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RESPONSE OF OKRA (ABELMOSCHUS ESCULENTUS L.) TO DIFFERENT ORGANIC MANURES: CARABAO VS. CHICKEN MANURE

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ABSTRACT

This research examined the effects of chicken and carabao manure on the growth of Okra (Abelmoschus esculentus) and its yield. Through the experimental research design, it combined quantitative growth data with qualitative observations of fresh soil and healthy plants. Over a long period of observation, the variables of plant height, leaf production, and fruiting cycles were used in the data analysis. At the beginning, the chicken manure treatment plant height and fruiting outran all the other treatments without a doubt. That is largely why chicken manure is rich in nitrogen, phosphorus, potassium and that decomposes quickly. Qualitative data evidenced that at early stages, chicken manure was more conducive to the development of soil microbiology and the leaf production than the other treatments. However, carabao manure, due to nutrients released slowly, resulted in more fruit production at the later stages. But the statistical analysis showed p, values were higher than the significance level; therefore, the final growth parameters among these two treatments and the control group were not statistically significantly different. Considering the various nutrient release patterns and effects of the two manure types, the paper recommended the use of chicken manure for fast, growing, short, season crops.

Keywords: Chicken Manure, Carabao Okra (Abelmoschus Esculentus L.), Organic Manures

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INTRODUCTION

Okra was one of the crops that farmers planted to earn income and make a living. However, there were challenges in growing it, so it was important to ensure the effective growth of the plant. Carabao and chicken manure fertilizers were used to determine which was easier and more effective method for growing okra with sufficient nutrients. One crop that farmers grew to generate revenue and support themselves was okra but growing it was difficult; therefore, it was crucial to make sure the plant grew well. To find out which was the simpler and most efficient way to grow okra with enough nutrients, fertilizer made from carabao manure was used. The studies found that carabao and chicken manure can be used in a wide variety of ways as sustainable agricultural resources. Carabao manure is a very effective fertilizer and soil conditioner that is capable of making eco, friendly garden pots (Bernardo et al., 2020; Sungahed et al., 2020) and when it is combined with rabbit manure it results in an increased production of biogas (Alaku et al., 2024). The studies demonstrate that the application of these materials results in the drastic elevation of the yields of mungbean, cauliflower, and okra, and besides, it has been recognized that organic applications not only improve soil microbial diversity but also reduce the use of chemicals (Adriano et al., 2025; Tuan et al., 2023; Siervo et al.). Similarly, use of chicken manure results in an increased biomass of corn and pak choy (Indriani et al., 2023; Tomasz et al., 2022) and it has also been considered a good source of bioenergy (Kardas et al., 2022; Jurgutis et al., 2020). Based on the above knowledge, viral diseases and pests which are largely responsible for the production problems of crops such as okra constitute the major challenge that still remains to be addressed (Lahuf et al., 2025; Slepetiene et al., 2020). The objective of this paper is to study the response of carabao manure, chicken manure, and non-manure treatments on the growth and yield of okra (Abelmoschus esculentus L. Moench) in order to identify the best production method for okra. The results of the research would provide farmers and agricultural communities with accurate information on sustainable crop management options without over, reliance on commercial fertilizers. Through improving yield quality and enhancing soil health, the current study might offer a great help to farmers in making a decision as to what type of manure was the best for okra production.

RESEARCH PROBLEM

The researchers aimed to determine the effectiveness of carabao manure and chicken manure on the production of okra. Specifically, this study sought answers to the following questions:

OBJECTIVES

1. How may the effectiveness of the carabao manure, chicken manure on the okra growth production be described in terms of: height; number of leaves: number of flowers; and number of fruits?

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2. Is there a significant difference between the carabao manure and chicken manure and the okra growth production?
3. To what extent does the cumulative effect of orderly land preparation, strict field maintenance, and continual performance monitoring through data analysis contribute to the overall development and yield of crops from the initial stage to maturity

HYPOTHESIS

There is no significant difference between the carabao vs. chicken manure and the okra growth production according to height, number of leaves, number of flowers, and number of fruits.

MATERIAL AND METHODS

The study was carried out from June 2025 to September 2025 at San Pedro 2, Magalang, Pampanga. A variety of tools were used in the Randomized Block Design (RBD) experimental setup, which included the following treatments: T0 – no organic fertilizer, T1 – carabao manure, and T2 – chicken manure. The materials necessary for the study included okra (*Abelmoschus esculentus*), chicken manure, carabao manure, garden soil, and a water supply. Fertilizer applications involved both carabao manure and chicken manure. The carabao and chicken manure were prepared using tools such as a hoe, rake, spade, watering can, measuring tape, and weighing scale. The composted carabao and chicken manure were produced using straw and wood shavings as components. Fertilizer was applied at 7, 14, and 20 days after transplanting (DAT) by pouring it around the base of the plants.

Three treatments were used in the trial, which employed a Randomized Block Design (RBD) with six replications. These treatments included: T0 – no organic fertilizer, T1 – 7 t/ha of carabao manure organic fertilizer, T2 – chicken manure organic fertilizer, and T3 – 21 t/ha of coconut husk organic fertilizer. When the plants were harvested, the following parameters were measured: leaf area (LA), leaf area index (LAI), net assimilation rate (NAR), crop growth rate (CGR), and fruit weight per plot. Each plot contained 20 plants, with a single plot measuring 100 cm × 500 cm. The spacing between rows and within rows was 50 cm × 40 cm.

STATISTICAL TREATMENT AND DATA ANALYSIS

This research employed a mixed, methods strategy to assess the impact of carabao manure, chicken manure, and a control group on the growth and yield of okra. In quantitative terms, plant height and the number of leaves, flowers, and fruits were documented and then analyzed using Microsoft Excel. Although means of each treatment were calculated, a One, way ANOVA at a 0. 05 significance level showed that all P, values were greater than the level, thus no statistically significant difference between the groups was

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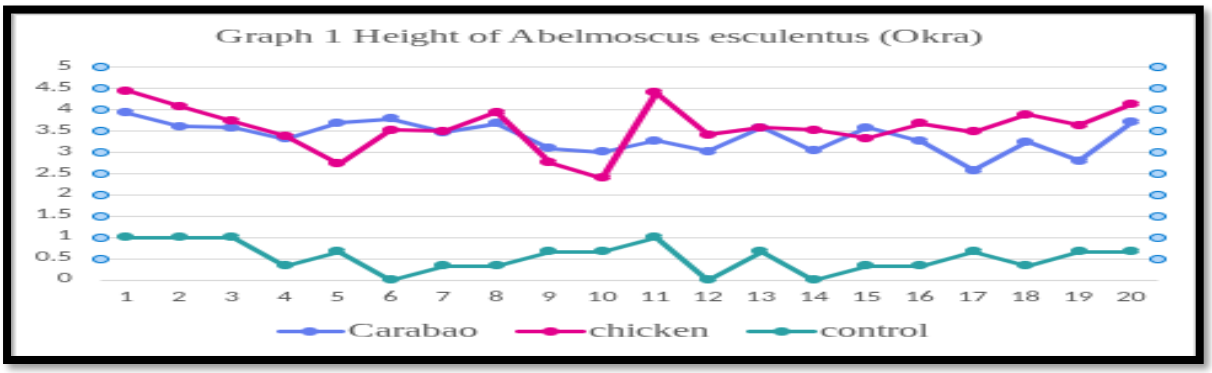
found. Qualitatively, the team of researchers made field observations throughout the entire stages of land preparation, planting, and harvesting. Through the use of Braun and Clarkes (2006) thematic analysis, the observation notes were turned into codes for behaviors that were repeated such as clearing, monitoring, and measuring. These codes were further broken down into separate themes that offered a detailed account of the farming process which was used as the basis for the statistics presented.

RESULTS



The graph depicts how the leaves of an okra plant grown with chicken manure, carabao manure and the control group as fertilizers developed over 45 days, comparing Chicken manure, Carabao manure, and a Control group. In general, the Chicken manure treatment produced a significantly taller plant, keeping the value around 3. 5, 4. 5cm for the whole period. Most probably, this is because of its rich nutrient content, which includes higher amounts of nitrogen, phosphorus, and potassium, all of which are very important for the plant growth. In addition, chicken manure breaks down quicker, thus the nutrients are released faster to the plants and it also brings beneficial microbes into the soil, which further help the nutrient cycling and the soil structure. The Carabao manure does not has a very good nutrient ratio and its decomposition is slower, therefore, it releases fewer nutrients that are available for a short time. The control group, which had no manure, showed the least growth, thus it can be inferred from this that manure is very important as a nutrient source (Semenov et al., 2023). It was confirmed by these findings that the utilization of chicken manure treatment has the greatest impact on promoting the growth of okra plants possibly because of its high nutrient content and rapid decomposition rate, which made the nutrients more accessible for the plants' consumption. Meanwhile, the carabao manure seemed to break down more slowly, thus providing fewer nutrients that were readily available.

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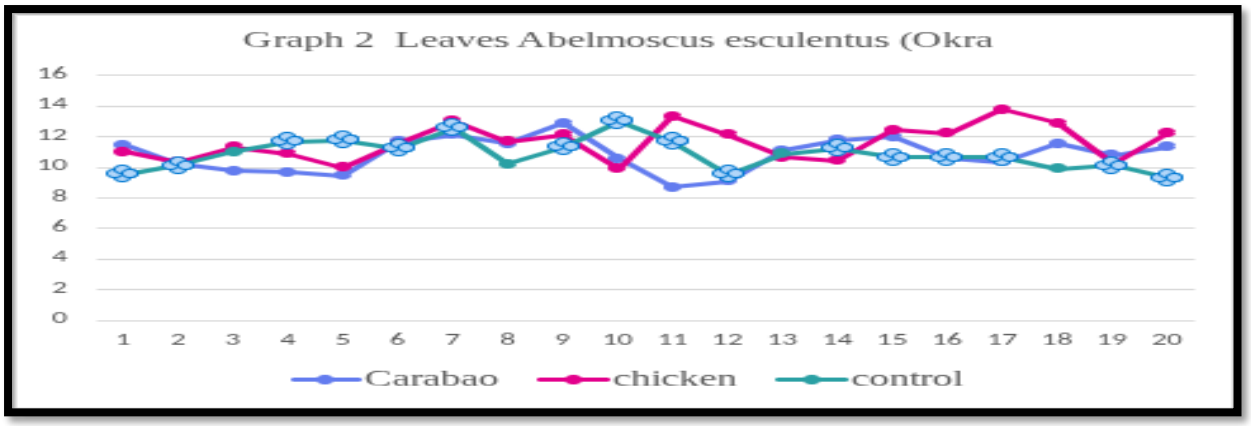
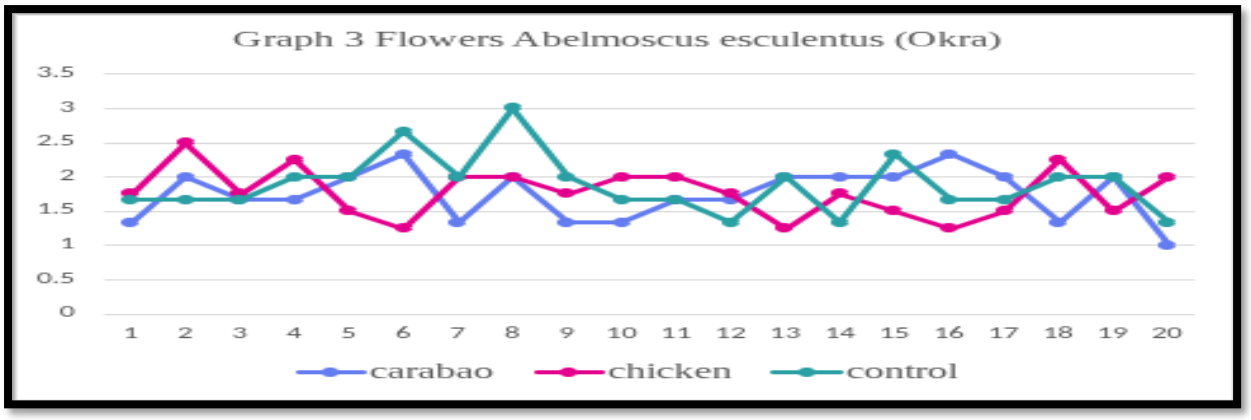


During a 45, day observation period, this graph displays the quantitative data of the number of leaves an okra plant has produced when treated with chicken manure, Carabao manure, and Control. Chicken manure treatment would normally result in more leaves since it contains a high amount of nitrogen which is very important for leaf growth and also serves as a good source of other nutrients. Another advantage is that it breaks down quickly, readily releasing nutrients and improving soil microbiome. On the other hand, Carabao manure could have less nitrogen and probably a slower rate of breaking down. The control group which is not given any manure thus has the least number of leaves thereby emphasizing the role of manure. Therefore, the reason for the effectiveness of chicken manure in significantly promoting leaf production has been demonstrated to be the high nitrogen content together with a good balance of other nutrients and quick decomposition, as well as positive effect on the soil when compared to Carabao manure or control group (Adekiya et al., 2020).



This graph depicts the daily flower count of an okra plant, charting its growth pattern under the influence of chicken and carabao manure, and control group across 45 days. The number of flowers went up and down in all groups, and the control group sometimes had higher counts. This suggests that flower production was not only affected by manure but also by other things like weather, plant growth stage, or how the plant used its energy. The chicken and carabao manure groups also showed changes in flower

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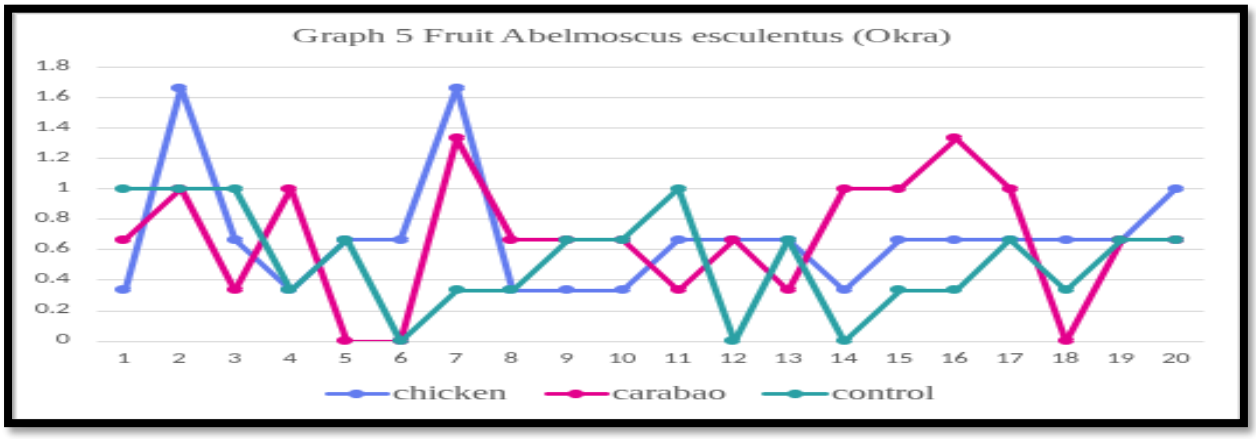
numbers, meaning the nutrients in each manure may have had some effect, but neither was always better. Overall, the changing patterns suggest that okra flower production depended on a mix of factors manure type, environment, and plant growth stage rather than just one main cause (Khandaker & Jusoh, 2017).



The graph visually illustrates the step, by, step increment of the number of leaves on an okra plant which had the chicken manure, carabao manure treatments and the control group after 45 days. The carabao manure group eventually produced more fruits, whereas the chicken manure group produced more fruits earlier. This means that each type of manure is most effective at different phases of the plant's growth, probably because they release nutrients at different times and have different nutrient compositions. The control group always had the lowest yield, thus showing that to have a good fruit production, the use of manure is necessary (Adekiya et al., 2020).

Table 1. Significant difference between the carabao manure and chicken manure and the okra growth production.

	P-Value			
Treatment	**Height**	**Leaves**	**Flowers**	**Fruit**
Carabao vs chicken	0.77	0.54	0.29	0.76
Carabao vs Control group	0.10	0.54	0.08	0.62
Chicken vs control group	0.23	0.88	0.39	0.85

This study evaluated the effect of carabao and chicken manure on the growth of okra by measuring height, number of leaves, number of flowers and fruit yield, with p, values being used to decide if the differences were statistically significant. P, values less than 0. 05 usually suggest a significant difference. However, the findings revealed that there was no significant difference in okra growth between carabao and chicken manure as all p, values exceeded 0. 05. Likewise, no considerable difference was observed when carabao manure was compared to the control group, or chicken manure to the control group.

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Description on cumulative effect of orderly land preparation, strict field maintenance, and continual performance monitoring.

Theme 1: Land and crop preparation

The first step in land preparation for cultivation involves Clearing and removal of stone that gets rid of debris so that a workable area is created. This is quickly followed by Plotting and Measuring setting the exact boundaries and layout of the planting beds. After the plots have been delineated, the major soil health steps are taken, specifically Fertilizer application to supply the soil with essential nutrients, and the vital Removed the weeds step, which kills the competitors for those nutrients and sunlight. The grain of all these preparatory actions is Planting the last step where the seeds or seedlings are put into the soil that has been thoroughly prepared, thus initiating the crop's growth

Theme 2: Field Maintenance and input

Field maintenance essentially consists of regular monitoring. First of all, measuring physical parameters and growth observation which are basically very necessary and they also form an indispensable part of field maintenance. These changes in the plant rely to the nature and quantity of chemicals that are getting into the environment and also the climatic conditions. They are therefore very crucial for determining the health and development stage of the crop.

Theme 3: Monitoring and crop management

Efficient crop management starts with observation and data collection on a regular basis. It comprises Growth observation which is quite frequently assisted by the recording of detailed measurements such as Measuring and Measure for the precise monitoring of the size and development of the crop. The resulting information goes directly to Care and Maintaining Crops that is basically a broad activity which among other things consists of using the plants to pests and diseases. A major part of a maintenance is giving in a very focused way the required nutrients, particularly Fertilizer Application to get the plant through the critical phases. The final product which can be harvested, fruiting and harvesting is the long-term result of the diligent management cycle.

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