
**FACULTY OF AGRICULTURE AND ANIMAL SCIENCES
DEPARTEMENT OF CROP PRODUCTION AND MANAGEMENT**

**EFFICACY OF AFRICAN ORGANIC MANURE ON GROWTH AND
YIELD OF COMMON BEANS UNDER FIELD CONDITIONS**

BY

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**A RESEARCH REPORT SUBMITTED TO THE FACULTY OF
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OF REQUIREMENTS FOR THE AWARD OF A DEGREE IN BACHELOR
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JUNE, 2023

DECLARATION

I, Aguti Judith do hereby declare that this research report is my original work and has not been submitted to any other University or any other tertiary institution for the award of any academic qualification.

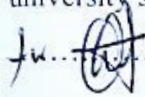
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APPROVAL

This research report has been submitted for examination consideration with my approval as the university supervisor.



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DEDICATION

With great pleasure, I dedicate this special project report to my mother Kodet Margret, my sister Alungat Suzan, my sister Itiamat Betty and my brother Ajoko Charles for their love and care during my studies. In a pecial way, I dedicate this book to FAWE-U for the financial support offered to me during my studies may almighty God bless you abundantly.

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LIST OF ACRONYMS

NaSARRI.....	National Semi Arid Resources Research Institute
FAWE-U.....	Forum for African Women Educationalists Uganda
NPK.....	Nitrogen, Phosphorus and Potassium
AOM.....	African Organic Manure
DAP.....	Di-Ammonium Phosphate
ANOVA.....	Analysis of Variance
LSD.....	least significant different
VC.....	Vermicompost
TC.....	Traditional Compost

ABSTRACT

Common bean (*Phaseolus vulgaris*), is an important legume staple crop in Uganda yet its yield has been decreasing with average production of 0.25 tons (250kg) per acre despite its potential yield of 700 to 1500kg/ acre. This is attributed to climate change, drought, pests, diseases and declining soil fertility. The inorganic fertilizers have been used to manage the declining soil fertility, however this inorganic fertilizers are not readily available and are expensive for small resourced farmers. The use of foliar fertilizers have increasingly become important in addressing low nutrient supply and enhancement of productivity of vegetables. African organic manure could be one of the solution to increase yield of beans. However little scientific information is known on the effect of African organic manure on growth and yield of beans. This study aimed to investigate the effects of African organic manure and DAP applied at planting on the growth and yield of beans. A randomized complete block design was used with four replicates and five treatments including T1- Farmers practice- DAP alone, T2- Check (nothing applied at all), T3- 50mls/20 liters of water +DAP, T4- 75mls/20litres of water +DAP and T5-100mls/20litres of water +DAP. The results demonstrated significant positive effects of African organic manure on the growth and yield of beans. Plants treated with the organic manure exhibited increased plant height, number of leaves, leaf area, and reduced days of 50% flowering compared to the control group. Moreover, the application of African organic manure positively influenced the yield of beans that's number of pods, number of seeds and seed weight. All the treatments of the organic manure demonstrated superior bean yield compared to the control. This study highlights the potential of African organic manure as a beneficial resource for bean cultivation. Its nutrient composition, specifically nitrogen, phosphorus, potassium, and calcium, likely contributed to the growth and yield of beans. Integrating African organic manure into agricultural practices can lead to increased bean production, improved soil fertility, and reduced reliance on synthetic fertilizers. From the observation of the study, I recommend 100mls of AOM should be adopted by farmers for bean production because it gave the highest yield of bean followed by 75mls of AOM. Further research is recommended to explore optimal application rates on different crops.

CHAPTER ONE

1.0. INTRODUCTION

1.1 Background of the study

Phaseolus vulgaris L., (common bean) is the major legume crop having 85% share in worldwide bean production. Common beans have an annual global yield of over 27 million tons cultivated on 29 million ha worldwide, feeding more than 300 million people linked to agricultural economies across the globe (Karavidas *et al.*, 2023). Common bean, is an important legume staple crop in Uganda. National annual consumption of beans is estimated at about 58 kg per capita. In 2016, the area planted under beans was 683,120 Ha with a total production of 1,104,770MT. Volume of beans exported increased from 157,152 MT (2015) to 200,000MT (2017). Uganda is among the top bean producers in SSA and a major net sellers of common bean in the East African regional markets (Survey, 2013).

Uganda is Africa's second largest bean producer after Tanzania (1,008,410 tons produced on 670,737 ha in 2016), and production has been increasing. The country is a net exporter of dried beans to interregional markets, notably South Sudan, Kenya and the Democratic Republic of Congo. Bean exports increased from 157,152tonnes in 2015 to 200,000 tons in 2017 (CASA, 2020).

Common bean (*Phaseolus vulgaris* L.) is globally important leguminous vegetables that has been used for several centuries as food for humans and feed for animals. (Trott *et al.*, 2016). Beans are important source of protein and micro nutrients mostly B vitamins, iron, calcium and zinc(Valdez-Pérez *et al.*, 2011) hence offering a good source of balance nutrition for rural households especially the poor who can barely afford animal protein. Beans can be consumed as mature fresh grain or dry beans and its leaves are used to complement carbohydrate diets. In addition, dry beans are important source of income especially for women and youth (CASA, 2020).

Despite the importance of beans several challenges impede the production of small holder's bean farmers and this limit their incomes. The main constraints are low productivity (especially lack of foundation seed), high post-harvest losses, inadequate access to commercial markets, climate change, drought, pests, diseases and declining soil fertility are the main production constraints of beans in Uganda. The above production constraints can be circumvented by practicing good agronomic practices, organic and inorganic fertilizers (H. H. Alhroust *et al.*, 2016). The use of foliar fertilizers have increasingly become important in addressing soil infertility and enhancement of productivity of vegetables(Norrving, 2007). African organic manure could be one of the potential

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