

## TABLE OF CONTENTS

	<b>Page No.</b>
<i>Declaration</i>	I
<i>Certificate</i>	II
<i>Anti-Plagiarism Report</i>	III
<i>Abstract</i>	IV
<i>Preface</i>	VI
<i>Acknowledgement</i>	VIII
<i>Table of Contents</i>	X
<i>List of Tables</i>	XVII
<i>List of Figures</i>	XX
<i>List of the Appendices</i>	XXIV
<b>Chapter – I Introduction</b>	<b>1-13</b>
1.1 Why this study?	1
1.2 Scope and choice of the region	1
1.3 Hypotheses	3
1.4 Objectives	3
1.5 Methodology	3
1.6 Sources of Data	8
1.7. Limitations	9
1.8. Review of Literature	9
1.9. References	12
<b>Chapter – II General Background of the Study Area</b>	<b>14-34</b>
2.1. Introduction	14
2.2. Physical set up of the study area	15
2.2.1. Geology	15

2.2.2. Relief	17
2.2.3. Drainage System	20
2.2.4. Climate	24
2.2.5. Soil	26
2.2.6. Natural Vegetation	26
2.3. Socio-economic set up of the study area	27
2.3.1. Population Composition	27
2.3.1.1. Growth of Population	27
2.3.1.2. Rural and Urban Population composition	28
2.3.1.3. Density of Population	28
2.3.1.4. Occupational Structure	29
2.3.2. Land Holdings	32
2.3.3. Transport and Communication	32
2.3.4. Market Centres	33
2.4. References	34
<b>Chapter III: Spatial Analysis of Land Use Pattern</b>	<b>35-72</b>
3.1. Introduction	35
3.2. General Land use pattern	35
3.2.1. Classification of Land	35
3.2.2. Spatio-Temporal Variations of Land Use	37
3.2.2.1. Methodology	38

3.2.2.2. Results and Discussions	40
3.2.2.2.1. Changes in Agricultural land	41
3.2.2.2.2. Changes in Forest Land	44
3.2.2.2.3. Changes in Tea Garden	45
3.2.2.2.4. Changes in Built up Area	47
3.2.2.2.5. Changes in Rivers and Water body	49
3.3. Conclusions	49
3.4. References	72
<b>Chapter IV: Spatio-Temporal Analysis of Agricultural Land Use Pattern</b>	<b>73-116</b>
4.1. Introduction	73
4.2. Agricultural Land use Pattern	73
4.2.1. Spatio - Temporal variations of Agricultural Land use Pattern	79
4.2.1.1. Methodology	79
4.2.1.2. Results and Discussions	81
4.2.2. Growth Trend analysis of Agricultural Land use Pattern	93
4.2.2.1. Methodology	93
4.2.2.2. Results and Discussions	94
4.3. Impact of changing agricultural land use pattern on socio-economic conditions of rural masses	109
4.3.1. Change in agriculture	110
4.3.2. Educational Change	110
4.3.3. Occupational Change	112

4.3.4. Infrastructural Change	113
4.3.5. Social Change	113
4.4. Conclusions	114
4.5. References	114
<b>Chapter V: Quantitative Analysis of Agricultural Productivity</b>	<b>117-157</b>
5.1. Concept of Agricultural Productivity	117
5.2. Approaches of study	120
5.3. Agricultural Productivity Regions	128
5.3.1. Methodology	128
5.3.2. Results and Discussions	130
5.4. Growth trend analysis of productivity	148
5.4.1. Methodology	149
5.4.2. Results and Discussions	149
5.5. Conclusions	155
5.6. References	156
<b>Chapter VI: Role of Agricultural Inputs on Cropping Pattern</b>	<b>158-175</b>
6.1 Introduction	158
6.2 Irrigation	158
6.3 Agricultural Mechanization	164
6.4 High Yielding Variety Seeds	166
6.5 Chemical Fertilizers	168
6.6 Levels of Agro-Technological Development	169
6.6.1 Methodology	169

6.6.2 Results and Discussion	170
6.7 Changes in Agricultural Land use	172
6.7.1 Methodology	172
6.7.2 Results and Discussions	173
6.7.3 Overall change in agricultural land use	173
6.8. Conclusions	175
6.9. References	175
<b>Chapter VII: Delineation of Agricultural Land Use Regions</b>	<b>176-206</b>
7.1. Concept of Agricultural Land Use Regions	176
7.1.1. Techniques for the delimitation of Agricultural Land Use Regions	180
7.2. Crop Ranking Regions	180
7.2.1. Methodology	180
7.2.2. Results and Discussions	181
7.2.2.1. Period – I: (1990-91)	181
7.2.2.1.1. First Ranking	181
7.2.2.1.2. Second Ranking	181
7.2.2.1.3. Third Ranking	181
7.2.2.1.4. Fourth Ranking	182
7.2.2.1.5. Fifth Ranking	184
7.2.2.2. Period – II: (2010-11)	184
7.2.2.2.1. First Ranking	184
7.2.2.2.2. Second Ranking	184

7.2.2.2.3. Third Ranking	184
7.2.2.2.4. Fourth Ranking	186
7.2.2.2.5. Fifth Ranking	186
7.2.2.2.6. Sixth Ranking	188
7.3. Crop Combination Regions	188
7.3.1. Methodology	188
7.3.2. Results and Discussions	190
7.3.2.1. Period – I: (1990-91)	190
7.3.2.1.1. Crop combinations by Weaver’s Method	190
7.3.2.1.2. Crop combinations by Doi’s Method	192
7.3.2.2. Period – II: (2010-11)	192
7.3.2.2.1. Crop combinations by Weaver’s Method	193
7.3.2.2.2. Crop combinations by Doi’s Method	193
7.3.3. Changing crop combination pattern (1990-91 to 2010-11)	198
7.4. Crop Diversification Regions	199
7.4.1. Methodology	199
7.4.2. Results and Discussions	200
7.4.2.1. Crop diversification Regions by Bhatia	200
7.4.2.1.1. Crop Diversification Regions in Period-I (1990-91)	200
7.4.2.1.2. Crop Diversification Regions in Period-II (2010-11)	203

7.4.3. Changing Crop Diversification Pattern in Siliguri Subdivision (1990-91 to 2010-11)	204
7.5. Conclusions	204
7.6. References	205
<b>Chapter VIII: Problems of Agricultural Development</b>	<b>207-212</b>
8.1. Introduction	207
8.2. Problems of agriculture	207
8.2.1. Problems of Physical determinants	207
8.2.1.1. Relief	207
8.2.1.2. Uncertainties in Monsoonal rainfall	208
8.2.1.3. Soil	208
8.2.1.4. Rivers	208
8.2.2. Problems of Non - Physical determinants	209
8.2.2.1. Pressure of population	209
8.2.2.2. Uneconomic size of land holdings	209
8.2.2.3. Inadequate Irrigation	210
8.2.2.4. Low Degree of Mechanization	210
8.2.2.5. Inadequacy of Seeds	210
8.2.2.6. Problem to use Fertilizers	211
8.2.2.7. Problems of Labours	211
8.2.2.8. Problems of Transport	212
8.2.2.9. Other problems	212
8.3. Conclusions	212
<b>Chapter IX: Major Findings and Conclusions</b>	<b>213-216</b>
Bibliography	217-223