



TABLE OF CONTENTS

APPROVAL PAGE	i
STATEMENT OF NON-PLAGIARISM	ii
PREFACE	iii
TABLE OF CONTENTS	iv
LIST OF TABLES	vi
LIST OF FIGURES	vii
Abstract	viii
CHAPTER I INTRODUCTION	1
1.1 Background	1
1.2 Problem Statement	2
1.3 Objective	2
1.4 Benefit	2
CHAPTER II LITERATURE REVIEW	3
2.1 Literature Review	3
2.1.1 Mixed Cropping	3
2.1.2 Belowground Nitrogen Transfer	4
2.1.3 Common Mycorrhizal Networks and Their Ability to Transfer Nitrogen	6
2.1.4 ¹⁵ N Isotope Labeling	7
2.2 Hypothesis	8
CHAPTER III METHODOLOGY	9
3.1 Location and Time	9
3.2 Materials and Tools	9
3.3 Experimental Design	9
3.4 Research Procedures	10
3.4.1 Plant Growth Conditions	10
3.4.2 ¹⁵ N Labeling of Legume	11
3.4.3 Plant Biomass Collection	12
3.4.4 Root Staining, Root Length Estimation, and AMF Colonization Measurement	12
3.4.5 Root Total Nitrogen Analysis	13
3.4.6 Root ¹⁵ N Isotope Analysis	13
3.4.7 Shoot Phosphorus Concentration	14
3.5 Statistical Data Analysis	15
CHAPTER IV RESULT AND DISCUSSION	16
4.1 AMF Colonization Rate	16
4.2 Plant Growth and Biomass Production	17
4.2.1 Root Length	17
4.2.2 Root Fresh Weight and Root Dry Weight	18
4.2.3 Shoot Dry Weight	20
4.3 Root N Concentration and Root N Uptake	21
4.4 Root ¹⁵ N Concentration and Root ¹⁵ N Uptake	23
4.5 Shoot P Concentration and Shoot P Uptake	25
4.6 Discussion	26
4.6.1 Mycorrhizal Colonization and Rhizobial Inoculation	26
4.6.2 Effect of Inoculation Treatments on Plant Growth and Nutrient Uptake	28
4.6.3 Nitrogen Transfer among Plants through Common Mycorrhizal Networks	29
CHAPTER V CONCLUSION AND SUGGESTION	32



Nitrogen Transfer from *Trifolium repens* to *Allium fistulosum* through Common Mycorrhizal Networks

Hafsah Dwi Nur Haliza, Prof. Ir. Irfan Dwidya Prijambada, M.Eng., Ph.D.; Prof. Dr. Keitaro Tawaraya

Universitas Gadjah Mada, 2025 | Diunduh dari <http://etd.repository.ugm.ac.id/>

UNIVERSITAS
GADJAH MADA

5.1	Conclusion.....	32
5.2	Suggestion	32
	REFERENCES	33
	APPENDIX.....	40
	ACKNOWLEDGEMENT	48