

**EFFECT OF ORGANIC NUTRIENT SOLUTION ON
GROWTH AND YIELD OF GREEN BEAN**

(Phaseolus vulgaris L.)



BY

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ABSTRACT

Liquid Organic Fertilizer (LOF) is one of the important methods of supplying supplemental doses of minor and major nutrients, plant hormones, stimulants, and other beneficial substances for not only soil cultivation but also in Hydroponics. The two experiments were conducted to study the effect of organic nutrient solutions on growth and yield of Green Bean (*Phaseolus vulgaris L.*), variety Sri Lankan capri in field and hydroponic.

The field experiment was laid out in a Randomized Complete Block Design (RCBD) with seven treatments and four replicates. The treatments were recommended inorganic fertilizer application (T1), 5t/ ha Poultry Manure with 0.5% vermiwash (T2), 1% vermiwash (T3), 1.5% vermiwash (T4), 0.5% vegetable waste solution (T5), 1% vegetable waste solution (T6) and 1.5% vegetable waste solution (T7). Vermiwash and vegetable waste solution were applied at once in two weeks and the performance was recorded at 2nd, 4th, 6th 8th weeks after planting (WAP). The hydroponic experiment was laid out in a Completely Randomized Design (CRD) with seven treatments having twenty replicates. The treatments were recommended inorganic fertilizer application (T1), ½ doses of Albert's solution with 0.5% vermiwash (T2), 1% vermiwash (T3), 1.5% vermiwash (T4), 0.5% vegetable waste solution (T5), 1% vegetable waste solution (T6), 1.5% vegetable waste solution (T7) was used as media.

The field study showed that number of branches and leaves per plant, plant height, number of flowers per plant, dry weight of leaves, stem and roots were significantly ($P < 0.05$) varied at 8th week after planting and it was high in T2. Further, application of

LOF significantly influenced ($P < 0.01$) yield at 1st, 2nd and 3rd picking and it was high in T2. Total Yield was achieved in T2 which was 1.37 % higher than T1. This study suggests that application of 5t/ha poultry manure with 0.5% vermiwash (T2) would be more suitable for cultivation of green bean in red podzolic soil.

Further, in hydroponics plant height, number of leaves and branches per plant, leaf area, dry weight of leaves and length of pods were significantly ($P < 0.05$) varied at 6th week after planting and it was high in T5. However, number of pods per plant, girth of pods, fresh and dry weight of pods and yield were high in T2 at 3rd picking while yield at 1st and 2nd picking were high in T5. This result suggests that ½ doses of Albert's solution with 0.5% vegetable waste solution (T5) and ½ doses of Albert's solution with 0.5% vermiwash (T2) would be the potential source of plant nutrients for sustainable crop production of bean in Non-circulating Hydroponic system.

Key words: Liquid organic fertilizer, Non-circulating Hydroponic, vermiwash, vegetable waste solution, green bean

TABLE OF CONTENT

ABSTRACT.....	I
ACKNOWLEDGEMENT	III
TABLE OF CONTENTS.....	IV
LIST OF TABLES.....	IX
LIST OF FIGURES	XII
LIST OF ABBREVIATIONS	XII
CHAPTER 01	1
Introduction	1
CHAPTER 02	6
2.0. REVIEW OF LITERATURE.....	6
2.1 Organic fertilizer.....	6
2.2 Liquid Organic Fertilizer (LOF).....	6
2.2.1. Vermiwash Liquid Fertilizer.....	6
2.2.2 Vegetable waste solution.....	7
2.3 Green bean (<i>Phaseolus vulgaris</i>).....	7
2.3.1 Importance of green beans	7
2.4 Hydroponic Techniques.....	9
2.4.1 Nutrient Solution	9

2.4.2 Nutrient solution Managements.....	9
2.4.3 Advantages of Hydroponic	10
2.4.4 Organic Hydroponic.....	11
2.4.5 Types of Hydroponic	11
2.4.6 Non-circulating Hydroponic system	12
2.4.6.1 Salient Features of Non-circulating / Kratky Hydroponic system (Maurya et al., 2017).....	13
2.4.7 Hydroponic for crop production	13
CHAPTER 03	14
3.0 Materials and Methodology.....	14
3.1 Location and site.....	14
3.2 Climate.....	14
3.3 Variety	14
3.4 Seed Germination	14
3.5 Liquid Organic Fertilizers.....	15
3.5.1 Preparation of vermiwash	15
3.5.2 Preparation of Vegetable waste solution.....	15
3.6 Experiment 01 - Field trail.....	16
3.6.1 Treatments.....	16
3.6.2 Agronomic Practices	17

3.7 Experiment 02 – Kratky Hydroponic system	17
3.7.1 Treatments.....	18
3.7.2 Kratky Hydroponic Istallation.....	18
3.8 Growth and yield parameters.....	19
3.9 Statistical analysis.....	19
CHAPTER 04	20
4.0 Results and Discussion	20
4.1 Growth & Yield Parameters (Field trail)	20
4.1.1 Plant height	20
4.1.2 Number of branches per plant	21
4.1.3 Number of leaves per plant	22
4.1.4 Leaf Area.....	24
4.1.5 Root length.....	25
4.1.6 Number of total nodules.....	26
4.1.7 Number of flowers per plant	27
4.1.8 Dry weight of leaves, stem, roots.....	28
4.1.9 Number of pods per plant.....	32
4.1.10 Length of pods	33
4.1.11 Girth of pods	35
4.1.12 Fresh and Dry weight of pods	36

4.1.13 Total Yield	39
4.2 Growth & Yield Parameters (Hydroponic culture).....	41
4.2.1 Plant Height.....	41
4.2.2 Number of leaves per plant	42
4.2.3 Number of branches	43
4.2.4 Number of flowers per plant	44
4.2.5 Root Length.....	46
4.2.6 Leaf Area.....	47
4.2.7 Dry weight of leaves, stem, roots.....	48
4.2.8 Number of pods per plant.....	53
4.2.9 Length of pods	54
4.2.10 Girth of pods	55
4.2.11 Fresh and Dry weight of pods	57
4.2.12 Total yield	59
4.3 Comparison of Growth and Yield characteristics of hydroponically grown and soil-grown Green Bean (<i>Phaseolus vulgaris</i>).....	61
4.3.1 Plant height.....	61
4.3.2 Number of branches per plant.....	61
4.3.3 Number of leaves per plant.....	62

4.3.4 Leaf Area.....	62
4.3.5 Root length.....	63
4.3.6 Number of total nodules.....	63
4.3.7 Number of flowers per plant.....	64
4.3.8 Dry weight of leaves, stem and roots.....	64
4.3.9 Number of pods per plant.....	65
4.3.10 Length of pods.....	65
4.3.11 Girth of pods.....	65
4.3.12 Fresh weight of pods.....	66
4.3.13 Dry weight of pods.....	66
4.3.14 Total Yield.....	66
CHAPTER 05.....	68
Conclusion.....	68
Reference.....	70-87

LIST OF TABLES

Table 3.1 Recommended inorganic fertilizer for one plot.....	17
Table 4.1 LOF application on average plant height (cm) of green bean at different weeks.....	21
Table 4.2 LOF application on number of branches of green bean at different weeks ..	22
Table 4.3 LOF application on number of leaves of green bean at different weeks	23
Table 4.4 LOF application on average leaf area of green bean at different weeks.....	24
Table 4.5 LOF application on average root length of green bean at different weeks....	25
Table 4.6 LOF application on number of total nodules of green bean at different weeks	26
Table 4.7 LOF application on number of flowers of green bean at different weeks.....	27
Table 4.8 LOF application on average dry weight of leaves of green bean at different weeks	29
Table 4.9 LOF application on average dry weight of stem of green bean at different weeks	30
Table 4.10 LOF application on average dry weight of roots of green bean at different weeks	31
Table 4.11 LOF application on average number of pods per plant of green bean at different picking.....	32

Table 4.12 LOF application on average length of pods of green bean at different picking	34
Table 4.13 LOF application on average girth of pods per plant of green bean at different picking	35
Table 4.14 LOF application on average fresh weight of pods per plant of green bean at different picking.....	37
Table 4.15 LOF application on average dry weight of pods per plant of green bean at different picking.....	38
Table 4.16 LOF application on Total yield of green bean at different picking	39
Table 4.17 LOF & Albert's solution as Nutrient solution on average plant height of green bean in Hydroponic system at different weeks	40
Table 4.18 LOF & Albert's solution as Nutrient solution on average number of leaves of green bean in Hydroponic system at different weeks	42
Table 4.19 LOF & Albert's solution as Nutrient solution on average number of branches of green bean in Hydroponic system at different weeks	43
Table 4.20 LOF & Albert's solution as Nutrient solution on number of flowers per plant of green bean in Hydroponic system at different weeks	44
Table 4.21 LOF & Albert's solution as Nutrient solution root length of green bean in Hydroponic system at different weeks	45

Table 4.22 LOF & Albert's solution as Nutrient solution on leaf area of green bean in Hydroponic system at different weeks	47
Table 4.23 LOF & Albert's solution as Nutrient solution on average dry weight of leaves of green bean in Hydroponic system at different weeks	48
Table 4.24 LOF & Albert's solution as Nutrient solution on average dry weight of stem of green bean in Hydroponic system at different weeks	49
Table 4.25 LOF & Albert's solution as Nutrient solution on average dry weight of roots of green bean in Hydroponic system at different weeks	50
Table 4.26 LOF & Albert's solution as Nutrient solution on average number of pods per plant of green bean in Hydroponic system at different picking	52
Table 4.27 LOF & Albert's solution as Nutrient solution on average length of pods per plant of green bean in Hydroponic system at different picking	53
Table 4.28 LOF & Albert's solution as Nutrient solution on average girth of pods per plant of green bean in Hydroponic system at different picking	55
Table 4.29 LOF & Albert's solution as Nutrient solution on fresh weight of pods per plant of green bean in Hydroponic system at different picking	56
Table 4.30 LOF & Albert's solution as Nutrient solution on dry weight of pods per plant of green bean in Hydroponic system at different picking	57
Table 4.31 LOF & Albert's solution as Nutrient solution on Total yield of green bean in Hydroponic system at different picking	58