

**AUTOMATION OF FOGPONICS SYSTEMS WITH INTERNET OF THINGS  
(IOT) FOR SWEET BASIL (*Ocimum basilicum*) PRODUCTION**

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## TABLE OF CONTENTS

	PAGE
LIST OF TABLES	xi
LIST OF FIGURES	xii
LIST OF APPENDIX A	xiv
LIST OF APPENDIX TABLES	xv
LIST OF APPENDIX FIGURES	xvii
ABSTRACT	xviii
INTRODUCTION	1
Background of the Study	1
Statement of the Problem	4
Objectives of the Study	5
Significance of the Study	6
Scope and Limitation of the Study	7
Time and Place of the Study	7
REVIEW OF RELATED LITERATURE	8
Basil Cultural Practices	8
Planting	8
Spacing	8
Irrigation	9
Weed Control	9
Insects and Diseases	9
Harvesting	9
Post-harvest Handling	10
Basil Optimal Condition	10
Peak Season of Basil	12
Basil's Leaf Color and Its Causes	12
Fogponics System	14
Advantages of Fogponics System	14
Disadvantages of Fogponics System	15

	PAGE
Design of Fogponics System	15
Program for Automated Fogponics System	16
Internet of Things in Agriculture	17
Programming Languages	17
Temperature and Humidity Sensors	21
Cost Analysis	22
Infrastructure Cost	22
Operating Cost	23
Maintenance and Replacement Cost	23
Miscellaneous Cost	24
METHODOLOGY	25
Conceptual Framework	25
Designing the Fogponics System	26
The Fogponics System	26
The Automation of the System and Structure	29
The Greenhouse	30
Materials	32
Cultural Practices	32
Seedlings	32
Transplanting	33
Harvesting	33
Irrigation Management (Fogging Frequency)	33
Temperature and Humidity	33
Experimental Design	34
Experimental Layout	34
Data Analysis	36
Data to be Gathered	36
Growth of the Plant	36
Leaf Length	37
Leaf Width	37
Number of leaves	37
Plant height	37
Root Depth	37

	PAGE
Yield weight	38
Nutrient Solution	38
Temperature and Humidity	38
Water Productivity	38
Billing of Materials	39
RESULTS AND DISCUSSION	40
Greenhouse Description and Specification	40
Weather conditions of the Greenhouse	41
Design and Simulation	42
Established Hardware Components of the System	42
Schematic Diagram and Design of the Fogponics System's Automation	43
Flowchart of the Fogponics System's Automation	46
Automated Fogponics System for Sweet Basil Production	51
pH Monitoring	52
Nutrient Solution Level Monitoring	52
Growth and Yield Parameters	53
Leaf length	53
Leaf width	54
Number of leaves	54
Plant height	55
Root depth	56
Yield weight	57
Water Productivity	57
Simple Cost Analysis	58
Infrastructure cost	59
Operating cost	59
Maintenance and replacement cost	60
Miscellaneous cost	60
Total cost	60
SUMMARY, CONCLUSION AND RECOMMENDATION	61
Summary	61
Conclusion	
Recommendation	



	PAGE
LITERATURE CITED	66
APPENDICES	69
Appendix A	70
Appendix of Tables	83
Appendix of Figures	96

## LIST OF TABLES

TABLE		PAGE
1	Specification of the greenhouse	40
2	Area covered by the materials for greenhouse	41
3	Average length of leaves	53
4	Average width of leaves	54
5	Average number of leaves	55
6	Plant height	55
7	Root depth	56
8	Yield	57
9	Water productivity	58
10	Cost analysis	59

## LIST OF FIGURES

FIGURE		PAGE
1	Conceptual framework of the study	25
2	Perspective of the fogponics system	26
3	Gallon reservoir of the system	27
4	Lid of the gallon reservoir	27
5	Fogger	28
6	2" net cup	28
7	Cross-section perspective of the automated fogponics system	29
8	Floor plan of the greenhouse	30
9	Front, side and rear elevation of the greenhouse	31
10	Perspective of the greenhouse	31
11	Perspective of the interior of the greenhouse	32
12	Experimental layout of the study	35
13	Accomplished greenhouse	40
14	Temperature and relative humidity record for 30 days	41
15	Established hardware of the system	43
16	Schematic diagram of the automated fogponics system simulated via the fritizing software	44
17	Simulation design of the automated fogponics system via the fritizing software	45
18	Established program code for the fogponics system via Arduino IE	46
19	Flow chart of the automated fogponics system	48

		PAGE
19a	Flow chart of the automated fogponics system	49
19b	Flow chart of the automated fogponics system	50
20	Established fogponics system for basil production	51

## LIST OF APPENDIX A

APPENDIX A	PAGE
1 System's programming codes	70

## LIST OF APPENDIX TABLES

APPENDIX TABLE		PAGE
1	Specification of the frame of the fogponics system	83
2	Specification of the Gallon Reservoir of the fogponics system	83
3	Specification of the Gallon Reservoir Lid of the fogponics system	83
4	Materials for the greenhouse	84
5	Materials for the fogponics system	86
6	Materials for the automation of the fogponics system	89
7	Infrastructure cost	92
8	Operating cost	94
9	Maintenance and replacement cost	94
10	Miscellaneous cost	94
11	Analysis of Variance table in Average length of leaves	94
11a	Pairwise Mean Comparison of Treatment: least significant difference (lsd) Test of Average length of leaves	95
12	Analysis of Variance table in average width of leaves	95
12a	Pairwise Mean Comparison of Treatment: least significant difference (lsd) Test of Average width of leaves	95
13	Analysis of Variance table in Average number of leaves	95
13a	Pairwise Mean Comparison of Treatment: least significant difference (lsd) Test of Average No. of leaves	95
14	Analysis of Variance table in Plant height	95
15	Analysis of Variance table in root depth	95

		PAGE
15a	Pairwise Mean Comparison of Treatment: least significant difference (lsd) Test of Root depth	96
16	Analysis of Variance table in yield weight	97
16a	Pairwise Mean Comparison of Treatment: least significant difference (lsd) Test of Yield Weight	97

## LIST OF APPENDIX FIGURES

APPENDIX FIGURE		PAGE
1	Floor plan of the greenhouse	98
2	Front elevation and rear elevation of the greenhouse	99
3	Side elevation of the greenhouse	100
4	Perspective of the greenhouse	101
5	Perspective of fogponics system	102
6	Cross-section of fogponics system	103
7	Before and after of the greenhouse	104
8	Developing the automated fogponics system's programming	104
9	Finished automation of the fogponics system with IoT	105
10	Finishing the set up inside the greenhouse	105
11	Finished set up of the system inside the greenhouse	106
12	Setting up of the automated fogponics system	106
13	Transplanting the basil plant to the automated fogponics system	107
14	Finished automated fogponics system	107
15	Measuring of plant length and width	108
16	Measuring plant height	108
17	Measuring of root depth	109
18	Internet of Things (IoT) data storage and management	109

## ABSTRACT

**ESCORIA, MILDRED M., LOMIBAO, DARWIN A., TUVERA, MAUREN JOYCE D.** Department of Agricultural and Biosystems Engineering, College of Engineering, Central Luzon State University, Science City of Muñoz, Nueva Ecija, **JUNE 2023. AUTOMATION OF FOGPONICS SYSTEMS WITH INTERNET OF THINGS (IOT) FOR SWEET BASIL (*Ocimum basilicum*) PRODUCTION**

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Fogponics is a modernized version of the Aeroponics farming system, often known as "Aeroponics 2.0." Fogponics systems with IoT offers improved automation and control. Also, it offers significant potential for enhancing sweet basil (*Ocimum basilicum*) production. In addition to the preparation and design of the program in automating the fogponics system with IoT with the integration of sensors, microcontrollers, and online platform for real-time monitoring and automated control of environmental parameters, the study evaluates the impact of fogging frequency on basil growth, and yield. By varying the fogging frequency within predefined ranges, the thesis explores its effects on the overall plant performance. The fog is produced by placing an ultrasonic fog generator inside the mixture of water and plant nutrients within an enclosed reservoir. Furthermore, the fogging frequencies were set to 3 different timers. For treatment 1, the timer was set to 15 minutes on. In treatment 2, the fogger was on for 30 minutes. Lastly, 45 minutes was set for treatment 3. Each treatment had 15 minutes off . The programming language used in the automation was C++. The findings show that basils on Treatment 2 produced the highest number of leaves, most significant growth development, and exhibited the greatest root length. The IoT-enabled fogponics system demonstrates its ability to

minimize human effort, provide remote monitoring and control capabilities that allow precise adjustment of environmental conditions, leading to optimal plant development. This research contributes to the field of sustainable agriculture by combining fogponics and IoT technologies to enhance basil cultivation, offering potential benefits such as increased productivity, and resource conservation.

*Keywords: Fogponics System, Automation, Irrigation, Internet of Things, Sweet Basil*

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