

PROSPECTS OF AZOLLA AS
BIOFERTILIZER
IN EGYPT

BY

REDA MOHMED EL-SHAHAT

B.Sc. (Agric. Microbiology), Fac. Agric., Ain Shams Univ., 1979

M. Sc. ((Agric. Microbiology), Fac. Agric., Ain Shams Univ., 1988

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Under the supervision of:

Late Prof. Dr. S.A. Zaki

Prof. of Agric. Microbiology,
Fac. Agric., Ain Shams Univ.

Prof. Dr. M.E.M. EL-Haddad

Prof. of Agric. Microbiology,
Fac. Agric., Ain Shams Univ.

Prof. Dr. S.N. Shalaan

Head Researcher, Agric. Microbiol., Dept., Soil, Water and
Environment Res. Inst., Agric. Res. Center., Giza, Egypt.

APPROVAL SHEET

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This thesis for Ph. D. Degree had been aproved

By

Prof. Dr. M.K. Zahra

M. K. Zahra

Prof. and Head of Agric. Microbiol. Dept.,

Fac. Agric., Cairo Univ.

Prof. Dr. Wedad El-Tohami

W. E. Elwedda

Prof. of Agric. Microbiology,

Fac. Agric., Ain Shams Univ.

Prof. Dr. M.E.M. El- Haddad

M. El Haddad

Prof. of Agric. Micobology,

Fac. Agric., Ain Shams Univ.

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ABSTRACT

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The growth, N_2 -fixation and nutrient uptake by Azolla pinnata 7001 and Azolla filiculoides 1001 were examined in the presence of a range of increased concentrations of phosphorus (0-100 ppm), zinc (0-30 ppm) and iron (0-10 ppm) as well as the two pesticides, saturn (0-0.056 ppm) and henozan (0-0.0112 ppm). The growth and yield responses of five varieties of rice to different rates of Azolla and/or urea were also evaluated under green house and field conditions. Data showed that split application of phosphorus gave better effects on growth, N_2 -fixation and nutrient uptake within a greater range of phosphorus compared with basal application. While the whole range of lower concentrations of zinc (0 - 0.08 ppm) stimulated growth, N_2 -fixation and zinc uptake, positive effects were only detected at 15 ppm zinc. Four ppm iron, on the other hand, appeared to be effective in enhancing all parameters measured compared with other concentrations. Both Azolla species were sensitive to all tested concentrations of saturn or henozan. However, the henozan

was less toxic to the two Azolla compared with Saturn. Regarding the response of different varieties of rice to Azolla and/or urea application, data showed the application of 40 or 60 Kg N derived from Azolla generally stimulated growth and yield of the 3 tested varieties (Giza 171, Giza 177 and Giza 178) in pot experiments. Although in some cases the combination of low level of urea with Azolla gave better effects on the parameters measured compared with Azolla alone, no significant differences were reported among treatments. However, the two varieties tested under field conditions, i.e., Giza 172 and Giza 175 showed different responses to the rates of Azolla and/or urea application. Spore formation was only reported in A. pinnata particularly under the conditions prevailing in summer, i.e., long day hour, high light intensity and high temperature.

Key words:

Azolla pinnata Vahl - Azolla filiculoides Desf

Phosphorus - Zinc - Iron - Saturn - Benzamide

N₂ fixation - Nutrient Uptake - Rice Varieties

Urea - Growth and yield responses - Azolla species

CONTENTS

Page No.

LIST OF FIGURES

LIST OF TABLES

1. INTRODUCTION

INTRODUCTION.....	1
-------------------	---

2. REVIEW OF LITERATURE

2.1 <u>AZOLLA</u> : THE HOST PLANT AND THE ENDOPHYTE.....	3
---	---

2.2 TAXONOMY AND DISTRIBUTION OF <u>Azolla</u>	4
--	---

2.3 REPRODUCTION OF <u>Azolla</u>	5
---	---

2.3.1 Vegetative reproduction.....	5
------------------------------------	---

2.3.2 Sexual reproduction.....	6
--------------------------------	---

2.3.3 Sporocarps germination.....	7
-----------------------------------	---

2.4 FACTORS AFFECTING GROWTH AND

N_2 -FIXATION BY <u>AZOLLA</u>	8
--	---

2.4.1 Environmental factors.....	8
----------------------------------	---

2.4.1.1 Water and humidity.....	8
---------------------------------	---

2.4.1.2 Light intensity and photosynthesis.....	9
---	---

2.4.1.3 Temperature and seasonal variations.....	10
--	----

2.4.1.4 Hydrogen ion concentration.....	12
---	----

2.4.2 Mineral nutrition.....	14
------------------------------	----

2.4.2.1 Effect of Macro elements.....	14
---------------------------------------	----

A- Nitrogen.....	14
------------------	----

B- Phosphorus.....	16
--------------------	----

2.4.1.2	Effect of Micro elements	19
A-	Iron and zinc	19
2.4.3	Pesticides application	20
2.5	EFFECT OF <u>AZOLLA</u> APPLICATION ON GROWTH AND NUTRIENT UPTAKE OF RICE CROP	23
3	MATERIALS AND METHODS	
3.1	MATERIALS	27
3.1.1	Soils	27
3.1.2	Azolla	27
3.1.3	Rice Seeds	30
3.1.4	Mineral Nutrients and Pesticides	30
3.1.5	Growth Medium for <u>Azolla</u>	31
3.2	METHODS	31
3.2.1	Experimental Techniques	31
3.2.1.1	Propagation of <u>Azolla</u> in nursery	31
3.2.1.2	Preparation of standard inocula of <u>Azolla</u>	32
3.2.1.3	Effect of mineral nutrition with P, Zn and Fe on growth, N ₂ -fixation and nutrients uptake of <u>A. pinnata</u> and <u>A. filiculoides</u>	32
3.2.1.4	Effect of saturn and benozan on growth, N ₂ fixation and nutrient uptake of <u>A. pinnata</u> and <u>A. filiculoides</u>	33
3.2.1.5	Studying the response of different rice varieties to <u>Azolla</u> and/or urea application	34
A-	Pot experiment	34
B-	Field experiment	36

3.3	PARAMETERS MEASURED.....	39
3.4	SUITABLE CONDITIONS FOR SPORULATION OF <u>Azolla</u> ...	41
4.	RESULTS	
4.1	EFFECT OF INCREASED CONCENTRATIONS OF PHOSPH- ORUS ON GROWTH, N ₂ -FIXING ACTIVITY AND NUTRIENT UPTAKE BY <u>A. pinnata</u> AND <u>A. filiculoides</u>	43
4.1.1	Growth and doubling time.....	43
4.1.2	Nitrogenase activity.....	50
4.1.3	Nitrogen percentage and contents.....	53
4.1.4	Phosphorus percentages and contents.....	58
4.2	EFFECT OF DIFFERENT CONCENTRATIONS OF ZINC ON GROWTH, N ₂ -FIXING ACTIVITY AND NUTRIENT UPTAKE BY <u>A. pinnata</u> AND <u>A. filiculoides</u>	58
4.2.1	Effect of low concentrations of zinc.....	63
A-	Growth and doubling time.....	63
B-	Nitrogenase activity.....	70
C-	Nitrogen percentages and contents.....	70
D-	Zinc content and uptake.....	73
4.2.2	Effect of high concentrations of zinc.....	82
A-	Growth and doubling time.....	82
B-	Nitrogenase activity.....	89
C-	Nitrogen percentages and contents.....	89
D-	Zinc content and uptake.....	94
4.3	EFFECT OF DIFFERENT CONCENTRATIONS OF IRON ON GROWTH, N ₂ -FIXING ACTIVITY AND NUTRIENT UPTAKE BY <u>A. pinnata</u> AND <u>A. filiculoides</u>	101

4.3.1	Growth and doubling time	101
4.3.2	Nitrogenase activity	109
4.3.3	Nitrogen percentages and contents	109
4.3.4	Iron percentages and uptake	116
4.4	EFFECT OF DIFFERENT CONCENTRATIONS OF SATURN ON GROWTH, N ₂ -FIXING ACTIVITY AND NITROGEN CONTENT OF <u>A. pinnata</u> AND <u>A. filiculoides</u>	121
4.4.1	Growth and doubling time.....	121
4.4.2	Nitrogenase activity.....	125
4.4.3	Nitrogen percentages and contents.....	131
4.5	EFFECT OF DIFFERENT CONCENTRATIONS OF HENOZAN ON GROWTH, N ₂ -FIXING ACTIVITY AND NITROGEN CONTENT OF <u>A. pinnata</u> AND <u>A. filiculoides</u>	136
4.5.1	Growth and doubling time.....	136
4.5.2	Nitrogenase activity.....	145
4.5.3	Nitrogen percentages and contents.....	145
4.6	THE RESPONSE OF DIFFERENT RICE VARIETIES TO AZOLLA AND/OR UREA APPLICATION	146
4.6.1	In Pots	147
4.6.2	Under field conditions	157
4.7	CONDITIONS SUITABLE FOR SPORULATION	157
5	DISCUSSION	164
6	SUMMARY.....	171
	REFERENCES	172
	ARABIC SUMMARY	