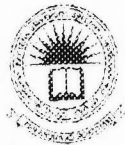


**EFFECT OF DIFFERENT SOURCE OF ANIMAL MANURE
COMPOST MIX ON THE GROWTH OF OKRA
(*Abelmoschus esculentus*)**



BY

THANEKA SANTHIRAMOHAN



FTC 41

Project Report
Library - EUSL

**FACULTY OF TECHNOLOGY
EASTERN UNIVERSITY
SRI LANKA**

2021

ABSTRACT

This research study was conducted to investigate the effect of different animal manure-compost mixtures on the growth of the okra (*Abelmoschus esculentus*) plant. The compost was prepared by using banana leaves, paddy straw, and gliricidia leaves (*Gliricidia sepium*), and compost was mixed with different animal manures in a 1:1 ratio. The animal manure-compost mixture was named as type-1 (compost + cattle manure), type-2 (compost + goat manure) and type-3 (compost + poultry manure). These three different animal manures- compost mixtures were incorporated with topsoil at two different rates such as 25% and 50% to prepare potting media. The study comprises seven treatments including a control. Physiochemical parameters such as pH, moisture, and nitrogen contents of the potting media were measured at Biosystems Technology Laboratory, Faculty of Technology, Eastern University Sri Lanka. Okra seeds were planted in prepared potting media in polythene bags and all other agronomy practices were done as recommended by the Department of Agriculture, Sri Lanka. Growth parameters such as plant height, number of leaves per plant, and stem diameter were measured during the 2nd, 4th and 6th weeks after planting. Data on physiochemical properties of potting media and growth parameters were statistically analyzed using minitab17. It was found that the physiochemical properties of potting media were varied significantly among treatments. The results show that the different animal manure-compost mixture has a significant ($P < 0.05$) effect on the growth of okra, suggesting that incorporation of manure-compost mixture improves soil nutrition and consequently enhances the growth of the plant and thus the application of chemical fertilizer could be avoided.

Keywords: Okra, poultry manure, compost mix, plant growth, physiochemical properties.

TABLE OF CONTENT

Content	Page No
ABSTRACT.....	i
ACKNOWLEDGEMENT	ii
TABLE OF CONTENT	iii
LIST OF TABLES	vi
LIST OF FIGURES	vii
CHAPTER 01	1
INTRODUCTION.....	1
CHAPTER 02	5
2.0 REVIEW OF LITERATURE.....	5
2.1 Okra	5
2.1.1 Recommended varieties in Sri Lanka	6
2.1.2 Nutritional composition of okra.....	7
2.2.3 Health benefits of Okra	7
2.1.4 Growth of okra with chemical fertilizer.....	8
2.2.5 Growth of okra with organic compost	9
2.2 Organic Compost	10
2.2.1 Advantages of organic compost.....	10
2.2.2 Composting process	11
2.2.3 Composting in Sri Lanka	13
2.2.4 Government initiative to promote composting in Sri Lanka.....	14
2.2.5 Manure	14
CHAPTER 03	17
3.0 METHODOLOGY.....	17
3.1 Experimental Site.....	17
3.2 Collection of Raw Materials	17
3.3 Preparation of Compost	18
3.3.1 Preparation of 3 types of animal manure compost mix	18
3.4 Treatments	19

3.4.1 Treatment code and description	19
3.4.2 Experimental Design	19
3.5 Preparation of Pots.....	20
3.6 Agronomic Practices.....	20
3.6.1 Collection of Seeds	20
3.6.2 Seed treatment.....	20
3.6.3 Irrigation	21
3.6.4 Weeding.....	21
3.6.5 Plant Protection	21
3.7 Measurements	21
3.7.1 Growth Parameters.....	21
3.7.1.1 Plant Height (cm)	21
3.7.1.2 Number of Leaves	21
3.7.1.3 Stem Diameter (cm)	21
3.7.2 Physiochemical parameters.....	22
3.7.2.1 pH	22
3.7.2.2 Moisture Content.....	22
3.7.2.3 Nitrogen Content	23
3.8 Statistical Analysis.....	23
CHAPTER 04	24
4.0 RESULTS AND DISCUSSION	24
4.1 Plant Height	24
4.2 Number of Leaves/ Plant	25
4.3 Stem Diameter	27
4.4 pH of the Growth Media.....	28
4.5 Moisture Content of the Growth Media.....	29
4.6 Nitrogen Content of the Growth Media.....	30

CHAPTER 5	32
CONCLUSION	32
CHAPTER 6	33
REFERENCE	33

LIST OF TABLES

Content	Page No
Table 2.2.5: The nutrient content of cattle manure.....	15
Table 2.2.6: The nutrient content of goat manure.....	16
Table 2.2.7: The nutrient content of poultry manure.....	16
Table 3.4.1: Treatment code and description.....	19
Table 3.4.2: Layout of the experimental design.....	20
Table 4.1: Plant height of okra at 2 nd WAP, 4 th WAP, and 6 th WAP in different animal manure compost mix.....	24
Table 4.2: Number of leaves/plant in 2 nd WAP, 4 th WAP, and 6 th WAP in different animal manure compost mix.....	26
Table 4.3: Stem diameter of the plant in 2 nd WAP, 4 th WAP, and 6 th WAP in different animal manure compost mix.....	28
Table 4.4: pH of the potting media at 2 nd WAP and 4 th WAP.....	29
Table 4.6: Moisture content of the potting media at 2 nd WAP and 4 th WAP.....	30
Table 4.6: Nitrogen content of the media at 4 th WAP.....	31

LIST OF FIGURES

Content	Page No
Figure 3.2.1: Sliced banana leaves.....	16
Figure 3.2.2: Sliced gliricidia leaves.....	17
Figure 3.3: Compost heap preparation.....	18
Figure 3.5: Polythene bag.....	20
Figure 3.7.2.1: Measuring the pH of the sample.....	22
Figure 3.7.2.3: Titrated sample.....	23