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To

My Preceptor and Guide Late Dr. Surjapada Paul

DECLARATION

I declare that the thesis entitled 'VULNERABILITY OF AGRICULTURE AND INTRODUCTION OF SMART AGRICULTURAL PRACTICES (SAPs): AN ASSESSMENT IN KOCH BIHAR DISTRICT, WEST BENGAL' has been prepared by me under the supervision of Dr. Indira Lepcha Nee Lama, Associate Professor of Department of Geography and Applied Geography, University of North Bengal. No previous degree or fellowship has been granted on the basis of this thesis.

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CERTIFICATE

This is to certify that **Satyajit Das** has prepared the thesis entitled **VULNERABILITY OF AGRICULTURE AND INTRODUCTION OF SMART AGRICULTURAL PRACTICES (SAPs): AN ASSESSMENT IN KOCH BIHAR DISTRICT, WEST BENGAL** for the award of Ph.D degree in Geography and Applied Geography of University of North Bengal under my supervision. He has carried out the research work at the Department of Geography and Applied Geography, University of North Bengal and the prepared based on the extensive field study for collection of primary data and secondary sources of information.

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Preface

The effect of climate change and variability has a direct impact on agricultural activity. The agricultural activity of different district in India has witnessed significant changes over the past decades in terms of cultivation technique, cropping patterns and different type of climate adaptation practices. Koch Bihar district is one of them and the main objective of this study is to identify the agricultural vulnerability and the status of smart agricultural activity in this district. Though the traditional farming practices and crops predominated in the district's agriculture. However, the district's agricultural activity began to alter in some smart technique from the last decade. Through this thesis, an effort has been made to analyse the vulnerability of agricultural activity, determinant of various smart agricultural practices, as well as the awareness, adoption and various problems to adopt this technique in different blocks of Koch Bihar district.

There are seven chapters in the thesis. **The first chapter** covers the significance, objective, hypotheses, sampling structure, data sources and methodology of the current study. The physical and socio-economic background of the study area is covered in **the second chapter**. In this chapter the agro-climatic location, geology, relief, drainage features, soils, and natural vegetation; climatic factors like rainfall and temperature, different extreme events; land holdings, population density, and KCC holder farmer, status of road connectivity at the block level also described. **The third chapter** deals with the various indicators and spatial variation of agricultural vulnerability in the study area. **The fourth chapter** depicted the socio-economic status and different types smart agricultural practices in the study area and also identify the different indicators that determine the adoption of smart agricultural practices (SAPs). **The fifth chapter** discusses the awareness and adoption level of various smart agricultural practices in different block of the study area. **The chapter six** addresses the main issues relating to the adoption of smart agricultural practices that makes remedial actions to resolve the issues and implement some new policy for the promotion of such smart technique in the study area in future. **The chapter seven** described the main findings of the research work as well as some suggestion strategies for the policy maker to development of this sector that will be important to the farming community of Koch Bihar district.

LIST OF TABLES

Table No.	Title	Page No.
2.1	Various Climatic Data of Koch Bihar District	37
2.2	Soil seris of Koch Bihar district and its textural classification	43
2.3	Population distribution of different block in Koch Bihar district, 2011	46
2.4	Caste Composition of Koch Bihar District	49
2.5	Religion types of Koch Bihar district	50
2.6	Occupational structure of different block in Koch Bihar district,2011	51
2.7	Block wise KCC distribution In Koch Bihar District	53
2.8	Different types of Landholder in Koch Bihar district,2011	54
2.9	Different types of road in Koch Bihar district	55
3.1	Exposure Indicators and Relationship with Agricultural Vulnerability	60
3.2	Sensitivity Indicators and Relationship with Vulnerability	66
3.3	Adaptive Capacity Indicators and Relationship with Vulnerability	72
3.4	Vulnerability coefficient value of frequency of low rainfall events in kharif season in different blocks of Koch Bihar district	80
3.5	Vulnerability coefficient value of livestock density in different blocks of Koch Bihar district	81
3.6	Coefficient value of exposure indicators in different blocks of Koch Bihar district	82
3.7	Coefficient value of Sensitivity indicators in different blocks of Koch Bihar district	82
3.8	Coefficient value of Adaptive capacity indicators in different blocks of Koch Bihar district	83
3.9	Scale for pair-wise comparison matrix	84
3.10	Random consistency index Value	85
3.11	Pairwise matrix table for Exposure indicators weight	85
3.12	Normalized Pairwise matrix table for Exposure indicators weight	86
3.13	Pairwise matrix table for Sensitivity indicators weight	86
3.14	Normalised Pairwise matrix table for Sensitivity indicators weight	87
3.15	Pairwise matrix table for Adaptive capacity indicators weight	87

3.16	Normalised Pairwise matrix table for Adaptive capacity indicators weight	87
3.17	Composite Exposure Index (CEI)	90
3.18	Composite Sensitivity Index (CSI)	91
3.19	Composite Adaptive Capacity Index (CAcI)	93
3.20	Composite Agricultural Vulnerability	94
3.21	Normalized agricultural vulnerability	96
4.1	Dependent Variable (Smart Agricultural Practices)	103
4.2	Independent Variable (Socio-economic condition of the respondent farmer)	103
4.3	Smart Agricultural Practices adoption scenario of different block in Koch Bihar district	106
4.4	Socio economic condition of the respondent cultivator of different block in Koch Bihar district	107-108
4.5	Sig. value of determinants of Various types of Smart Agricultural Practices (SAPs) in Koch Bihar block-I	112-113
4.6	Sig. value of determinants of Various types of Smart Agricultural Practices (SAPs) in Koch Bihar block-II	117-118
4.7	Sig. value of determinants of Various types of Smart Agricultural Practices (SAPs) in Dinhata block-I	122-123
4.8	Sig. value of determinants of Various types of Smart Agricultural Practices (SAPs) in Dinhata block-II	127-128
4.9	Sig. value of determinants of Various types of Smart Agricultural Practices (SAPs) in Haldibari block	132-133
4.10	Sig. value of determinants of Various types of Smart Agricultural Practices (SAPs) in Mathabhanga block-I	137-138
4.11	Sig. value of determinants of Various types of Smart Agricultural Practices (SAPs) in Mathabhanga block-II	142-143
4.12	Sig. value of determinants of Various types of Smart Agricultural Practices (SAPs) in Mekhliganj block	147-148
4.13	Sig. value of determinants of Various types of Smart Agricultural Practices (SAPs) in	152-153

	Practices (SAPs) in Sitai block	
4.14	Sig. value of determinants of Various types of Smart Agricultural Practices (SAPs) in Sitalkuchi block	157-158
4.15	Sig. value of determinants of Various types of Smart Agricultural Practices (SAPs) in Tufanganj block-I	162-163
4.16	Sig. value of determinants of Various types of Smart Agricultural Practices (SAPs) in Tufanganj block-II	167-168
4.17	Smart Agricultural Practices (SAPs) Koch Bihar District	169
4.18	Socio-economic traits of the respondent farmer in Koch Bihar District	170
4.19	Binary logistic Sig. value of determinants of Various types of Smart Agricultural Practices (SAPs) in Koch Bihar district	174-175
5.1	Level of Awareness and Adoption of Smart Agricultural Practices Koch Bihar-I Block	183
5.2	Level of Awareness and Adoption of Smart Agricultural Practices in Koch Bihar-II block block -II	187
5.3	Level of Awareness and Adoption of Smart Agricultural Practices in Dinhata-I	191
5.4	Level of Awareness and Adoption of Smart Agricultural Practices in Dinhata-II Block	195
5.5	Level of Awareness and Adoption of Smart Agricultural Practices in Haldibari Block	199
5.6	Level of Awareness and Adoption of Smart Agricultural Practices in Mathabhanga-I block	203
5.7	Level of Awareness and Adoption of Smart Agricultural Practices in Mathabhanga-II Block	207
5.8	Level of Awareness and Adoption of Smart Agricultural Practices in Mekhliganj Block	211
5.9	Level of Awareness and Adoption of Smart Agricultural Practices in Sitai Block	215
5.10	Level of Awareness and Adoption of Smart Agricultural Practices in Sitalkuchi Block	219

5.11	Level of Awareness and Adoption of Smart Agricultural Practices in Tufanganj-I Block	224
5.12	Level of Awareness and Adoption of Smart Agricultural Practices in Tufanganj-II block	228
5.13	Level of Awareness and Adoption of Smart Agricultural Practices in Koch Bihar district	233
6.1	Percentage of Respondent Rankers about Soil Health Card	238
6.2	Percentage of respondent rankers about Seed treatment and HYV seed problem	238
6.3	Percentage of respondent rankers about Zero tillage problem	239
6.4	Percentage of respondent rankers about Mulching problem	239
6.5	Percentage of respondent rankers about Sustainable irrigation problem	240
6.6	Percentage of respondent rankers about E-Marketing problem	241
6.7	Percentage of respondent rankers about Crop rotation and Intercropping related problem	241
6.8	Percentage of respondent rankers about Integrated farming System(Commercial Interconnected) related problems	241
6.9	Percentage of respondent rankers about Poly house nursery and vegetable production related problem	242
6.10	Percentage of respondent rankers about Vermicompost and organic farming related problem	243
6.11	Percentage of respondent rankers about Plant protection measure (INM,IPM) problem	243
6.12	Percentage of respondent rankers about Crop insurance (BSB) and crop loan related problem	243
6.13	Percentage of respondent rankers about Information and communication technology (ICTs) problem	244
6.14	Percentage of respondent rankers about Farm power machinery related problem	245
6.15	Percentage of respondent rankers about Climate Resilient Agriculture	245

	(CRA) related problem	
6.16	Percentage of respondent rankers about Smart Animal husbandry related problem	246
6.17	Ranks of the Overall Problems of smart agricultural practices (SAPs) in Koch Bihar district:	246-247
6.18	Percentage of rankers (Farmer) about the Prospect of Smart Agricultural Practices (SAPs)	250
6.19	Rank of the Prospect of Smart Agricultural Practices (SAPs)	252
7.1	Crop Calendar for Koch Bihar District (Eastern Himalayan Agro-Climatic Region)	258
7.2	Production Cost Minimisation by Using Farm Power Machinery in Paddy Cultivation	260
7.3	Production Cost Minimisation Analysis by Zero Tillage in Muatard Cultivation	260
7.4	Production Cost Minimisation by Zero Tillage in Maize Cultivation	261

LIST OF FIGURES

Figure No.	Title	Page No.
1.1	Block wise Sample villages following SAPs in Koch Bihar District	19
2.1	Average monthly rainfall of Koch Bihar district (1951 to 2020)	34
2.2	Trend of annual rainfall in Koch Bihar district (1951 to 2020)	35
2.3	Average monthly temperature of Koch Bihar district (1951 to 2020)	35
2.4	Trend of Maximum temperature in Koch Bihar district (1951 to 2020)	36
2.5	Trend of Minimum temperature in Koch Bihar district (1951 to 2020)	36
2.6	Average monthly relative humidity and rainy days in Koch Bihar district (1951 to 2020)	37
2.7	Average monthly wind speed and special weather phenomena in Koch Bihar district (1951 to 2020)	38
2.8	Seasonal trend of ground water depth in Koch Bihar district from (1996 to 2018),	44
2.9	Block Wise Gender Distribution in Koch Bihar District, 2011	47
2.10	Block Wise Rural and Urban Population Distribution in Koch Bihar District, 2011	47
2.11	Religious composition of Koch Bihar district	50
2.12	Rural and Urban Literacy of Different Blocks of Koch Bihar District, 2011	50
2.13	Kishan Credit Card (KCC) status of the cultivator in Koch Bihar district	53
3.1	Conceptual framework of assessing the vulnerability of agriculture to climate change	89
3.2	Correlation between exposure and Agricultural vulnerability in different block of Koch Bihar district	98
3.3	Correlation between sensitivity and Agricultural vulnerability in different block of Koch Bihar district	98
3.4	Correlation between adaptive capacity and Agricultural vulnerability in different block of Koch Bihar district	98
4.1	Adoption of Smart Agricultural Practices (SAPs) in Koch Bihar-I	109

	Block	
4.2	Socio economic traits of the respondent cultivators in Koch Bihar-I Block	110
4.3	Adoption of Smart Agricultural Practices (SAPs) in Koch Bihar-II Block	114
4.4	Socio economic traits of the respondent cultivators in Koch Bihar-II Block	115
4.5	Adoption of Smart Agricultural Practices (SAPs) in Dinhata-I Block	119
4.6	Socio economic traits of the respondent cultivators in Dinhata-I Block	120
4.7	Adoption of Smart Agricultural Practices (SAPs) in Dinhata-II Block	124
4.8	Socio economic traits of the respondent cultivators in Dinhata-II Block	125
4.9	Adoption of Smart Agricultural Practices (SAPs) in Haldibari Block	129
4.10	Socio economic traits of the respondent cultivators in Haldibari Block	130
4.11	Adoption of Smart Agricultural Practices (SAPs) in Mathabhanga-I Block	134
4.12	Socio economic traits of the respondent cultivators in Mathabhanga-I Block	135
4.13	Adoption of Smart Agricultural Practices (SAPs) in Mathabhanga-II Block	139
4.14	Socio economic traits of the respondent cultivators in Mathabhanga-II Block	140
4.15	Adoption of Smart Agricultural Practices (SAPs) in Mekhliganj Block	144
4.17	Socio economic traits of the respondent cultivators in Mekhliganj Block	145
4.18	Adoption of Smart Agricultural Practices (SAPs) in Sitai Block	149
4.19	Socio economic traits of the respondent cultivators in Sitai Block	150
4.20	Adoption of Smart Agricultural Practices (SAPs) in Sitalkuchi Block	154
4.21	Socio economic traits of the respondent cultivators in Sitalkuchi Block	155
4.22	Adoption of Smart Agricultural Practices (SAPs) in Tufanganj-I Block	159
4.23	Socio economic traits of the respondent cultivators in Tufanganj-I Block	160

4.24	Adoption of Smart Agricultural Practices (SAPs) in Tufanganj-II Block	164
4.25	Socio economic traits of the respondent cultivators in Tufanganj-II Block	165
4.26	Adoption of Smart Agricultural Practices (SAPs) in Koch Bihar District	169
4.27	Socio economic traits of the respondent cultivators in Koch Bihar District	171
5.1	Awareness and Adoption Index of Smart Agricultural Practices (SAPs) of Koch Bihar-I block	184
5.2	Awareness and Adoption Index of Smart Agricultural Practices (SAPs) of Koch Bihar-II block	188
5.3	Awareness and Adoption Index of Smart Agricultural Practices (SAPs) of Dinhata-I block	192
5.4	Awareness and Adoption Index of Smart Agricultural Practices (SAPs) of Dinhata-II block	196
5.5	Awareness and Adoption Index of Smart Agricultural Practices (SAPs) of Haldibari block	200
5.6	Awareness and Adoption Index of Smart Agricultural Practices (SAPs) of Mathabhanga-I block	204
5.7	Awareness and Adoption Index of Smart Agricultural Practices (SAPs) of Mathabhanga-II block	208
5.8	Awareness and Adoption Index of Smart Agricultural Practices (SAPs) of Mekhliganj block	212
5.9	Awareness and Adoption Index of Smart Agricultural Practices (SAPs) of Sitai block	216
5.10	Awareness and adoption of Smart agricultural practices (SAPs) of Sitalkuchi block	220
5.11	Awareness and Adoption Index of Smart Agricultural Practices (SAPs) of Tufanganj-I block	224

5.12	Awareness and Adoption Index of Smart Agricultural Practices (SAPs) of Tufanganj-II block	229
5.13	Awareness and Adoption Index of Smart Agricultural Practices (SAPs) in Koch Bihar district	234
6.1	Problem in adoption of Soil Health Card (SHC)	239
6.2	Problem in adoption of seed treatment and use of HYV seed	239
6.3	Problems in adoption of Zero tillage	240
6.4	Problems in adoption of mulching	240
6.5	Problems in adoption of Sustainable irrigation	242
6.6	Problems in adoption of E-marketing	242
6.7	Problem in adoption of Intercropping	242
6.8	Problem in adoption of integrated farming system (IFS)	242
6.9	Problem in adoption of Poly house nursery and vegetable production	244
6.10	Problem in adoption of vermicompost	244
6.11	Problem in adoption of plant protection measure	244
6.12	Problem in adoption of crop insurance	244
6.13	Problem in adoption of Information and communication technology (ICTs)	246
6.14	Problem in adoption of Farm power machinery	246
6.15	Problem in adoption of Climate Resilient Agriculture	246
6.16	Problem in adoption of smart animal husbandry	246
6.17	Percentage of rankers (Farmer) about the Prospect of Smart Agricultural Practices (SAPs)	251

LIST OF MAPS

Map No.	Title	Page No.
1.1	Location of the study area	15
1.2	Location of the sample villages in the study area	18
2.1	Koch Bihar district in Terrai-Tesat Alluvial zone under Eastern Himalayan Agro-Climatic region	34
2.2	Relief map of Koch Bihar district	49
2.3	Major Geomorphic units of Koch Bihar district	40
2.4	Drainage map of Koch Bihar district	41
2.5	Natural vegetation map of Koch Bihar district	42
2.6	Soil type of Koch Bihar district	43
2.7	Spatial variation of ground water depth in Pre-monsoon, Monsoon and post-monsoon season in Koch Bihar district	45
2.8	Population density of different blocks in Koch Bihar district	48
2.9	Caste composition of different block in Koch Bihar district	49
2.10	Occupational structure in different of Koch Bihar district, 2011	52
2.11	Cultivator's land holding status of different block in Koch Bihar district, 2011	54
2.12	Road Density of different block in Koch Bihar district	56
3.1	Maximum temperature change rate during kharif season in different blocks of Koch Bihar district	61
3.2	Minimum temperature change rate during kharif season in different blocks of Koch Bihar district	61
3.3	Maximum temperature change rate during rabi season in different blocks of Koch Bihar district	62
3.4	Minimum temperature change rate during rabi season in different blocks of Koch Bihar district	62
3.5	Frequency of low rainfall events during kharif season in different blocks of Koch Bihar district	63
3.6	Frequency of high rainfall events during kharif season in different blocks of Koch Bihar district	64

3.7	Frequency of low rainfall events during rabi season in different blocks of Koch Bihar district	64
3.8	Frequency of high rainfall events during rabi season in different blocks of Koch Bihar district	65
3.9	Net sown area to respective geographical area of different blocks in Koch Bihar district	66
3.10	Average yield of food grains of different blocks of Koch Bihar district	67
3.11	Soil organic carbon content of different blocks of Koch Bihar district	68
3.12	Marginal landholding farmer of different blocks of Koch Bihar district	69
3.13	Small landholding farmer of different blocks of Koch Bihar district	70
3.14	population density of different blocks of Koch Bihar district	71
3.15	Percentage of irrigated area map of different blocks of Koch Bihar district	73
3.16	Human Development Index (HDI) map of different blocks of Koch Bihar district	74
3.17	Cropping intensity map of different blocks of Koch Bihar district	75
3.18	Livestock density map of different blocks of Koch Bihar district	76
3.19	Percentage of villages electrified in different blocks of Koch Bihar district	77
3.20	Percentage of villages with paved road in different blocks of Koch Bihar district	78
3.21	Female work participation in agricultural sector in different blocks of Koch Bihar district	79
3.22	Composite exposure in different blocks of Koch Bihar district	91
3.23	Composite sensitivity map of different blocks of Koch Bihar district	92
3.24	Composite adaptive capacity in different blocks of Koch Bihar district	94
3.25	Composite agricultural vulnerability map in different block of Koch Bihar district	95
3.26	Normalized agricultural vulnerability map in different block of Koch Bihar district	97

LIST OF PHOTO PLATES

Photo Plate No.	Description	Page No.
5.1	Zero tillage mustard in Koch Bihar block-I	184
5.2	Paddy field transplanted by tranplanter	184
5.3	Sprinkler Irrigation in Cabbage Field (Sustainable Irrigation)	188
5.4	Potato Seed Production inside Net Barrier (Plant Protection Measure)	188
5.5	Paddy Cum Fish Farming (Integrated Farming System)	192
5.6	Potato Seed Production inside Net Barrier (Plant Protection Measure)	192
5.7	Processing of Vermicompost in Dinhata block-II	196
5.8	Agricultural field surrounded by battle nut tree an eucalyptus	196
5.9	Sprinkler Irrigation in Tea Plantation In haldibri	200
5.10	Integrated Farming system (Agro-forestry) in Haldibari	200
5.11	Use of stubble mulching in Mathabhanga-I Block	204
5.12	Intercropping	204
5.13	Use of Solar Irrigation in Mathabhanga-II Block	208
5.14	Poly House Nursery and Vegetable Production in Mathabhanga-II	208
5.15	Processing of Vermicompost in Mekhliganj Block	212
5.16	Ridge Goard Plant using Vermicompost and Poly Pack	212
5.17	Use of Use of Seed Drill in Sitai Block	216
5.18	High Tech Potato Seed Farm with Drip Irrigation	216
5.19	Using Poly Mulching Snake Goard Cultivation at BR Chatra	217
5.20	Zero Tillage Mustard in Sitai Block	217
5.21	Use of land leveler (farm power machinnary)	221
5.22	Poly house vegetable (Wax goard)	221
5.23	Mashroom cultivation (Itegrated Farming system)	225
5.24	mustard thresher (farm power machinary)	225
5.25	Sollar Irrigation	225
5.26	drought tolerance crop maize (Climate resilient crop varity)	225
5.27	Ploy house nurshery and vegetable	229
5.28	Bio flock fish (Integrated farming system)	229

5.29	Solar irrigation	230
5.30	zero tillage mustard in Tufanganj-II Block	230

LIST OF APPENDICES

Appendix-A: Schedule/Questionnaire

Appendix-B: Abbreviation

Appendix-C: Glossary

Appendix-D: Publication list

Appendix-E: Publication copy