

TRIBHUVAN UNIVERSITY ORANGE CULTIVATION IN SIKKIM

(A Case Study of Khanisirbong Gram Panchayat Unit

of West District)



A THESIS

SUBMITTED TO CENTRAL DEPARTMENT OF GEOGRAPHY

The Faculty of Humanities and Social Science in Partial

Fulfillment of the Requirement for the

Master's Degree in Geography



By INDRADHOJ SUBBA Central Department of Geography Kirtipur, Kathmandu, Nepal March, 2008

Tribhuvan University Faculty of Humanities and Social Science Central Department of Geography Kirtipur, Kathmandu, Nepal.

APPROVAL LETTER

This dissertation is submitted to the Central Department of Geography, Tribhuvan University by Indradhoj Subba entitled "**Orange cultivation in Sikkim (A Case Study of Khanisirbong Gram Panchayat Unit)**" has taken Approved by the undersigned member of the dissertation committee.

	Dissertation committee	Approved by
1.	Head of the Department	
2.	Research Supervisor	
3.	External examiner	

Date

ACKNOWLEDGEMENT

This study entitled "Orange Cultivation in Sikkim; A Case Study of Khanisirbong Gram Panchayat Unit", is carried out by the researcher for the fulfillment of Master's Degree of Humanities and Social Science at Central Department of Geography, T.U., Kirtipur, Kathmandu, Nepal.

First of all, I heartily acknowledge to Ms. Puspa Sharma Lecturer, Central Department of Geography, T.U., Kirtipur for providing valuable guidance, encouragement and constructive suggestion to complete this dissertation.

I would like to express my grateful thank to Prof. Bhim P. Subedi, Ph.D. Head of the Central Department of Geography, T.U., and all the respected teachers and staffs for their valuable support and suggestion.

I am indeed thankful to Hon'ble Minister Shri Prem Singh Tamang, PWD Building and Housing and Sports and Youth Affairs Government of Sikkim for his financial support and encouragement during the period of field survey.

I would also like to express my thank to Mr. H.P. Rai (Peshker SDM office, Soreng), Mr. P.P. Thapa (Horticulture Inspector Vok, South Sikkim), Mr. J.H. Subba (Panchayat President Khanisirbong GPU), Mr. N.S. Rai (RDA Khanisirbong GPU) for their cooperation and providing me a valuable data for this study.

I would like to extend thanks to my friends Aitahang Subba, Keshab Sharma, Laxuman Adhikari and B.P. Timsina for their cordial encouragement and support to complete this dissertation.

I wish to express my sincere gratitude to my parents and family members for their moral and financial support throughout the entire period of study.

Last but not the least, I am very much thankful to Mr. Ram Krishna Maharjan (Cheap and Best Computer Centre) and Sushan Shrestha (Shrestha Photocopy, Kirtipur) for their fine and fast service.

Indradhoj Subba

TABLE OF CONTENTS

Page No.

Ackı	nowledgement	
Tabl	e of Contents	
List	of Tables	
List	of Figures	
List	of Map	
List	of Photo	
Abb	reviation	
Cha	pter I : Introduction	1-6
1.1	Background of the Study	1
1.2	Statement of Problem	4
1.3	Objectives of the Study	5
1.4	Significance of the Study	5
1.5	Limitation of the Study	6
Cha	pter II : Literature Review	7-16
Cha	pter III : Research Methodology	17-26
3.1	Conceptual Framework	17
3.2	Selection of the Study Area	19
3.3	Sampling Method and Sampling Size	20
3.4	Methods and Source of Data	21
	3.4.1 Primary Source of Data	22
	3.4.1.1 Questionnaire and Interview	22
	3.4.1.2 Field Observations	23
	3.4.1.3 Field Notes	23
	3.4.2 Source of Secondary Data	24
25		24
3.3	Methods of Data Analysis	24

Chapter IV : General Background of the Study Area27-44			
4.1	Introc	luction of Study Area	27
	4.1.1	Physical Condition	29
		4.1.1.1Topography	29
		4.1.1.2 Drainage	29
		4.1.1.3 Natural Vegetation	33
		4.1.1.4 Climate	33
		4.1.1.5 Soil	33
	4.1.2	Socio-economic Condition	33
		4.1.2.1 Population	34
		4.1.2.2 Status of Education	38
		4.1.2.3 Availability of Facilities and Services	40
		4.1.2.4 Occupational Status	41
		4.1.2.5 Agriculture	43
		4.1.2.6 Livestock	43
Chap	oter V :	Production Trend and Marketing System of Orange	
		Cultivation	45-54
5.1	Prod	uction and Area of orange 2000-2006	45
	5.1.1	Ward-wise Distribution of Orange Production and Area	46
5.2	Mark	eting System of Orange Cultivations	48
	5.2.1	Marketing Channel of Orange	49
5.3	Incon	ne Contribution of Orange Cultivation	50
5.4	Suital	pility of Orange Cultivation in the Study Area	51
	5.4.1	Effect of Altitude on orange production (600-1200m)	51
	5.4.2	Effects of Aspects in Orange Production	52
	5.4.3	Effect of Altitude on Orange Production (1000 to 1600m)	53
Chapter VI : General Problems and Prospects of Orange			
		Cultivation	55-60
6.1	Probl	ems of Orange Cultivation	55
	6.1.1	Economic Problems	55

	6.1.2 Problems of Climatic Hazards56		
	6.1.3 Problems of Transportation		
	6.1.4 Problems of Disease and Pest		
		6.1.4.1 Powdery Mildew	57
		6.1.4.2 Bark Borer	57
		6.1.4.3 Orange Leaf Minor	58
6.2	Prosp	ect of Orange Cultivation	59
Chap	ter VI	I : Conclusion, Suggestion and Recommendation	61-65
Chap 7.1	oter VII Concl	I : Conclusion, Suggestion and Recommendation usion	61-65 61
Chap 7.1 7.2	oter VII Concl Sugge	I : Conclusion, Suggestion and Recommendation usion estion	61-65 61 63
Chap 7.1 7.2	oter VII Concl Sugge 7.2.1	I : Conclusion, Suggestion and Recommendation usion estion Suggestion for the Policy Level	61-65 61 63 63
Chap 7.1 7.2	Concl Sugge 7.2.1 7.2.2	I : Conclusion, Suggestion and Recommendation usion estion Suggestion for the Policy Level Suggestion for the Indigenous Farmers (Local Level)	61-65 61 63 63 64
Chap 7.1 7.2 7.3	Concl Sugge 7.2.1 7.2.2 Recor	I : Conclusion, Suggestion and Recommendation usion estion Suggestion for the Policy Level Suggestion for the Indigenous Farmers (Local Level) mmendations	61-65 61 63 63 64 65

REFERENCES APPENDIX 1

APPENDIX 2

LIST OF TABLES

Table 1:	Distribution of total households, orange grower and sample	
	Households	21
Table 2:	Ward wise Distribution of households population in 2007	34
Table 3:	Caste wise distribution	35
Table 4:	Caste wise distribution of orange cultivators from the same	pled
	households population	36
Table 5 :	Caste wise distribution of orange production from the sampled	
	households population in 2006	37
Table 6:	Educational Attainment of sampled households population	39
Table 7:	Occupational status of sampled households population	42
Table 8:	Number of animals in the sampled households	44
Table 9:	Area and production covered by orange as per sampled househol	lds
	(2000 - 2006)	45
Table 10:	Ward-wise distribution of orange production and area	
	(2000 - 2006)	47
Table 11:	Total income of households from orange cultivation 2006	50

LIST OF FIGURES

Figure 1:	Conceptual Framework of Orange Cultivation 19		
Figure 2:	2: Methodological Framework of Data Collection		
Figure 3:	Steps of data collection, processing and analysis	25	
Figure 4:	4: Caste wise distribution		
Figure 5:	ure 5: Caste wise distribution of orange cultivators from the sampled		
	households population	37	
Figure 6:	Caste wise distribution of orange production from the sampled		
	households population in 2006	38	
Figure 7:	Educational attainment of sampled households population	40	
Figure 8:	Occupational structure of sampled households population	43	
Figure 9: Production and Farm Size of orange from 2000 to 2006		46	
Figure 10: Ward-wise distribution of orange production and area			
	(2000 - 2006)	48	
Figure 11: Spatial interactions ward of the Study Area 49			
Figure 12: Marketing Channel of Orange50			

LIST OF MAPS

Map 1: Location Map of Khanisirbong GPU	28
Map 2: Drainage System	31
Map 3: Relief Map	32

LIST OF PHOTOS

Photo 1: I	nterviewing with Respondent	23
Photo 2: V	View of the Study Area	29
Photo 3 : La	arge crown of orange tree between (600-1200m altitude)	52
Photo 4 : Sn	nall crown of orange tree between (1200-1600m altitude)	53
Photo 5: Fru	it damaged by powdery mildew	57
Photo 6: Problem of beetle (larvae) on orange tree58		
Photo 7: Problem of orange leaf minor		

ABBREVIATION

B.S.	:	Bikaram Sambat
С	:	Celcius/Centigrade
CBS	:	Central Bureau Statistics
CDG	:	Central Department of Geography
Deptt.	:	Department
DOB	:	Department of Horticulture
ft	:	Feet
FYM	:	Farm Yard Manure
GIS	:	Geographic Information System
Govt.	:	Government
GPU	:	Gram Panchayat Unit
На	:	Hectare
HH	:	Households
HMG	:	His Majesty's Government
ICDS	:	Integrated Child Development Services
Jan.	:	January
Km	:	Kilometer
m	:	Meter
MSL	:	Mean Sea Level
No.	:	Number
Nov.	:	November
Р	:	Page
pН	:	antilog of hydrogen ion concentration
RDA	:	Rural Development Assistant
NGO	:	Non-Government Organization
SDM	:	Sub Divisional Magistrate
NSDP	:	Net State Domestic Product
Sept.	:	September
Sl. No.	:	Serial Number
Sq.km	:	Square Kilometer
Sr.sec.	:	Senior Secondary
T.U.	:	Tribhuvan University
VDC	:	Village Development Committee
VLW	:	Village Level Worker