

657.5
Si8
1998

EFFECT OF NUTRIENT MEDIUM IN
HYDROPONICALLY GROWN PLANTS

RESEARCH STUDY

Applied Research-IV

JOAN S. SISANTE

CAVITE STATE UNIVERSITY
Indaang, Cavite

April 1998

6/
EFFECT OF NUTRIENT MEDIUM IN HYDROPONICALLY
GROWN PLANTS

A Research Study Submitted to the Faculty of
the Secondary Education, Laboratory School,
College of Education of the Cavite State
University, Indang, Cavite

In Partial Fulfillment of the Requirements
in Applied Research IV

By



00000783

*Effect of nutrient medium in
hydroponically grown plants*
631.5 S18 1998
R-287

JOAN SISANTE
April 1998

885-2

Abstract

Sisante, Joan S., Applied Research IV (General Science Curriculum), Cavite State University, Indang, Cavite.
"Effect of Nutrient Medium in Hydroponically Grown Plants".

Thesis Adviser : Prof Eleanor Ersando

This study was conducted from November 1997 to February 1998 in Alfonso, Cavite to determine the best nutrient solution on the growth of tomato plants and to know the best growing media to be used in hydroponically grown plants.

Seeds from a common tomato plants were used in the study. After twenty one days, seedlings were transplanted to different growing bags containing sand, sawdust, and combination of sand and sawdust as the growing media and then were treated by different nutrient solutions. A Randomized Complete Block Design was used in this study.

The findings show that plants treated with salt peter and monosodium glutamate were the tallest, produced more leaves and show the earliest sign of flower bud formation. Plants treated with ammonia and Epsom salt obtained the thickest stem diameter.

The combination of sand and sawdust yield most of the tallest plants and with thickest stem diameter.

TABLE OF CONTENTS

| | PAGE |
|--|------|
| APPROVAL SHEET | |
| BIOGRAPHICAL SKETCH..... | iii |
| ACKNOWLEDGEMENT..... | iv |
| ABSTRACT..... | vi |
| INTRODUCTION | |
| STATEMENT OF THE PROBLEM..... | 3 |
| OBJECTIVES OF THE STUDY..... | 3 |
| IMPORTANCE OF THE STUDY..... | 4 |
| TIME AND PLACE OF THE STUDY..... | 4 |
| SCOPE AND LIMITATIONS..... | 4 |
| REVIEW OF RELATED LITERATURE | |
| HYDROPONICS A SOILESS METHOD OF FARMING..... | 6 |
| HYDROPONICS COMPARED TO TRADITIONAL FARMING..... | 6 |
| HYDROPONICS AN ADVANTAGE..... | 8 |
| SAND AND SAWDUST AS GROWING MEDIA..... | 8 |
| NUTRIENT SOLUTION..... | 10 |
| MATERIALS AND METHODS | |
| MATERIALS..... | 11 |
| METHODS..... | 12 |
| PREPARATIONS OF THE SEEDS..... | 12 |
| GERMINATION OF THE SEEDS..... | 12 |
| PREPARATION OF THE GROWING MEDIA..... | 12 |
| TRANSPLANTING AND FEEDING OF PLANTS..... | 12 |
| EXPERIMENTAL DESIGN..... | 13 |
| DATA GATHERING..... | 13 |

DISCUSSION OF RESULTS

| | |
|---|----|
| PLANT HEIGHT (IN CM)..... | 14 |
| STEM DIAMETER (IN CM)..... | 16 |
| NUMBER OF LEAVES PER PLANT..... | 18 |
| NUMBER OF DAYS FROM TRANSPLANTING TO FLOWER BUD EMERGENCE..... | 20 |
| SUMMARY, CONCLUSION AND RECOMMENDATION..... | 22 |
| LITERATURE CITED..... | 24 |
| PLATES..... | 25 |

LIST OF TABLES

| TABLE | | PAGE |
|-------|---|------|
| 1 | PLANT HEIGHT (IN CM)..... | 15 |
| 2 | STEM DIAMETER (IN CM)..... | 17 |
| 3 | NUMBER OF LEAVES PER PLANT..... | 19 |
| 4 | NUMBER OF DAYS FROM TRANSPLANTING TO FLOWER BUD EMERGENCE..... | 21 |

LIST OF PLATES

| PLATE | PAGE |
|-------|--|
| 1 | NUTRIENT AND GROWING MEDIA USED IN THE EXPERIMENT.....26 |
| 2 | SAMPLES OF NUTRIENT SOLUTION USED IN EXPERIMENT.....27 |
| 3 | SEEDLING OF TOMATO READY FOR TRANSPLANTING TO THE GROWING MEDIA AND NUTRIENT MEDIA.....28 |
| 4 | GENERAL VIEW OF THE EXPERIMENT.....29 |
| 5 | SAMPLES OF PLANTS GROWN ON DIFFERENT NUTRIENT SOLUTION AND GROWING MEDIA.....30 |
| 6 | SAMPLES OF PLANT FROM T ₃ (SALT PETER MONOSODIUM GLUTAMATE) WHICH SHOW THE BEST RESULT.....31 |

Effect of Nutrient Medium in Hydroponically
Grown Plants

by

JOAN SISANTE

A research study submitted to the faculty of the
Laboratory School, College of Education, Cavite State
University, Indang, Cavite in partial fulfillment of the
requirements in Applied Research IV under the supervision of
Prof. Eleanor G. Ersando

CHAPTER I

INTRODUCTION

Hydroponics also known as soilless growing and container gardening, is the term used to describe the many ways in which plants can be raised without soil. Due to its capacity for higher yields that are more than double the volume of crops harvested by traditional farming methods and its adaptability to different temperatures and climates, use of hydroponics has gained wide acceptance all over the world. Hydroponics is utilized by middle eastern countries to raise vegetables in their deserts. The Americans have adapted the technique to suit their frigid and temperate zones. Taiwan and Japan boast of tones of vegetables they produce from roof tops and backyard gardens using soilless technology (Foundation for Resource, Linkages and Development Inc., 1986).