

**NITRIFYING CAPACITY OF WATER SPINACH ROOTS (*Ipomoea aquatica*)
IN AQUAPONICS SYSTEM**

**GIORGIO ARMANI G. CLETO
VHONN XENDRIX T. KUIZON**

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TABLE OF CONTENTS

Page

LIST OF TABLES	x
LIST OF FIGURES	xi
LIST OF APPENDIX TABLES	xiii
LIST OF APPENDIX FIGURES	xv
ABSTRACT	xvi
INTRODUCTION	1
Background of the Study	1
Statement of the Problem	2
Objectives of the Study	3
Significance of the Study	4
Scope and Limitations of the Study	4
Time and Place of the Study	5
REVIEW OF RELATED LITERATURE	6
Characteristics of Water Spinach	6
Water Spinach Farming	6
Spacing for Water Spinach	7
Nitrifying Capacity of Water Spinach Roots	7
Aquaponics Systems	8
Types of Aquaponics Systems	8
Media-Based	8
Nutrient Film Technique	9
Deep Water Culture	9
Aquaponics Production of Water Spinach and Tilapia	10

Water Spinach Production	10
Tilapia Production	11
Feeding Requirement of Tilapia	12
Feeding Schedule	12
Stocking Density of Tilapia in Aquaponics System	13
Parameters in Water Quality of Aquaponics System	13
Dissolved Oxygen (DO)	15
Ammonia	15
Nitrate	16
PH	18
Water Temperature	18
METHODOLOGY	19
Conceptual Design of the Study	19
Materials and Instrument	21
Aquaponics Set-up	23
Water Spinach Production	27
Planting of Water Spinach	27
Growing the Water Spinach Plant	27
Tilapia Production	28
Fingerlings/Fish Parameters	28
Feeding Method	28
Water Management	28
Monitoring Water Quality Parameters	28
Data Gathering	30
Water Sampling	30
Water Spinach Sampling and Harvesting	30
Root Surface Area Calculations	30
Evaluation of Nitrifying Capacity	31
Growth Performance of Tilapia	31
Experimental Layout	32

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Recommendation	61
LITERATURE CITED	64
APPENDICES	67
Appendix Tables	68
Appendix Figure	75

LIST OF TABLES

TABLE		PAGE
1	Feeding requirement of tilapia	12
2	Feeding schedule	13
3	Recommended parameters for aquaponics	14
4	Materials and purposes	21
5	Aquaponics water quality parameters	29
6	Least significant difference test for the root surface area	40
7	Least significant difference test for the nitrification rate	41
8	Least significant difference test for the ammonia	43
9	Least significant difference test for the nitrite	44
10	Least significant difference test for the nitrate	46
11	Least significant difference test for the height of water spinach	51
12	Least significant difference test for the height of water spinach number of leaves	52
13	Least significant difference test for the height of water spinach width of leaves	54
14	Assumption used in computing cost analysis	59

LIST OF FIGURES

FIGURE		PAGE
1	Conceptual design of the study	20
2	Perspective view of aquaponics set-up	22
3	Top view of aquaponics set-up (40 plants)	23
4	Top view of aquaponics set-up (30 plants)	24
5	Top view of aquaponics set-up (30 plants)	25
6	Experimental layout of the study	33
7	Average root surface area	39
8	Average nitrification rate in each treatment	41
9	Average concentration of ammonia per week	42
10	Average concentration nitrite per week	44
11	Average concentration of nitrate per week	45
12	Average dissolved oxygen per treatment	47
13	Water temperature and outside temperature	48
14	Average pH level of water per week	49
15	Average plant height for 30 day period	50
16	Average number of leaves for 30 day period	52
17	Average length of leaves for 30 day period	53
18	Average width of leaves for 30 day period	55
19	Total weight of ten water spinach sample per treatment for 30 day period	56

20	Total weight and percent weight gain of tilapia for 30 days of culture	57
21	Survival rate and mortality of tilapia for 30 day of culture	58

LIST OF APPENDX TABLES

APPENDIX TABLE		PAGE
1	Data summary of root surface area per plant each treatment	68
2	Weekly data of ammonia each treatment	68
3	Weekly data of nitrite each treatment	68
4	Weekly data of nitrate each treatment	69
5	Data summary of dissolved oxygen each treatment	69
6	Data summary of water temperature each treatment	69
7	Outside temperature	69
8	Data summary of pH level each treatment	70
9	Data summary of number of leaves in each treatment	70
10	Data summary of length leaves in each treatment	70
11	Data summary of width leaves in each treatment	70
12	Data summary of height water spinach in each treatment	71
13	Output of one-way ANOVA of root surface area	71
14	Output of one-way ANOVA of nitrification rate	71
15	Output of one-way ANOVA of ammonia	71
16	Output of one-way ANOVA of nitrite	71
17	Output of one-way ANOVA of nitrate	72
18	Output of one-way ANOVA of water spinach height	72
19	Output of one-way ANOVA of water spinach number of leaves	72
20	Output of one-way ANOVA of leaf length of water spinach	72

21	Output of one-way ANOVA of leaf width of water spinach	72
22	Output of one-way ANOVA of water spinach weight	73
23	Least significant difference test for water spinach weight	73
24	Output of one-way ANOVA of tilapia weight	73
25	Output of one-way ANOVA of pH	73
26	Output of one-way ANOVA of water temperature	73
27	Bill of materials	74

LIST OF APPENDIX FIGURES

APPENDIX		PAGE
FIGURES		
1	Preparation of set-up	75
2	Preparation for transplanting	75
3	Transplanting of water spinach	75
4	Data gathering	76
5	Water quality testing	76
6	Measuring the plants	77
7	Tilapia counting	77
8	Measuring size of tilapia	77
9	Harvesting water spinach	78
10	Weighing of tilapia	78
11	Measuring the water spinach roots	78

ABSTRACT

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**NITRIFYING CAPACITY OF WATER SPINACH ROOTS (*Ipomoea aquatica*) IN
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The purpose of this study was to determine the effects of water spinach at its optimal density to absorb waste ammonia (NH_3), nitrite (NO_2^-), and nitrate (NO_3^-) optimally in order to determine its nitrifying capacity in aquaculture system as well as to increase the growth and yield of both water spinach and tilapia. For this study, IBC tank were used for the aquaponics set up where each tank had 60 tilapia. Number of spinach was used as treatment that served as a natural filter and the study was conducted for 30 days. The treatment with 40 plants (T_1) showed the highest absorption rates for ammonia, nitrite, and nitrate compared to the other treatments. Also, this treatment (T_1) had the lowest nitrification rate of 1.0024 mg/week-cm². Meanwhile treatment with 30 plants (T_2) had a nitrification rate of 2.889 mg/week-cm², and the treatment with 20 plants (T_3) exhibited the highest nitrification rate of 4.3358 mg/week-cm². These results with previous research that suggests nitrification rates decrease as the media area per unit volume increases. Overall, the findings indicate variations in nitrification effectiveness among different plant

densities, with the lowest density (T₃) demonstrating the highest nitrification rate. However, treatment with 40 plants (T₁) has the best growth of water spinach and highest survival rate of tilapia. Water quality measurements in all treatments changes in environmental conditions, specifically the weather, resulted in variations within the experiment. Factors that were monitored, including temperature, pH, and dissolved oxygen levels moved, increases and decreases, across the treatments, Ammonia, Nitrification Capacity, Aquaponics, Water Spinach Roots.

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