TABLE OF CONTENTS

ACKNOW	LEDGEMENTS	V	
TABLE OF CONTENTS			
LIST OF TABLES			
LIST OF F	LIST OF FIGURES		
LIST OF A	LIST OF ABBREVIATIONS		
SUMMAR	Y	1	
Chapter 1	General introduction	5	
	1.1 Foreword	6	
	1.2 Problem statements	7	
	1.3 Aim and objectives of the study	8	
	1.4 Research hypotheses	8	
	1.5 Outputs and contributions	9	
	1.6 Conceptual framework for the study	9	
Chapter 2	Literature Review	11	
	2.1 General information about Thailand	12	
	2.2 Agricultural and livestock production sectors	13	
	2.3 The status of beef cattle and buffaloes for agriculture in Thailand	14	
	2.3.1 Food security	14	
	2.3.2 Insurance, capital and income generation	15	
	2.3.3 Integration into the farming system	16	
	2.3.4 Social and cultural supports	18	
	2.4 Husbandry of beef cattle and buffaloes in Thailand	19	
	2.5 Breeds and breeding systems	20	
	2.5.1 Beef cattle breeds	20	
	2.5.2 Beef buffalo breeds	23	
	2.5.3 National beef cattle and buffalo breeding programmes	26	

	2.5.4 Breeding systems in small beef cattle and buffalo farms	27
	2.6 Social and environmental issues in beef cattle and buffalo farming	28
	2.7 Competition between buffaloes and cattle	30
	2.8 Government incentives and policies for beef cattle and buffalo production	31
	2.8.1 Cattle and Buffalo Banks	31
	2.8.2 Promotion of buffalo conservation and development villages	32
	2.8.3 Village Buffalo Emergency Fund	32
	2.8.4 Beef cattle farm promotion in northeast region	33
	2.8.5 One million beef cattle households promotion	33
	2.9 Situation of beef cattle and buffalo production in Thailand	34
Chapter 3	Materials and Methods	37
	3.1 Study area	38
	3.2 Selection of farms	39
	3.3 Study methods	40
	3.4 Data analysis	41
Chapter 4	A comparison of characteristics, socio-economic benefits and household	
	livelihood impacts of beef buffalo and beef cattle farming in northeastern	
	Thailand	43
	4.1 Abstract	44
	4.2 Introduction	45
	4.3 Materials and Methods	46
	4.4 Results and discussion	46
	4.4.1 Farm household characteristics	46
	4.4.2 Household activities	49
	4.4.3 Farm labour management	52
	4.4.4 Livestock roles for farm households	53
	4.4.5 Farm household livelihoods	58
	4.5 Conclusions	61

Chapter 5	Feed resources and feeding management on beef buffalo and beef cattle farms		
	in northeastern Thailand	63	
	5.1 Abstract	64	
	5.2 Introduction	65	
	5.3 Materials and Methods	66	
	5.4 Results	66	
	5.4.1 Feeding systems, pasture lands and area allowance	66	
	5.4.2 Main sources of forages throughout the year and their limitations	67	
	5.4.3 Pasture cultivation and green forage supply	69	
	5.4.4 Feed supplementation and limitations of the practice	71	
	5.5 Discussion	73	
	5.6 Conclusions	77	
Chapter 6	Herd structures and breeding practices on beef buffalo and beef cattle farms in		
	northeastern Thailand	79	
	6.1 Abstract	80	
	6.2 Introduction	81	
	6.3 Materials and Methods	81	
	6.4 Results	82	
	6.4.1 Herd structure and demography	82	
	6.4.2 Breeding services and sources of breeding stocks	84	
	6.4.3 Breeding objectives and selection of replacing animals	86	
	6.4.4 Breed compositions	88	
	6.5 Discussion	89	
	6.6 Conclusions	93	
Chapter 7	Comparisons of beef buffalo and beef cattle farming in northeastern Thailand		
	and their potential for further development	95	
	7.1 Abstract	96	
	7.2 Introduction	97	
	7.3 Materials and Methods	98	

	7.4 Results and discussion	98
	7.4.1 Comparisons of buffalo and cattle husbandry	98
	7.4.2 Favourable traits of beef buffaloes and beef cattle stated by the	
	farmers	100
	7.4.3 Community and environmental impacts caused by livestock farming	102
	7.4.4 Constraints and needs of livestock farms	106
	7.4.5 Reasons for buffalo farming decline	109
	7.5 Conclusions	110
Chapter 8	General discussion, conclusions and recommendations	111
	General discussion	112
	8.1 Buffalo and cattle production systems	112
	8.2 The importance of buffaloes and cattle	112
	8.3 Husbandry of beef buffaloes and beef cattle	114
	8.3.1 Feed resources and feeding management	114
	8.3.2 Breeding systems and practices	115
	8.4 Comparisons between buffaloes and cattle	117
	8.5 Reasons for the decreasing buffalo population	118
	8.6 Relationship between livestock farming, community and environment	119
	8.7 Constraints of livestock farming and its prospects for further development	120
	General conclusions	121
	Recommendations	122
REFEREN	ICES	125