

**EFFECT OF ORGANIC LIQUID MIXTURE ON GROWTH AND
DEVELOPMENT OF GREENGRAM (*Vigna radiata*)**



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ABSTRACT

Organic fertilizers are environmentally friendly and less costly. Organic liquid mixture (Jiwamritha) is an effective microbial culture, which contain huge amount of beneficial micro organisms. Jiwamritha can be applied to soil as bio inoculant to enhance the microbial activities and improve the availability of nutrients towards the roots of the plants. This experiment was conducted with three different frequencies of Jiwamritha applications with synthetic fertilizer as a control to investigate the best frequency of Jiwamritha application on growth and development of greengram (cv. MI-5) and comparison of greengram's performance in Jiwamritha and synthetic fertilizer. This experiment was carried out in plastic pots from November to December 2010 for four weeks in net house at the Crop farm, Eastern university of Sri Lanka. The soil was mixed with compost at the ratio of 2:1 and used as potting media. Five treatments with six replicates were arranged in a completely randomized design with the spacing of 30cm × 10cm. Treatments are T₁- Once in one week of Jiwamritha application, T₂- Once in two weeks of Jiwamritha application, T₃- Once in Three weeks of Jiwamritha application, T₄- Control, T₅- Synthetic fertilizer application based on Department of Agriculture. Liquid organic mixture was prepared (ingredients for one acre) by mixing 10 L urine of indigenous cow, 200 L of fresh water, 10 kg of fresh dung of indigenous cow, 2 kg of pulses flour and 2 kg of jaggery in a plastic bucket and allowed to ferment 48 hours.

The parameters measured during the experiment were number of effective nodules, number of 1st order lateral roots, length of 1st order lateral roots, main root length, root biomass, leaf area, shoot biomass, plant height and leaves number. The data were

subjected statistical analysis. The results showed that there were significant differences ($p < 0.05$) in number of effective nodules, number of 1st order lateral roots, length of 1st order lateral roots, main root length, root biomass, leaf area, shoot biomass, plant height at 2nd and 3rd weeks after planting and also number of leaves at 4th week after planting. There were no significant differences in height at one week after Jiwamritha application and number of leaves at one week and two weeks after Jiwamritha application.

The results from this study demonstrated that the growth of green gram was improved by the once in three weeks application of Jiwamritha than other treatments. Once in one week and once in two weeks Jiwamritha application produced approximately equal in values for synthetic fertilizer application. Because, microbial activity for the higher rate of growth and development was attained in once in three weeks application of Jiwamritha, than other treatments. From this study, it could be stated that, Jiwamritha application at once in three weeks interval can be adapted by the farmers for greengram cultivation instead of synthetic fertilizer as it is less harmful to the environment and less costly.

TABLE OF CONTENTS

ABSTRACT.....	i
ACKNOWLEDGEMENT.....	iii
TABLE OF CONTENTS	iv
LIST OF TABLES.....	ix
LIST OF FIGURES.....	x
CHAPTER 01	
1.0 Introduction.....	01
1.1 Objective.....	05
CHAPTER 02	
2.0 Literature review.....	06
2.1 Greengram.....	06
2.1.1 Introduction.....	06
2.1.2 Origin and distribution.....	06
2.1.3 Area of cultivation in Sri Lanka.....	07
2.1.4 Extend and production of Greengram in Sri Lanka.....	07
2.1.5 Botanical description of Greengram.....	08

2.1.6 Importance of Greengram	09
2.1.7 Climatic requirements of Greengram.....	09
2.2 Organic fertilizers	10
2.3 Natural Farming.....	11
2.3.1 Jiwamritha.....	11
2.3.1.1 Nutritional composition of cow dung	13
2.3.1.2 Nutrients present in cow urine	13
2.3.1.3 Principle microbes in Jiwamritha.....	14
2.3.1.3.1 Nitrogen fixers	14
2.3.1.3.2 Phosporus solubilizing bacteria	15
2.3.1.3.3 Anaerobic bacteria	15
2.3.1.3.4 Decomposing fungus	15
2.3.1.3.5 Mycorrhizal fungi	16
2.3.1.3.6 Protozoa	17
2.3.1.3.7 Other microbes.....	17
2.4 Role of Jiwamritha in Natural farming	17
2.5 Soil Microbes in Agriculture	18

2.6 Microbial interaction in Rhizosphere.....	18
2.7 Loop structure of the bacterial energy channel in the rhizosphere	19
2.8 Protozoa and nematodes on plant growth	20
 CHAPTER 03	
3.0 Materials and method.....	22
3.1 Site description.....	22
3.2 Pot preparation	22
3.3 Preparation of Bijamritha.....	23
3.4 Seed treatments	23
3.5 Seed germination	23
3.6 Preparation of Jiwamritha	24
3.7 Experimental design.....	25
3.7.1 Treatments.....	26
3.8 Experimental Layout.....	26
3.9 Agronomic practices	26
3.9.1 Planting	26
3.9.2 Irrigation	26

3.9.3 Fertilizer application	27
3.9.3.1 Jiwamritha application for T ₁ , T ₂ , T ₃	27
3.9.3.2 Fertilizer Recommendation by DOA for T ₃	27
3.9.4 Thinning out.....	27
3.9.5 Weeding	27
3.9.6 Pest and disease management	27
3.10 Agronomic parameters.....	28
3.10.1 Plant height	28
3.10.2 Leaf numbers	28
3.10.3 Leaf area.....	28
3.10.4 Shoot bio mass	28
3.10.5 Number of 1 st order lateral roots.....	28
3.10.6 Number of effective nodules.....	29
3.10.7 Length of main root	29
3.10.8 Length of 1 st order lateral root.....	29
3.10.9 Root bio mass.....	29
3.11 Statistical analysis of data.....	29

CHAPTER 04

4.0 Results and discussion	30
4.1 Plant height	30
4.2 Number of leaves per plant	32
4.3 Leaf area.....	34
4.4 Number of effective nodules per plant.....	36
4.5 Number of 1 st order lateral roots per plant.....	38
4.6 Length of 1 st order Lateral root.....	40
4.7 Main root length.....	42
4.9 Root biomass.....	44
4.10 Shoot biomass	46

CHAPTER 05

5.0 Conclusions.....	50
Reference	52