

TABLE OF CONTENTS

TITLE PAGE	i
ENDORSEMENT	ii
STATEMENT	iii
PREFACE	iv
TABLE OF CONTENTS	vi
LIST OF TABLES	viii
LIST OF FIGURES	ix
LIST OF ATTACHMENT	xi
ABSTRACT	xii
I. INTRODUCTION	1
1.1 Background	1
1.2 Statement of Problems	3
1.3 Aim	3
1.4 Benefit	3
1.5 Research originality	3
II. LITERATURE REVIEW AND THEORY BASIS	4
2.1 Literature review	4
2.1.1 twisted disease on shallot	4
2.1.2 Cultural practices of Shallot farmers and Twisted Diseases in Bantul	7
2.1.3 Rhizosphere Zone in Soil	10
2.1.4 Collony Forming Unit and microbial community analysis through dependent culture	12
2.1.5. Diversity analysis using Amplicon Targeted Sequencing	18
2.2 Theory Basis	22
2.3 hypothesis	23
III. MATERIAL AND METHODS	25
3.1 Materials and Tools	25
3.2 Location and period of experiment	25
3.3 Experimental procedure	25
3.3.1 Experimental Site and Soil Sampling	25
3.3.2 Extraction of genome DNA from rhizosphere	26
3.3.3 DNA amplification and sequencing	26
3.3.4 Sequence and Data analysis	27
3.3.5 Isolation of Bacteria and Fungal for Dependent Culture	28
3.3.6 CFU of fungal and bacteria	28
3.3.7 Preparation of dependent culture sample for RISA	28
3.3.8 RISA	29
3.3.9 Bacterial confirmation from Dependent Culture for Independent Approach	29
3.3.10 Fungal confirmation	30
3.3.11 Bacterial Dual Culture	31
IV. RESULTS AND DISCUSSION	32
4.1 Independent culture approach using ITS amplicon targeted sequencing for Fungal Diversity	32
4.2 Independent culture approach using 16S amplicon targeted sequencing for Bacteria Diversity	42
4.3 CFU on fungal and bacteria	51
4.4 RISA in Bacteria	54
4.5 RISA in fungal	57

4.6 Fungal confirmation	59
4.7 Isolation of bacteria that potential as biocontrol agent from rhizosphere soil of shallot	61
4.8 Bacterial confirmation.....	64
V. CONCLUSION AND SUGGESTION	65
5.1 Conclusion	65
5.2 Suggetion.....	66
Literature	67
Attachment	76

