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Comparative Effects Of Rabbits Dung, Npk 15:15:15 And Cow Dung On The Growth And Yield Of Pepper

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Abstract: ***Field experiment was conducted at the Teaching and Research Farm of the department of Agriculture Technology, Federal College of Forestry, Jericho, Ibadan, Oyo state, to study the effects of rabbit dung, NPK 15:15:15 and cow dung on growth and yield of sweet pepper (Capsicum annuum). The experimental design was completely randomized design (CRD) with 4 treatments and 4 replicates. The following variables were measured for the period of 9 weeks: plant height, leaves production, stem girth, number of fruits. The result obtained from the average mean shows that T1 (rabbit dung- 17g) had the best performance in the plant height, leave production, stem girth, number of fruit and fruit weight (19.48, 19.00, 1.85, 3.00, and 24.35 respectively), while top soil has least performance (14.7, 14.25, 1.28, 1.00, 2.50 respectively). ANOVA table revealed that there are significant differences (ON<p<.05) in plant height, stem diameter, and number of fruit at 5% level of probability, while there is no significant difference (p>=O. 05) in leave production, at 5% level of probability. Based on the result, it is therefore recommended that rabbit dung TI (1 7g) should be adopted since it support the increase in plant height, leave production, stem girth, number of fruit, weight of the fruit of sweet pepper (Capsicum annuum).***

I. INTRODUCTION

Sweet pepper *(Capsicum annuum*) is a species of the plant genus Capsicum, native to Southern North American and Northern South. The species is the most common and extensive cultivated of the five domesticated Capsicum. (Poulas, 1994). Sweet pepper is called 'popurika' in Japan, 'peperoni' in Switzerland, 'poivon' in France, 'piment' in Korea. (Azhar *et al.,* 2004). Ideal growing conditions for sweet pepper include warm soil, ideally 21- 29°C (70-84°F) that is kept moist but not waterlogged (Labed *et al.,* 2013). Pepper is an important crop not only because of its economic importance but also for nutritional value of its fruit being a major source of natural colour and antioxidant compound (Howard *et al.,* 1994). The intake of this compound in food is an important health protecting factors; they have been recognized as being beneficial for prevention of widespread human disease, like cancer when taken in adequate amount. *Capsicum annuum* fruit are consumed in fresh, dried or processed form. Non-pungent fruit, usually called sweet pepper are eaten in raw salads but more commonly cooked, fried or processed together with other foods. They are consumed in such quality per serving that they constitute a real table vegetable contributing to the nutritional value of the meal, also rich in antioxidants and vitamin C. Sweet pepper was discovered to be a good source of medicinal preparation for black vomit, gout and paralysis (Khan *et al.,* 2010). It was reported by Juroszek and Tsai (2009) that sweet pepper fruits are good sources of many essential nutrients, such as vitamins A, C, and E, carotenoids, minerals (e.g., calcium and iron), and other secondary plant compounds.

Although pepper can be grown all over Nigeria, the northern region between latitude 10^0 N and 12^0 N is the major area for production where an estimated 77,000 hectares of land under pepper cultivation yields about 695 000 metric tons (FAO, 2000). The lower yield of pepper can be attributed to low and inherent soil fertility and management practices, weeds infestation and diseases problems (Grubben and El-

Tahir, 2004). One of the panacea for improved production output of tropical crop production is use of fertilizers and organic matter maintenance (Agboola, 1982). Fertilization studies on pepper production is pertinent in southern part of Nigeria due to high rainfall intensity which always resulted in leaching, impoverishing the soil. Research also shows that organic manure application is more beneficial over the use of chemical fertilization in tropical crop production, sustainability and soil fertility management (Ansa and Woke, 2018). There are different views as to which performs better on pepper (between organic and inorganic fertilizer). Thus, the researchers embarked on this study to investigate the effects of Rabbits Dung, NPK 15:15:15 and Cow Dung on the Growth and Yield of Pepper.

II. MATERIALS AND METHOD

STUDY SITE

The experiment was conducted at the Teaching and Research Farm of the department of Agriculture Technology, Federal College of Forestry, Jericho, Ibadan, Oyo state. The college area lies between latitude 7°26N and longitude 3°36E. The climate conditions of the area is tropically dominated by rainfall pattern, ranging from 1400-1500mm with average temperature of about 31.2^{o}C. The area experience two distinct season; dry season, usually from November — March and raining season, from April-October (FRIN, 2011).

NURSERY PRACTICE

Enclosed 1 m by 1 m nursery beds of dark top soil were made. The beds were watered before the seeds were broadcasted evenly and watered. After emergence, some seedlings were removed so that strong healthy pepper seedling can be obtained for transplanting. Seedlings were watered daily and ready for transplant after 40 days.

EXPERIMENTAL PROCEDURES

The manures (rabbit dung and cow dung) and top soil were taken to the laboratory for analysis after they have been dried under intense sunlight for two weeks and later grind into powdery form. The manure were measured and weighed using sensitive weighing balance and thereafter put inside a polythene bag. The manures were incorporated into the soil in the polythene pot and watered to allow commencement of mineralization and germination four (4) days before transplanting. The study adopted a 4 x 4 factorial experiment arranged in a randomized complete block design (RCBD) and replicated four times making it a total of 16 test samples. The treatments were (1) T1-17g of Rabbit dung/3.5kg of top soil (2) T2- 1.7g of N.P.K 15:15:15:/3.5kg of top soil (3) T3-17g of cow dung/3.5kg of top soil (4) T4- 3.5kg of Top Soil serving as the control.

DATA COLLECTION AND ANALYSIS

Data collection commenced two weeks after planting and continued on weekly basis till the end of the experiment. The parameters assessed includes; plant height with the aid of meter rule, number of leaves which was counted with the aid of hand weekly, numbers of fruit was counted per plant, Stem girth was measured with the aid of vernier caliper. All data collected were subjected to analysis of variance (ANOVA) and significant means was separated using Duncan multiple range test (DMRT).

III. RESULT AND DISCUSSIONS

EFFECT OF THE TREATMENTS ON PLANT HEIGHT

Table 1 shows the result of effect of the treatments on plant height. From the table, the results of the height of *Capsicum annuum* varied on weekly basis, the mean value at the end of the eight weeks of the experiments were reported with plants treated with treatment 1 (T1) having the highest plant height with mean value of (19.48 cm), followed closely by treatment 2 (T2) with mean value of (19.23 cm), and treatment (T3) with mean value of (18.45 cm). While plant treated with top soil (control) has the least performance with mean value of (14.7 cm).

Treatment	1	2	3	4	5	6	7	8	9	Average
T1	16.13a	17.00a	17.20a	17.38	19.33b	20.90a	21.45a	21.57a	24.50a	19.48a
T2	14.13b	15.00b	15.43ab	15.58ab	22.55	22.13a	21.40a	25.00a	23.73a	19.23a
T3	13.65b	14.13b	14.53b	14.78b	20.95	20.50a	22.10a	23.18a	22.33a	18.45a
T4	13.7b	14.00b	14.13b	14.38b	14.88	15.03b	15.23b	15.50a	15.53b	14.7b
% CV	17.23	17.09	16.95	16.61	10.21	13.57	12.27	13.53	15.20	10.82

Table 1

EFFECT OF THE TREATMENT ON THE STEM DIAMETER

The result presented in Table 2 shows that rabbit dung had the best performance in collar diameter with an average mean of 1.85, N.P.K 15:15:15 performed better in collar diameter with an average mean of 1.65 while treatment 4 (Control) had the least performance with an average mean of 1.28.

Treatment	1	2	3	4	5	6	7	8	9	Average
T1	0.98b	1.28a	1.43a	1.58a	1.88a	1.93a	2.38a	2.45a	2.68a	1.85a
T2	0.90b	1.10ab	1.25a	1.43a	1.55ab	1.83a	2.05ab	2.28a	2.55a	1.65a
T3	2.90a	1.00b	1.20a	1.35a	1.40b	1.68ab	1.60bc	1.45b	1.38b	1.35b
T4	0.93b	1.05ab	1.30a	1.45a	1.23b	1.35b	1.38c	1.68b	1.75b	1,28b
% CV	143.09	14.7	11.75	14.56	17.75	14.59	18.50	18.58	18.32	10.88

Table 2

AVERAGE NUMBER AND WEIGHT OF FRUITS

Table 3 shows the effects of rabbit dung, NPK 15:15:15, cow dung and top soil on number and weight of fruit of *Capsicum annuum*. The result shows that fruit weight of the *Capsicum annuum* planted on soil treated with rabbit dung (T1) has the highest mean value of (24.35), followed by (T2)

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NPK 15:15:15 with mean value of (9.93), and cow dung (T2) with mean value of (3.37), while fruit weight of the *Capsicum annuum* on the control soil has least performance with mean value of (2.50). The result of the number of fruits is not relatively difference except for treatment one that has highest number of fruits (3). The number and length of fruits increased with the application of rabbit dung which was significantly different among the treatments applied. The results could be as a result of higher number of leaves, flowers and fruiting buds which may have increased fruit production (Nweke *et al.*, 2014).

Treatment	No. of Fruits	Weight of Fruits (g)
T1	3.00a	24.35
T2	1.50b	9.93
T3	1.00b	3.37
T4	1.00b	2.50
%CV	30.77	42.62

Table 3: Average number and weight of fruits

IV. CONCLUSION

The result of the present study indicated that the application of rabbit manure had more effect on the growth and yield components of *Capsicum annuum* compared to NPK 15:15:15 and cow dung as the highest values were recorded in rabbit manure treated plots in all the parameters measured. Rabbit manure released enough nutrients which resulted in significant increase in growth and yield of *Capsicum annuum*; also it serves as a good source of soil amendment, and improvement of soil properties which in turn resulted in improved growth and yield.

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Arbuscular mycorrhiza fungi npk 15 15 15 and cow dung interaction in sustainable cassava production and food security. Submit manuscript Due to current COVID19 situation and as a measure of abundant precaution, our Member Services centre are operating with minimum staff.Â On the other hand, sole application of cow dung did not produce plants with appreciable increase in height (57 Â± 9, 71 Â± 8 and 70 Â± 14 cm respectively). Other treatments produced plant heights similar to the control. On the other hand, from 14WAE to 20WAE, the plants showed decreasing performance in height in the order AMFNPKL2 (30 + 60) g > NPK 100 g and CDNPKL4 (500 + 100) g > control > CD (400 g) > CD (200g) (Table 2). Parameter. Soil. NPK 15:15:15 produced the highest Ash (7.60%), protein (27.70%), fat (2.03%) and fiber (11.80%) while the control plant produced the highest carbohydrate (67.13%) and moisture (6.10%). This study concludes that vegetative growth and nutrients of Moringa oleifera were best supported by 5g NPK which is statistically significant ($p<0.05$) as compared to other treatments. : Effect of N:P:K 15:15:15 and cow dung on nutrient composition of Moringa oleifera leaves. â€¦ Figures - uploaded by Olayinka Oloyede. Author content. 15-15-15 fertilizer applied at 120 kg N haâˆ’1 and a control (no manure/inorganic fertilizer).Â Control, rabbit manure, cow dung, poultry manure, green manure, pig manure and NPK fertilizer in 2018 increased the pod yield of okra by 9.7%, 35.3%, 57.9%, 36.2%, 39.2%, 45.5% and 3.2%, respectively compare with the same treatment in 2017.Â Okra growth and yield parameters were significantly higher in 2018 compared with 2017.Â The effect of different organic manure sources on proximate and mineral content of okra in 2017 and 2018 are shown in Table 5. In 2017 and 2018 different organic manure sources and NPK fertilizer increased protein, ash, carbohydrates, mucilage N, P, K Ca and Mg contents of okra fruits compared with the control. In order to comparative the effect of Cow Dung (CD) manure on soil and leaf nutrient and yield of pepper, two field trials were conducted involving six treatment replicated three times in a randomized complete block design at Ondo, Southwest Nigeria. The six treatments were control, 2.5, 5.0, 7.5 and 10.0 t ha-1 CD and 250 kg ha-1 NPK fertilizer.Â Data of growth and yield were subjected to analysis of variance and treatment means separated using least significant difference at 5% level probability.Â Leaf and Cow Dung Analysis At 10 weeks after treatment application, leaf samples were collected. The samples were oven dried at 70Â°C for 24 h and milled. Nitrogen was determined using Micro-Kjeldahl method.