunshine [4]. The protein in bambara groundnut has high lysine content [5] and so has a beneficial complementary effect when consume together with cereals which have low lysine content [6]

2. Materials and Methods

2.1. Experimental Site

The experiment was carried out in the Advanced Biological Sciences Laboratory, of the Federal University of Agriculture Makurdi, Benue State.

2.2. Sample Collection

Three different varieties of bambara groundnut seeds were obtained from local markets within Makurdi, saw dust was collected from the Wurukum saw mill in Makurdi, weeds was collected within the university campus. All samples collected were transported to the Department of Botany, College of Science, University of Agriculture for this experiment.

2.3. Sample

Preparation. Three different varieties of bambara groundnut seeds were properly sorted to avoid stones/ sands. The saw dust was sun dried for the experiment and the weeds was dried and decomposed before using for the experiment.

2.4. Experimental Design

The experiment was set up in a randomized design structure consisting of eighteen treatment combinations of Saw dust and two selected weeds *Tridax procumbens* and *Sida acuta* and NPK inorganic fertilizers, each replicated twice, in a 18x3x2 factorial experimental design making a total of 108 experimental units.

2.5. Experimental Procedure

A soil sample was filled into the plastic pots. The treatment samples (saw dust and weed compost) will be spread on the soil in the pots while the control pots were left without any treatment materials. Bambara groundnut seeds were sown at three seeds per pot.

2.6. Data Collection

Data collected were recorded weekly through the period of the experiment as follows:-

Plant Height (Cm)

The height of the plants will be measured using meter rule from the base of the plant to the tip of the apical leaf.

Number of Leaves per plants

The total numbers of leaves per plant will be determined by counting all fully opened leaves on the plants leaving the bud primordial at the shoot apex.

Number of branches per plant

The total number of branches per each plant will be pruned to two each on each branching point which gave a uniform branching on each plant.

Days to 50% flowering

The time taken for half of the plant per plots to flower was recorded. This was done by visual observation on all the plots.

2.7. Data Analysis

The data collected from this experiment were subjected to analysis of variance (ANOVA) using Gens tat software.

3. Results and Discussion

3.1 Results

3.1.1. Effect of Saw Dust on the Germination and Growth Performance of Bambara Groundnut

The parameters measured are germination count, germination percentage and seedling vigour which significantly affected by application of the saw dust compost. Both germination count, germination percentage (3.00±0.00 and 100.00±00.0% respectively) were recorded highest in bambara groundnut seed planted on treatment with NPK. Earth pea show the lowest germination count and germination percentage (1.00±0.11 and 33.00±0.05%) as treated with saw dust (150g) and (300g) respectively.

3.1.2. Effect of the Decomposition of Saw Dust of on Growth Performance of Bambara Groundnut

The result for the effect of litter of sawdust on growth performance of Bambara groundnut seeds is as presented in tables 1 and 2. Significant differences ($p \leq 0.05$) were observed across most of the parameters measured due to the effect of the different treatment and treatment levels.

The highest plant height 5 weeks after planting (12.92±0.29) was recorded Bambara nut treated with NPK (2.5g) followed by12.67±0.18 obtained in the same seeds verity grown with NPK (1.4g). It was also lowest (8.25±0.04) in the Earth pea variety under the SD (150g) treatment.

Table 1. Effect of Saw Dust on the Germination of Bambara Groundnut.

Varieties	Treatment	Germination count	%germination	Seedling vigour
Bambara bean	SD(150g)	1.50±0.10	50.00±0.9	28.09±0.12
	SD (300g)	1.00±0.11	33.00±0.05	22.50±0.16
	NPK(1.4g)	3.00±0.00	100.00±0.0	23.85±0.00
	NPK (2.5g)	2.00±0.01	66.55±0.06	27.73±0.32
	CLT	2.50±0.01	83.35±0.02	17.15±0.15
Earth pea	SD (150g)	1.00±0.26	33.00±0.11	16.05±0.12
	SD(300g)	1.00±0.31	33.00±0.08	20.70±0.08
	NPK(1.4g)	2.50±0.02	83.35±0.04	22.20±0.66
	NPK (2.5g)	1.50±0.07	50.00±0.09	24.40±0.17
	CLT	1.50±0.10	50.0±0.09	11.10±0.13
Congo goober	SD(150g)	1.50±0.02	50.00±0.11	16.66±0.12
	SD (300g)	1.50±0.09	50.00±0.09	12.95±0.09
	NPK(1.4g)	2.00±0.03	66.70±0.06	21.68±0.22
	NPK (2.5g)	2.00±0.04	66.70±0.0	18.50±0.09
	CLT	1.50±0.02	50.00±0.12	13.89±0.12

Table 2. Effect of the decomposition of saw dust on growth performance of Bambara Groundnut.

Varieties	Treatments	Plant height			Number of leaves		Plant spread		Leaf length	Stem circumference	Leaf width	No. of branch
		2WAP	3WAP	5WAP	3WAP	5WAP	3WAP	5WAP				
Bambara bean	SD(150g)	3.15± 0.11	7.75± 0.32	9.75± 0.15	4.65± 0.09	6.67± 0.18	2.75± 0.11	10.50± 0.60	6.25± 0.28	1.25± 0.00	4.50± 0.33	6.00± 0.03
	SD (300g)	5.00± 0.23	8.42± 0.12	10.80± 0.42	4.15± 0.18	7.97± 0.22	2.95± 0.03	9.23± 0.09	6.25± 0.24	1.22± 0.00	3.62± 0.39	4.50± 0.23
	NPK(1.4g)	5.20± 0.33	8.75± 0.11	12.67± 0.18	4.65± 0.22	8.50± 0.7	5.25± 0.22	13.00± 0.11	6.05± 0.34	2.05± 0.24	3.78± 0.44	4.50± 0.24
	NPK (2.5g)	5.50± 0.13	9.50± 0.42	12.92± 0.29	3.50± 0.16	8.30± 0.11	4.35± 0.27	12.45± 0.12	5.75± 0.34	1.43± 0.44	3.67± 0.56	5.0± 0.40
	CLT	5.00± 0.42	9.25± 0.22	11.51± 0.31	3.67± 0.18	8.67± 0.09	4.95± 0.28	11.00± 0.26	6.40± 0.75	3.20± 0.75	3.75± 0.34	4.50± 0.53
Earth pea	SD (150g)	3.25± 0.32	6.25± 0.21	8.25± 0.04	3.50± 0.22	8.44± 0.21	5.17± 0.03	13.00± 0.20	6.30± 0.45	1.43± 0.43	4.25± 0.54	5.00± 0.41
	SD(300g)	3.5± 0.33	7.45± 0.44	9.20± 0.22	3.77± 0.21	8.25± 0.18	5.33± 0.16	11.70± 0.11	6.85± 0.37	2.10± 0.75	3.00± 0.23	4.00± 0.35
	NPK(1.4g)	5.75± 0.32	7.00± 0.23	10.20± 0.12	4.15± 0.19	8.69± 0.22	4.83± 0.21	14.80± 0.08	5.90± 0.23	1.50± 0.27	3.50± 0.63	5.00± 0.20
	NPK (2.5g)	4.85± 0.34	6.67± 0.23	8.80± 0.42	3.65± 0.22	8.94± 0.29	4.23± 0.81	13.25± 0.11	6.42± 0.31	1.30± 0.20	3.90± 0.54	6.50± 0.24
	CLT	5.00± 0.55	7.15± 0.44	9.20± 0.32	3.33± 0.18	8.00± 0.07	5.33± 0.12	12.90± 0.32	6.03± 0.11	1.15± 0.45	3.67± 0.65	5.00± 0.28
Congo goober	SD(150g)	4.90± 0.24	7.55± 0.21	8.20± 0.42	3.17± 0.17	8.25± 0.33	4.25± 0.44	16.00± 0.15	5.99± 0.09	3.27± 0.34	4.15± 0.76	5.50± 0.23
	SD (300g)	3.00± 0.12	8.65± 0.23	9.65± 0.32	3.17± 0.25	8.53± 0.05	3.00± 0.24	15.25± 0.09	6.62± 0.28	2.25± 0.53	4.43± 0.86	4.50± 0.21
	NPK(1.4g)	5.25± 0.11	8.65± 0.44	11.0± 0.33	4.10± 0.16	8.42± 0.15	3.50± 0.55	13.20± 0.12	6.30± 0.22	1.40± 0.34	4.56± 0.44	5.00± 0.53
	NPK (2.5g)	4.25± 0.34	7.75± 0.22	10.15± 0.13	4.10± 0.22	8.15± 0.33	3.00± 0.17	14.30± 0.11	6.82± 0.43	1.50± 0.22	5.00± 0.37	6.00± 0.64
	CLT	3.75± 0.41	6.00± 0.11	8.80± 0.11	3.50± 0.21	8.45± 0.12	4.00± 0.29	14.50± 0.00	5.44± 0.13	1.25± 0.12	4.80± 0.22	5.00± 0.23
LSD (≤0.05)		0.3211	0.2145	0.2432	0.2116	2.5571	0.3229	NS	NS	NS	0.2251	0.1255

Number of leaves was highest in Earth pea treated with NPK (2.5g) with a mean value of 8.94±0.29at 5WAP. The least number of leave (6.67±0.18) 5WAP was recorded in Bambara nut planted with SD (300g).

The widest plant spread (16.00±0.15) was recorded for Earth pea in the experiments treated with saw dust (150g) at 5WAP. Plant spread was however smallest (9.23±0.09) in Bambara nut treated with SD (300g).

The longest leaf length (6.85±0.37) was recorded in Congo goober seeds treated with NPK (2.5g) while the shortest leaf length (5.44±0.13) was recorded in the same seed variety in the control experiment.

Stem circumference was highest 3.27±0.34) at the Congo goober seeds experiment treated with SD(150g), the smallest stem circumference (1.22±0.00) was however recorded in the Bambara nut seeds experiment treated with SD (300g).

Highest number of branches (6.50±0.24) was recorded at the Earth pea seeds experiment treated with NPK (2.5g) while

the lowest number of branches was recorded in the saw dust at 300g.

3.1.3. Effect of the Decomposition of Weedsonthe Germination of Bambara Groundnut Varieties

Germination count, germination percentage and seedling vigour, (3.00±0.12) (100.00±0.0%) and (27.73±0.32) respectively were observed and recorded in bambara bean treated with NPK(1.4g) compared to the seed planted with weed compost treatments. While earth pea recorded low seedling vigour (11.10±0.13).

Table 3. Effect of weed compost on growth performance of Bambara Groundnut.

Varieties	Treatments	Germination count	%germination	Seedling vigour
	WCP(150g)	2.00±0.12	66.55±0.05	18.75±0.11
	WCP (300g)	2.50±0.12	66.55±0.03	20.25±0.32
Bambara bean	NPK(1.4g)	3.00±0.12	100.00±0.0	23.85±0.00
	NPK (2.5g)	2.00±0.12	66.55±0.06	27.73±0.32
	CLT	2.50±0.12	83.35±0.02	17.15±0.15
	WCP(150g)	2.50±0.12	83.35±0.06	36.40±0.34
	WCP (300g)	2.00±0.12	66.70±0.03	21.62±0.12
Earth pea	NPK(1.4g)	2.50±0.12	83.35±0.04	22.20±0.66
	NPK (2.5g)	1.50±0.12	50.00±0.09	24.40±0.17
	CLT	1.50±0.12	50.0±0.09	11.10±0.13
	WCP(150g)	2.00±0.12	66.70±0.02	19.44±0.17
	WCP (300g)	1.50±0.12	50.00±0.08	15.40±0.33
Congo goober	NPK(1.4g)	2.00±0.12	66.70±0.06	21.68±0.22
	NPK (2.5g)	2.00±0.12	66.70±0.0	18.50±0.09
	CLT	1.50±0.12	50.00±0.12	13.89±0.12
LSD(≤0.05)		0.3017	0.2091	0.1261

Table 3. Continued.

Varieties	Treatments	Plant height			Number of leaves		Plant spread		Leaf length	Stem circumference	Leaf width	No. of branch
		2WAP	3WAP	5WAP	3WAP	5WAP	3WAP	5WAP				
Bambara bean	WCP(150g)	4.10± 0.09	6.13± 0.11	8.35± 0.34	3.65± 0.22	5.10± 0.10	3.90± 0.22	7.75± 0.19	4.25± 0.12	1.15± 0.73	3.25	5.50± 0.55
	WCP (300g)	3.88± 0.24	5.50± 0.11	7.70± 0.27	4.0± 0.62	6.55± 0.25	4.15± 0.71	10.10± 0.17	5.95± 0.08	1.35± 0.32	2.87	6.00± 0.16
	NPK(1.4g)	5.20± 0.33	8.75± 0.11	12.67± 0.18	4.65± 0.22	8.50± 0.7	5.25± 0.22	13.00± 0.11	6.05± 0.34	2.05± 0.24	3.78± 0.44	4.50± 0.24
	NPK (2.5g)	5.50± 0.13	9.50± 0.42	12.92± 0.29	3.50± 0.16	8.30± 0.11	4.35± 0.27	12.45± 0.12	5.75± 0.34	1.43± 0.44	3.67± 0.56	5.0± 0.40
	CLT	5.00± 0.42	9.25± 0.22	11.51± 0.31	3.67± 0.18	8.67± 0.09	4.95± 0.28	11.00± 0.26	6.40± 0.75	3.20± 0.75	3.75± 0.34	4.50± 0.53
Earth pea	WCP(150g)	2.80± 0.02	4.67	5.75± 0.26	3.33± 0.17	6.33± 0.27	5.17± 0.18	12.75± 0.08	5.56± 0.42	1.10± 0.54	4.45	5.00± 0.23
	WCP (300g)	3.25± 0.12	5.10	6.17± 0.34	3.00± 0.27	7.00± 0.0	5.25± 0.33	13.00± 0.27	4.75± 0.19	1.30± 0.29	3.57	4.50± 0.53
	NPK(1.4g)	5.75± 0.32	7.00± 0.23	10.20± 0.12	4.15± 0.19	8.69± 0.22	4.83± 0.21	14.80± 0.08	5.90± 0.23	1.50± 0.27	3.50± 0.63	5.00± 0.20
	NPK (2.5g)	4.85± 0.34	6.67± 0.23	8.80± 0.42	3.65± 0.22	8.94± 0.29	4.23± 0.81	13.25± 0.11	6.42± 0.31	1.30± 0.20	3.90± 0.54	6.50± 0.24
	CLT	5.00± 0.55	7.15± 0.44	9.20± 0.32	3.33± 0.18	8.00± 0.07	5.33± 0.12	12.90± 0.32	6.03± 0.11	1.15± 0.45	3.67± 0.65	5.00± 0.28
Congo goober	WCP(150g)	3.25± 0.41	4.55	7.35± 0.622	3.70± 0.88	6.70± 0.28	2.50± 0.03	13.18± 0.26	5.82	1.20	4.60	7.00± 0.34
	WCP (300g)	3.45± 0.31	4.75	6.60± 0.23	3.45± 0.8	7.45± 0.16	3.00± 0.25	13.21± 0.35	6.67	1.25	4.60	6.50± 0.35
	NPK(1.4g)	5.25± 0.11	8.65± 0.44	11.0± 0.33	4.10± 0.16	8.42± 0.15	3.50± 0.55	13.20± 0.12	6.30± 0.22	1.40± 0.34	4.56± 0.44	5.00± 0.53
	NPK (2.5g)	4.25± 0.34	7.75± 0.22	10.15± 0.13	4.10± 0.22	8.15± 0.33	3.00± 0.17	14.30± 0.11	6.82± 0.43	1.50± 0.22	5.00± 0.37	6.00± 0.64
	CLT	3.75± 0.41	6.00± 0.11	8.80± 0.11	3.50± 0.21	8.45± 0.12	4.00± 0.29	14.50± 0.00	5.44± 0.13	1.25± 0.12	4.80± 0.22	5.00± 0.23
	LSD(≤0.05)		0.1821	0.3272	0.4902	0.5390	2.4322	0.4424	NS	NS	NS	0.1091

3.1.4. Effect of Weed Compost on Growth Performance of Bambara Groundnut

Growth parameters measured in this research included pant height, number of leaves, leave area, plant spread, and leaf length and stem circumference.

The results of the effect of the weeds compost on this growth parameters is as presented in table 3.

The highest plant height 5 weeks after planting (12.92±0.29) was recorded for Bambara nut treated with NPK (2.5g) Followed by 12.67±0.18 recorded in Bambara bean treated with NPK (1.4g). Number of leaves showed significant difference in response to the effect of the weeds compost used in the experiment. The highest number of leaves (8.94±0.29) in this experiment was recorded in earth pea treated with NPK (2.5g). On the other hand the least number of leaves (5.10) was recorded in bambara bean treated with weed compost at 150g application.

A wider plant spread (14.80±0.08) was recorded for Earth pea varieties under the NPK(1.4g) experiment. The least plant spread (7.75±0.19) was obtained in bambarabeant treated with weed composts (150g).

Leaf length was highest (6.82±0.43) in Congo goober seeds treated with NPK (2.5g) while it was lowest (4.25±0.12) in the Bambara nut plants in the WCP(150g) experiment. Stem circumference was not significantly different across. Number of branches was highest in the earth pea plant under the control experiment and in the Congo goober plant still under the control experiment.

3.1.5. The Effect of Saw Dust and Weed Compost Litters on Germination of Bambara Groundnut

The result shows that germination count, germination percentage were highest in bambara bean with the mixed composts of saw and the weeds (SD+WCP (300g)which recorded 100% termination while the same bambara bean recorded the highest seedling vigour (27.73± 0.32) treated with NPK (25g).

However, the lowest germination percentage (50%) was recorded across the three varieties at different manure types and Earth pea variety recorded lowest (11.10± 0.13) under the control experiment.

Table 4. The combined effect of saw dust and weed compost on germination of Bambara Groundnut.

Varieties	Treatments	Germination count	%germination	Seedling vigour
	SD+WCP(150g)	2.50±0.10	83.35±0.08	20.61±0.11
	SD+WCP (300g)	3.00±0.00	100.00±0.0	24.70±0.23
Bambara bean	NPK(1.4g)	3.00±0.00	100.00±0.0	23.85±0.00
	NPK (2.5g)	2.00±0.01	66.55±0.06	27.73±0.32
	CLT	2.50±0.01	83.35±0.02	17.15±0.15
	SD+WCP(150g)	2.50±0.05	83.35±0.08	21.65±0.34
	SD+WCP (300g)	2.00±0.01	66.35±0.03	17.45±0.12
Earth pea	NPK(1.4g)	2.50±0.02	83.35±0.04	22.20±0.66
	NPK (2.5g)	1.50±0.07	50.00±0.09	24.40±0.17
	CLT	1.50±0.10	50.0±0.09	11.10±0.13
	SD+WCP(150g)	2.00±0.12	66.56±0.03	17.45±0.32
	SD+WCP (300g)	2.00±0.08	66.56±0.11	20.47±0.11
Congo goober	NPK(1.4g)	2.00±0.03	66.70±0.06	21.68±0.22
	NPK (2.5g)	2.00±0.04	66.70±0.00	18.50±0.09
	CLT	1.50±0.12	50.00±0.12	13.89±0.12
LSD(≤0.05)		0.2007	0.3681	0.4254

The result for the combined effect of saw dust on and weed on the growth performance of bambara groundnut seeds is presented in tables 4 and 5. Significant differences ($p \leq 0.05$) were observed across most of the parameters measured due to the effect of the different treatment and treatment levels.

The interaction of the different bambara variety with the compost also resulted in significance changes on the growth parameters. On plant height, the overall best height (12.67±0.18) 5 weeks after planting was recorded in the Bambaranut seeds treated with NPK (2.5g) fertilizer. The shortest plant height (6.70±0.23) was recorded in the Earth pea plant treated with SD+WCP (300g) all at 5 days after planting.

Number of leaves was highest (9.27±0.67) in earth pea plant treated with SD+WCP (300g) at 5WAP. The least number of leaves (5.88±0.27) 5WAP was recorded in earth pea varieties treated with SD+WCP (300g).

The widest plant spread (14.80±0.08) was recorded for Earth pea varieties treated with NPK(1.4g) 5WAP. The least value for plant spread 5WAP (11.00cm^2) was recorded in Bambara nut in the control experiment.

Leaf length was higher 6.82±0.43) in the Congo goober variety treated with NPK (2.5g) while the shortest leaf length (5.44±0.13) was recorded in Congo goober under the control experiment. Stem circumference was higher in Congo goober plant (1.79±0.52) treated with SD+WCP (300g) it was

however lowest (1.05±0.24) in bambarabean treated with NPK(1.4g). Number of branches was significantly affected by the combined effect of the saw dust and the weeds. The highest number of branches (7.00±0.64) was obtained in bambara bean treated with SD+WCP(150g) and the Congo goober plant in the control experiment.

Table 5. The combined effect of saw dust and weed compost on growth performance of Bambara nut.

Varieties	Treatments	Plant height			Number of leaves		Plant spread		Leaf length	Stem circumference	Leaf width	No. of branch
		2WAP	3WAP	5WAP	3WAP	5WAP	3WAP	5WAP				
Bambara bean	SD+WCP(150g)	4.00± 0.34	5.85± 0.34	7.65± 0.93	3.00± 0.19	8.32± 0.13	4.85± 0.32	11.15± 0.18	5.75± 0.27	1.28± 0.26	3.65± 0.36	7.00± 0.64
	SD+WCP (300g)	4.60± 0.42	6.78± 0.16	8.00± 0.27	3.50± 0.28	9.27± 0.67	4.43± 0.33	13.75± 0.15	6.15± 0.32	1.20± 0.17	4.35± 0.22	5.00± 0.33
	NPK(1.4g)	5.20± 0.33	8.75± 0.11	12.67± 0.18	4.65± 0.22	8.50± 0.7	5.25± 0.22	13.00± 0.11	6.05± 0.34	1.05± 0.24	3.78± 0.44	4.50± 0.24
	NPK (2.5g)	5.50± 0.13	9.50± 0.42	12.92± 0.29	3.50± 0.16	8.30± 0.11	4.35± 0.27	12.45± 0.12	5.75± 0.34	1.43± 0.44	3.67± 0.56	5.0± 0.40
	CLT	5.00± 0.42	9.25± 0.22	11.51± 0.31	3.67± 0.18	8.67± 0.09	4.95± 0.28	11.00± 0.26	6.40± 0.75	1.20± 0.75	3.75± 0.34	4.50± 0.53
Earth pea	SD+WCP(150g)	4.00± 0.17	5.50± 0.21	12.02± 0.28	3.65± 0.14	7.00± 0.75	4.83± 0.19	13.25± 0.22	6.40± 0.38	1.10± 0.9	4.17± 0.43	6.50± 0.33
	SD+WCP (300g)	4.35± 0.32	5.65± 0.13	6.70± 0.23	3.00± 0.33	5.88± 0.27	4.67± 0.23	13.00± 0.34	6.05± 0.91	1.20± 0.28	3.80± 0.05	6.50± 0.12
	NPK(1.4g)	5.75± 0.32	7.00± 0.23	10.20± 0.12	4.15± 0.19	8.69± 0.22	4.83± 0.21	14.80± 0.08	5.90± 0.23	1.50± 0.27	3.50± 0.63	5.00± 0.20
	NPK (2.5g)	4.85± 0.34	6.67± 0.23	8.80± 0.42	3.65± 0.22	8.94± 0.29	4.23± 0.81	13.25± 0.11	6.42± 0.31	1.30± 0.20	3.90± 0.54	6.50± 0.24
	CLT	5.00± 0.55	7.15± 0.44	9.20± 0.32	3.33± 0.18	8.00± 0.07	5.33± 0.12	12.90± 0.32	6.03± 0.11	1.15± 0.45	3.67± 0.65	5.00± 0.28
Congo goober	SD+WCP(150g)	3.85± 0.28	6.15± 0.54	7.90± 0.55	4.75± 0.17	8.79± 0.35	3.50± 0.47	13.40± 0.17	5.75± 0.14	1.79± 0.52	4.00± 0.54	5.50± 0.10
	SD+WCP (300g)	3.35± 0.26	4.25± 0.11	6.75± 0.23	3.15± 0.43	8.72± 0.27	4.00± 0.33	13.05± 0.09	5.15± 0.35	1.72± 0.08	5.65± 0.39	6.00± 0.32
	NPK(1.4g)	5.25± 0.11	8.65± 0.44	11.0± 0.33	4.10± 0.16	8.42± 0.15	3.50± 0.55	13.20± 0.12	6.30± 0.22	1.40± 0.34	4.56± 0.44	5.00± 0.53
	NPK (2.5g)	4.25± 0.34	7.75± 0.22	10.15± 0.13	4.10± 0.22	8.15± 0.33	3.00± 0.17	14.30± 0.11	6.82± 0.43	1.50± 0.22	5.00± 0.37	6.00± 0.64
	CLT	3.75± 0.41	6.00± 0.11	8.80± 0.11	3.50± 0.21	8.45± 0.12	4.00± 0.29	14.50± 0.00	5.44± 0.13	1.25± 0.12	4.80± 0.22	5.00± 0.23
LSD (≤0.05)	WCP(150g)	0.2117	0.3951	0.2455	0.2117	14.71	4.29	0.4267	NS	NS	NS	NS

3.2. Discussion

The results of this experiment were to determine the single, combined effects of saw dust and two selected weeds on the germination and growth performance of bambara groundnut. The result revealed variation in the germination and growth parameters of bambara groundnut varieties. The focus of this research is to determine the effect of compost on the germination and growth of the plant. It was observed in the research that the composts do not have any negative impact on the plant germination and growth. Rather in some interaction between the seeds and the manure/composts there was a significantly higher performance.

In the experiment treatment with saw dust had a better performance compared to treatment with the weeds compost. The relatively high growth performance recorded in the treatment with saw dust in comparison with the treatment with weed compost could be as a result of the nutrient contained in the woods from which this saw dust was produced. This had early been reported by white *et al* (2009) [7], this researcher had also state that saw dust perform better with crops when they are used as mulching material rather than been incorporated into the soil as manure. The low performance output by the seeds planted under the weed compost treatment is not farfetched from the fact that most weed have exudates which are inhibitory to the germination and growth of seeds.

The experiment reviewed that the treatment with NPK fertilizer had the overall best performance. Though organic manure has been reported to be much more effective in the production of bambara groundnut, this was not the case in this experiment. This present condition can therefore be explained by the fact the saw dust used in this experiment was a combination of wood dust from different plants species. Some of this plant species however are toxic and have allelopathic contents in them. The dissolving of this wood dust could cause a release of these substances into the soil and thereby inhibiting the germination and growth of the plant. such report have been made by Mohamadi and Rajaie, (2009) [8] concerning moringa tree, where they stated that

alleleochemicals have effect on seeds germination which is mediated through a disruption of normal cellular metabolism rather than through damage of organelles.

4. Conclusion

The results of this experiment can be concluded that, the interaction of bambara groundnut varieties and the different manure types resulted in significant changes in the germination and growth. A better germination and growth performance was recorded in the earth pea varieties treated under with NPK fertilizer followed by the combined compost of saw dust and weeds at 150g application treatment compared to the use f saw dust and weeds compost.

5. Recommendation

The recommended species of wood in which dust is to be used as compost manure should be known, in order to ensure that plant and weed species with allelopathic substances are not incorporated into the soil as organic manure as this will inhibit the germination and growth of the plant. Saw dust and weed compost are also recommended as mulching material instead of direct organic manure.

Appendix

Table 6. Treatment combinations used.

Treatment Level	Treatment Name
SD @150g	Sawdust
SD @300g	Sawdust
TP @150g	*Tridaxprocumbens*
TP @300g	*Tridaxprocumbens*
SA @150g	*Sidaacuta*
SA @300g	*Sidaacuta*
SD+TP@150g	Sawdust+*Tridaxprocumbens*
SD+TP @300g	Sawdust+*Tridaxprocumbens*
SD+SA @150g	Sawdust+*Sidaacuta*
SD+SA @300g	Sawdust+*Sidaacuta*
TP+SA @150g	*Tridaxprocumbens*+*Sidaacuta*
TP+SA @300g	*Tridaxprocumbens*+*Sidaacuta*
SD+TP+SA @150g	Sawdust+*Tridaxprocumbens*+*Sidaacuta*
SD+TP+SA @300g	Sawdust+*Tridaxprocumbens*+*Sidaacuta*
NPK @1.4g	Inorganic fertilizer
NPK @2.5g	Inorganic fertilizer
CLT	Control pot
CLT	Control pot

References

[1] Oyeleke, G. O., Afolabi, O. &Isola, A. D. (2012). Some Quality and Carbohydrate Fractions of Bambara Groundnut (*Vigna subterranea* (L).) Seed Flour. *IOSR Journal of Applied Chemistry*, 2 (4), 16-19.

[2] Akpalu M. M. (2010). Growth, Yield and Nutritional Quality of Five Bambara Groundnut (*Vigna subterranean* (L) Verdc.) Landraces to Different Plant Population Densities, School of Postgraduate Studies, Kwame Nkrumah University of Science and Technology.

[3] Basu S., Mayes S., Davey M., Roberts J. A., Azam-Ali S. N., Mithen R. and Pasquet R. S. (2007). Inheritance of 'domestication' traits in bambara groundnut (*Vigna subterranean* (L.) Verdc.) *Euphytica,* 157: 59-68.

[4] Boateng, J. K and Oppong, J. (2009). Proceedings of Seminar on organic and sedentary agriculture held at the Science and Technology Policy Research Institute (C.S.I.R) Accra. 1-3 Nov, pp 85.

[5] Adu- Dapaah, H. K and R. S. Sangwan, 2004: Improving Barmbara GroundnutProductivity using gamma Irradiation and in Vitro Techniques. Afr. Biotechnology. 3:260-265.

[6] Mazahib, A. M., Nuha, M. O., Salawa, I. S. &Babiker, E. E. (2013). Some nutritional attributes of Bambara groundnut as influenced by domestic processing. *International Food Research Journal*, 20 (3), 1165-1171.

[7] White P. J and Broadley M. R, 2009. Biofortification of crops with seven mineral elements often lacking in human diets--iron, zinc, copper, calcium, magnesium, selenium and iodine. New Phytol., 182 (2009), pp. 49-84.

[8] Neda Mohamadi and Peyman rajaie, 2009. Effects of Aqueous Eucalyptus (E. camadulensis Labill) Extracts on Seed Germination, Seedling Growth and Physiological Responses of *Phaseolus vulgaris* and *Sorghum bicolor*. Research Journal of Biological Sciences, 4: 1292-1296.