VARIETAL RESPONSE OF GROWTH ATTRIBUTE OF MUSKMELON (*Cucumis melon* .L) AS INFLUENCED BY POULTRY MANURE RATES AT SAMARU.

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Abstract

A field trial was conducted in 2018 dry season at teaching and research farm of Samaru College of Agriculture, Ahmadu Bello University, Zaria to study the varietal response of growth attribute of muskmelon as influenced by poultry manure rate at Samaru. The treatments consisted of two varieties of muskmelon; JINO and EPSILON and four levels of poultry manure rates; 0 t ha^{-1}, 1 t ha^{-1}, 3t ha^{-1} and 6 t ha^{-1}. The trial was laid out in a randomized complete block design with three replications. The results of the study show that JINO significantly produced more number of leaves and longer vines of muskmelon than EPSILON variety. Also number of branches was significantly higher to plots sown to EPSILON variety than JINO. Application of poultry manure at 3 t ha^{-1} significantly recorded higher values for number of leaves, number of branches and vine length than the rest of the poultry manure rate used. Applying poultry manure at 6 t ha^{-1} significantly produced more stand count than other rates used. Based on the results obtained from this study, it can be concluded that JINO muskmelon variety and application of poultry manure at 3 t ha^{-1} produced the best growth characters of muskmelon in Samaru.

KEYWORDS: Muskmelon, Varieties, Growth characters and Poultry manure rates.

Introduction

Muskmelon (*Cucumis melon L.*) belong to the family *Cucurbitaceae*, is a monoecious annual herb, slender hairy and often sprawling over the ground with a trailing vine growth having strong taproots but generally are shallow but horizontally extensive when the crops are adequately irrigated. A drought tolerant crop found in warm temperate and tropical areas of the world with estimated production of 61.13million tones (Anon, 2011). It is the fourth most important fruit in the world fresh fruit market with several varieties (Mabalaha *et al*., 2007).

Musk Melon originated in Africa and South West Asia and over time have travelled from Africa to Asia to Europe to North America (Sabo *et al.,* 2013). It is also known as (Golden Langkawi) in Malaysia and known for its stinky golden yellow colour and dense white flesh.

The leading musk melon growing countries in the world are China, Iran, Spain and U.S. in Africa it is an economic crop for urban market grown in drier region and non-high lands. It is an important commercial crop in many countries and mostly cultivated in the temperate regions of the world due to the good adaptation to temperate soil and climate (Zulkarami *et al,* 2010).

In Nigeria it is mostly grown in the northern part of the country where it is popular because of its sweet pulp and the pleasant aroma (Villanuella *et al.,* 2004). Musk melon is a delicious fruits of common man and its fruits pulps and juice are used in refreshing drinks.

Muskmelon commonly known as cantaloupe or sweet melon. In northern Nigeria it is popular known as "*melo or Shammam*". The crop is gaining a lot of importance due to it short duration, high production potential with high nutritive value, taste delicacy and its suitability for cultivation under rain fed and irrigated condition almost throughout the year.

However, muskmelon production is limited to fewer states in the North (Jigawa, Jos, Kaduna, Kano, Gombe and Katsina) due to unavailability of improved varieties suitable to other agro ecological zone that are high yielding and resistance to disease and pest. So most farmers that are into the production of the crop during off season use materials that are at their disposal without taking cognizance of the source of the material, sugar content, shelf life and yield potential.

On the other hand, the use of poultry manure is inevitable because majority of farmers involved with production of the crop produce it during dry season when inorganic fertilizer is very scarce and the quality of the product is being compromised in most cases. This is in line with the findings of Somani and Totawat (1999) who discovered due to high cost of inorganic fertilizer it is not obtainable by farmers and even where it is obtainable, it is not within the reach of most farmers to buy because of the exorbitant prices. As long as poultry manure is relatively cheap and readily available and comparable to inorganic fertilizer. This has encouraged scientist toward use of organic materials (both organic manure as well as organic waste) for improving the physical properties of the soil that allow profitable crop production.

Therefore, this research gap in an indicator that there is a need to use poultry manure at varying rates on the newly improved varieties of muskmelon so as to enhanced the productivity the crop in Samaru for the benefit of resource poor farmers. Based on the aforementioned this research was conceived with the following objectives.

Objectives of the Study

1. To determine the most appropriate variety suitable to Samaru condition.
2. To determine the appropriate poultry manure rate on growth of Musk Melon

MATERIALS AND METHODS

The experiment was conducted at the student demonstration field at Samaru College of Agriculture, Division of Agricultural Colleges, Ahmadu Bello University Zaria, which is

located at the Northern Guinea savannah ecological zone of Nigeria (11°11'N and 7°38'E 686 meter above sea level).

The treatments consisted of two varieties of Musk Melon (Jino and Epsilon) and four level of poultry manure (0t ha^{-1}, 1t ha^{-1} 3tha^{-1}6t ha^{-1}). The treatments were laid out in a randomized complete block design with three replications. The soil sample was collected from 10 point from the experimental site with an auger prior to land preparation. The sample was sieved and analyzed for physiochemical properties using the standard procedure as describe by Black (1965). The plot size used was 5m x $2m^2$ with 1m spacing between the plots and replicates respectively. Three (3) seeds were sown per hole and later on thinned to one plant per stand at two weeks after sowing [WAS]. Poultry manure was applied according to treatments. The following observations were recorded; number of leaves, vine length (cm), number of branches and stand count. All data collected was subjected to Statistical Analysis of Variance (ANOVA) using F test as directed by Snedecor and Cochran (1967) and the treatment means were compare using Duncan Multiple Range Test (DMRT) Duncan,(1955).

RESULTS

The effect of variety and poultry manure rate on stand count, number of leaves, number of branches and vine length of musk melon during 2018 dry season at Samaru is presented in Table 1. Plots sown to Jino musk melon variety significantly recorded higher values for number of leaves, number of branches and vine length of musk melon than plot sown to Epsilon.

However, application of poultry manure at the rate of 6 t ha^{-1} or 3 t ha^{-1} significantly recorded higher value for all the growth parameters. Though statistically at par with poultry manure rate at 1 t ha^{-1} on stand count and number of branches respectively. Whereas the control recorded the least value for all the growth parameters measured.

Discussions

Effect of Variety on Growth of Muskmelon

At the termination of the experiment plots grown to Jino significantly produced the highest number of leaves and longest Vine length than Epsilon muskmelon variety. The reason for variation on their growth indices could be due to the fact that Jino Muskmelon variety attained physiological maturity earlier than Epsilon.

Also due to the genetical make up of Jino variety it has wider leaves and longer vines for intercepting adequate solar radiation for more assimilate production which eventually translates to better growth and yield of the crop than variety Epsilon.

This is in line with the findings of Majambu *et al.,* (1996); Ibrahim *et al.,* (2000); and Sajjan *et al*., (2002). Who reported that genetic constitution of crops varieties, influence their growth characters. Likewise, in a research work conducted by Suleiman *et al.* (2015) who reported that CHANDA Variety Recorded the highest Vine Length of watermelon than CRIMSON SWEET and ORANAISE.

Effect of Poultry Manure Rate on Growth of Muskmelon

Organic manure has over the year been used as substitute to mineral fertilizer. They have protein to supply the required nutrient (N, P and K) improve soil structure, increase microbial

population and maintain the quality population and maintain the quality of produce (Suresh *et al.,* 2004; Sanwal *et al.,* 2007; Adeleye *et al.,* 2010).
Application rate of poultry at 3 or 6 t ha^{-1} were at maximum for all the growth characters (stand count, number of leaves, number of branches and vine length) used while the control recorded the lowest value for the growth characters.

The reason for this variation could be due to the fact that organic manure releases the nutrient gradually and it is sustainable throughout the production period and beyond. Thereby, improving soil structure for better moisture retention capacity and maintenances of fertility status of the soils.

Likewise, the crop was cultivated under irrigation so leaching of the essential nutrient from one plot to another is minimized. Hence the crop utilized the available nutrient to its potential.

This is in according to the findings of Tennakoon *et al.,* (1995) who reported that organic waste not only as a service of plant nutrients but also in restoring soil fertility and soil quality, thereby improving the chemical, physical and biological properties of soil.

Conclusion

From the result obtained it can be concluded that JINO muskmelon variety and application of poultry manure at 3 t ha^{-1} produced the best growth characters of muskmelon in Samaru.

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Table 1: Effect of Variety and Poultry Manure Rate on stand count and number Of leaves, number of branches and vine length of musk melon during 2018 dry season at Samaru**.**

Treatments	**Stand count**	**Number of leaves**	**Number of branches**	**Vine length (cm)**
Variety (V)				
Jino	10416	36.783a	28.058b	53.467a
Epsilon	10.750	27.933b	35.117a	41.125b
SE±	0.6373	2.2740	2.1813	2.4427
Poultry Manure Rate (P)				
0 t ha^{-1}	8.667b	24.233b	25.250b	36.150c
1tha^{-1}	10.333ab	26.367b	33.933ab	44.383bc
3t ha^{-1}	10.667ab	37.900a	36.933a	56.550a
6t ha^{-1}	12.667a	40.933a	30.233ab	52.100ab
SE±	0.9013	3.2159	3.0849	3.4545

Means followed by the same letter (s) within the treatment group are not significantly different using D. M.R.T at 5% level of probability.