

CONTENTS

	Title Page	i
	Certificate of Approval	ii
	Certificate	iii
	Acknowledgements	iv
	Declaration	v
	List of Symbols and Abbreviations	vi
	Abstract	viii
	Contents	ix
Chapter 1	Introduction	1-4
Chapter 2	Review of Literature	5-30
	2.1 Water and nitrogen management in rice	6
	2.2 Water and N use efficiency under drip irrigation	14
	2.3 Soil NH_4^+ -N and NO_3^- -N dynamics	19
	2.4 Impact of climate change on water resources and crop production	24
Chapter 3	Materials and Methods	31-46
	3.1 Field experiment	31
	3.2 Simulation	39
Chapter 4	Results	47-94
	4.1 Crop growth and yield assessment in field experiments	47
	4.2 Resource use efficiency of drip irrigated rice	58
	4.3 Soil chemical properties	67
	4.4 Rice yield simulation for the climate change scenarios	76
	4.5 Evaluation of agro-adaptation measures	83
Chapter 5	Discussion	95-116
	5.1 Effect of drip irrigation with different N fertilizer levels on growth and yield of rice	95
	5.2 Effect of varying N fertilizer levels on resource use efficiency of drip irrigated rice	99
	5.3 Effect of varying N fertilizer levels on soil NH_4^+ -N and NO_3^- -N dynamics	105
	5.4 Genotype coefficients of rice under dry seeding in drip irrigation and conventional puddled transplanting	107
	5.5 Crop yield simulation under climate change scenarios	108
	5.6 Evaluation of agro-adaptations	111
Chapter 6	Summary and Conclusions	117-124
	References	125-144
	Curriculum Vitae	145