



Training Program on

Integrating Geospatial Technologies in Climate-Smart Agriculture Planning and Management in South Asia

APN CAPaBLE

November 25-28, 2023

**Biratnagar
NEPAL**

**Mid-West University
Graduate School of Science and Technology**

TRAINING WORKSHOP REPORT

Four-Days International Training Workshop on "Integrating Geospatial Technologies in Climate-Smart Agriculture Planning and Management in South Asia" from November 25 - 28, 2023 at Biratnagar, Nepal

Organizers:

- Mid-West University, Graduate School of Science and Technology (MU-GSST)
- Nepal Academy of Science and Technology (NAST)

In Nepal, agriculture plays a crucial role, contributing to one-third of the national GDP (CBS, 2016), while in Pakistan and Bhutan, it constitutes 23% (Plecher, 2019) and 17% (NSB, 2018) respectively. The sector employs 65%, 60%, and 44% of the population in Nepal (CBS, 2016), Bhutan, and Pakistan (FAO, 2019), respectively. Climate change significantly impacts agriculture in these countries, and addressing these challenges necessitates the adoption of climate-smart agriculture (CSA). However, current CSA efforts are confined to conventional methods, hindering effective adaptation.

To enhance CSA adoption, there is a critical need for informed decision-making, for which the application of geospatial and other information technologies is essential. The South Asian region, with its increasing population and changing climate, faces threats to sustainable agriculture due to altering land use, water resources, soil fertility, and climate extremes (Gupta & Deshpande, 2004; Christen et al., 2010). Traditional practices and existing mitigation measures are insufficient to cope with emerging issues, leading to a significant impact on livelihoods in South Asia (Ahmad et al., 2004; Prabhakar & Shaw, 2008; Ashraf et al., 2011; Nelson et al., 2009; Rafiq & Blaschke, 2012).

Recognizing the urgency, geospatial technologies emerge as crucial tools for agriculture planning and management, addressing climate change issues (Albert, 2012; Rao et al., 2004; Sherrouse et al., 2011; Sunderesan et al., 2013). Therefore, a training workshop, part of the APN Project (CBA2020-13MY-Thakuri), aims to build the capacity of stakeholders in Nepal on applying geospatial technologies in CSA planning and management.

Organized by Mid-West University, Graduate School of Science and Technology (MU-GSST), in collaboration with the Nepal Academy of Science and Technology (NAST) and with financial support from the Asia Pacific Network for Global Change Research (APN-GCR), the 4-day training workshop (September 22 - 25, 2023) is led by Nepal. Assistant Prof. Ram Adhikari, Head of the Morang Multiple Campus of the program, emphasized the exploration of innovative ways to integrate geospatial technologies for climate-smart agriculture in the South Asian context in the inaugural address.

Throughout the workshop, GIS expert Bishnu Maharjan played a pivotal role in instructing participants on the practical utilization of GIS software in agriculture. The sessions covered navigating the software interface, data analysis techniques, mapping functionalities, and hands-on exercises, providing valuable insights into assessing climatic data and determining crop suitability for specific locations.

Dr. Uttambabu Shrestha offered a comprehensive training session on global agricultural technologies, focusing on land selection and mapping in the Nepalese context. Mr. Kiran Timilsina addressed climate-smart agriculture strategies and the importance of cultivating appropriate crops in specific locations, including training on Super-Krishak and Geo-Krishi mobile applications.

The concluding session featured expressions of gratitude from Dr. Indramani Bhagat from Nepal Academy of Science and Technology (NAST) recognizing the importance of incorporating cutting-edge technologies in agriculture. A diverse group of 30 participants, including agricultural officers, professors, and research-level students, actively engaged in the training, culminating in the distribution of certificates of participation at the Holiday Regency Hotel in Kathmandu. The event underscored the collaborative commitment to advancing agricultural methodologies through the integration of modern technologies.

This workshop was published in an online news portal ([जलवायु अनुकूलित कृषि तालिम - Arun Khabar - Arun Khabar](#)), that spotlight shines on the pivotal role of Geographic Information Systems (GIS) and Remote Sensing in the context of climate-smart agriculture in South Asia. The event, titled "Integrating Geospatial Technologies in Climate-Smart Agriculture Planning and Management," is scheduled to take place from November 25–28, 2023, in Biratnagar, Nepal gathered and served as a platform for experts, researchers, and stakeholders to converge and explore innovative ways to harness geospatial data for sustainable and resilient agricultural practices. Against the backdrop of climate change challenges, the event aims to underscore the significance of leveraging advanced technologies like GIS and Remote Sensing to enhance precision farming, optimize resource utilization, and bolster overall agricultural resilience in the face of evolving environmental conditions. As the global community grapples with the impacts of climate change, this initiative in South Asia stands out as a beacon of collaboration and knowledge exchange in the pursuit of climate-smart solutions for the agricultural sector.

1. Glimpse of the Event in Pictures



Picture 1. Participants in the Training Workshop



Picture 2. Inauguration session of the program



2. List of Training Participants

S. N .	Name	Post	Organization	Contact No.	Email	Address
1	Rakshya Poudel	Argi Economist	Directorate of Livestock and Fishery Development	9843493297	rakshya.p634@gmail.com	Morang
2	Alisha Khadka	Crop Development Officer	Directorate of Agriculture Development	9861870696	khadka.alisha44@gmail.com	Morang
3	Nabin Adhikari	Agriculture Extension Officer	Directorate of Agriculture Development	9845652844	nabin1adh@gmail.com	Morang
4	Ankit Bhattarai	Horticulture Development Officer	Agriculture Knowledge Center, Jhapa	9851240954	ankeetbhattara@gmail.com	Jhapa
5	Rujan Khadka	Horticulture Development Officer	Agriculture Knowledge Center, Ilam	9844641291	rujan.khadka@gmail.com	Ilam
6	Aadarsha Singh	Horticulture Development Officer	Agriculture Knowledge Center, morang	9862134593	akcmorang@gmail.com	Morang
7	Nidhi Gupta	M.Sc. Botany Student	Degree Campus, Biratnagar	9807065208		Morang
8	Yasir Jamal	M.Sc. Botany Student	Degree Campus, Biratnagar	9807018889		Morang
9	Rabin Rai	M.Sc. Botany Student	Degree Campus, Biratnagar	9807072250		Morang
10	Biraj Baral	M.Sc. Botany Student	Degree Campus, Biratnagar	9862290929		Morang
11	Madan Thapa	Teaching faculty	Purwanchal University	9842621462		Morang
12	Krishna Dahal	Teaching faculty	Purwanchal University	contact to Madan		
13	Jiban Paudel	Teaching faculty	Purwanchal University	contact to Madan		
14	Rabi Acharya	Teaching faculty	Purwanchal University	contact to Madan		
15	Shiva Neupane	Officer		9844779675		Jhapa
16	Surendra Chaudhary	Consultant		980926593		Jhapa
17	Seema Bhattarai	Zoology Teacher		9862134541		Morang
18	Reeja Dahal	Zoology , Thesis Student		98666781429		Jhapa

19	Yunisha Dahal	Consultant		9862230208	yunishadahal48@gmail.com	Morang
20	Reeya Rokka	Agri Graduate		9811359216	reya.rokka@gmail.com	Morang
21	Pooja Basnet	Agri Graduate		9842027508	po000jaaaabasnet@gmail.com	Morang
22	Niki Yadav	Agri Graduate		9862230208	yadavniki.yn@gmail.com	Morang
23	Santosh Khanal	Asst Professor	Gauradaha Ariculture Campus	9851074330		Jhapa
24	Sanjaya Mahato	Asst Professor	Gauradaha Ariculture Campus	9865658585		Jhapa
25	Kushal Lamichhan	M.Sc. Ag.Student		9861489016		Jhapa
26	Kushal Dhungana	M.Sc. Ag.Student		9868559933		Jhapa
27	Pragya Nepal	M.Sc.Zoo. Student	Degree Campus, Biratnagar	9842469533		Morang
28	Zisan UI Haque	M.Sc. Zoo. Student	Degree Campus, Biratnagar	9811008050		Morang
29	Karishma Chaudhary	M.Sc. Zoo. Student	Degree Campus, Biratnagar	9825770600		Morang
30	Moni Kumari Sah	M.Sc.Zoo. Student	Degree Campus, Biratnagar	9811074502		Morang
31	Nitika Wasti	B.Sc. Student, Env. Science	Mahendra Morang Multiple Campus	9846671678		

3. Programme Schedule

Day 1: Inaugural Session (November 25, 2023)

Time	Activity	Resource Person
8:00- 9:00	Registration and arrival of guests/participants (welcoming with snacks)	
Inaugural Session		
9:00-10:00	<p>Guests:</p> <p>Assoc. Prof. Dr. Sudeep Thakuri, Dean, Graduate School of Science and Technology</p> <p>Academician, NAST</p> <p>Others</p>	

10:00-10:15	Welcome note; Workshop Highlight and Project overview	Presentation by Project Coordinator, Dr. Pushpa Raj Acharya
10:15-10:25	Technical Highlights and Software Installation	Bishnu Maharjan, Resource Person
10:25-10:35	Brief remarks	Guests
10:35-10:40	Remarks from guest	Chief Guests
10:40-10:45	Vote of thanks and closing	
10:45-11:00	Group Photo	
11:00-12:00	Lunch	
12:00-15:00	Software Installation	
15:00-16:00	Resource Person Presentation	

Day 2: Introductory Session (November 26, 2023)

Time	Activity	Resource Person
8:00-8:30	Registration and arrival of guests/participants	
8:30-9:00	Introduction of the participant and training overview	
9:00 – 10:30	Introduction to Climate smart agriculture: Theory and practice	Kiran Timilsina - Head of Agri-Services - Gham Power
11:00 – 12:00	An introduction to Geokrishi App for smart agriculture	Rajan Bajracharya
12:00- 1:00	Lunch	
1:00 -3:00	Introduction to Arc Map: Getting to know software and data types	BishnuMaharjan/ Raju Chauhan
3:00 – 4:30	Exploring with data and data frame in GIS	BishnuMaharjan/ Raju Chauhan
4:30 – 5:30	Map layout	BishnuMaharjan/ Raju Chauhan

Day 3: Applied Session (November 27, 2023)

Time	Activity	Resource Person
9:00-10:30	Application of Geospatial Technologies for Climate Smart Agriculture: Global trend and Nepalese Perspective	Dr. Uttam Babu Shrestha, GIIS, Nepal
10:30 – 11:00	Hands on exercise on operating SMART agriculture NCFD Nepal application in android Mobile	Bishnu Maharjan
11:00- 12:30	Handling GPS and google earth applications for crop and agriculture mapping	Bishnu Maharjan
12:30- 1:30	Lunch	
1:30 -2:00	Crop Suitability Analysis using GIS and Climatic Data (Entropy Modelling)- An introduction	Bishnu Maharjan/ Raju Chauhan
2:00 – 3:30	Crop Suitability Analysis using GIS and Climatic Data: Hands on exercise	Bishnu Maharjan/ Raju Chauhan
3:30 – 5:00	Crop Suitability Analysis using GIS and Climatic Data: Hands on exercise, continued.	Bishnu Maharjan/ Raju Chauhan
5:00- 5:30	Group division for project work	

Day 4: Presentation and closing Session (November 28, 2023)

Time	Activity	Resource Person
8:00- 9:00	Group work continued	
9:00 – 11:00	Presentation of group work and Discussion	
Closing session		
11:00-11:30	Reflection from participants and trainers	
11:30- 12:00	Certificate distribution	
12:00 -12:10	Remarks	

12:10-12:20	Remarks	
12:20-12:30	Closing remarks	
12:30-1:30	Lunch	
1:30	Check out and departure	