TRAINING WORKSHOP REPORT

Three-Days International Training Workshop on ""“Integrating Geospatial Technologies in Climate-Smart Agriculture Planning and Management in South Asia" from October 13-15, 2022 at Birendranagar, Surkhet, Nepal

1. Background

Agriculture contributes one-third of the national GDP in Nepal (CBS, 2016), 23% in Pakistan (Plecher, 2019), and 17% in Bhutan (NSB, 2018). It employs 65%, 60%, and 44% of the population in Nepal (CBS, 2016), Bhutan, and Pakistan (FAO, 2019), respectively. Agriculture is immensely affected by climate change (CC) in these countries. Climate-smart agriculture (CSA) has been identified as a sustainable solution to CC challenges in agriculture; however current efforts in CSA limit to conventional planning, extension, and dissemination approaches. The effective adoption of CSA requires smart, informed decisions for which the application of geospatial and other information technologies is crucial.

Changing land use, water resources, soil fertility, and increasing climate extremes pose a serious threat for sustainable agriculture of the rapidly populating and climatically changing south Asian region (Gupta & Deshpande, 2004; Christen et al., 2010). Notwithstanding, the present apparent symptoms of CC causing non-availability of water at the right time, the existing traditional practices, skills, and drought/flood risks mitigation practices on watersheds are not sufficient (Ahmad et al., 2004; Prabhakar & Shaw, 2008) to cope with the emerging issues and risks. Consequently, a significant impact of CC on livelihood has been reported in South Asia (Ashraf et al., 2011; Nelson et al., 2009; Rafiq & Blaschke, 2012). It is partly because concise future climate vulnerability and risks are not known. Geospatial technologies comprise a range of modern tools contributing to the geographic mapping and analysis of the earth and human societies (Albert, 2012). These technologies can be an important tool for agriculture planning and management (Rao et al., 2004; Sherrouse et al., 2011) and addressing CC issues (Sunderesan et al., 2013). Therefore, skilled human resources and improved knowledge on the application of geospatial technologies in climate-smart agriculture planning and management are urgently needed for sustaining food production, improving livelihood, and augmenting the economy. Therefore, this training workshop has been planned, under the framework of the APN Project (CBA2020-13MY-Thakuri), to share and make a common understanding between the collaborators and key resource persons for the capacity

building initiatives on application of geospatial technologies in CSA planning and management in Bhutan, Nepal, and Pakistan.

2. Objective

The overall goal of the training workshop is to strengthen the capacity of project collaborators and key resource persons for the capacity building of local government and stakeholders on the application of geospatial technologies in CSA planning and management for promoting sustainable agriculture in Bhutan, Nepal, and Pakistan.

The specific objectives of this project are as follows:

- Share and discuss the key concepts of the CSA and geospatial tools and techniques;
- Develop a training module for application of geospatial techniques for the best/innovative CSA planning and management in the collaborating countries;
- Participate in collaborator meeting for the planning of training session in each country.

3. Date and Venue

Date: October 13-15 (Nepali Calendar: Asoj 27-29, 2079)

Venue: Suva Hotel, Birendranagar, Surkhet, Karnali Province, Nepal

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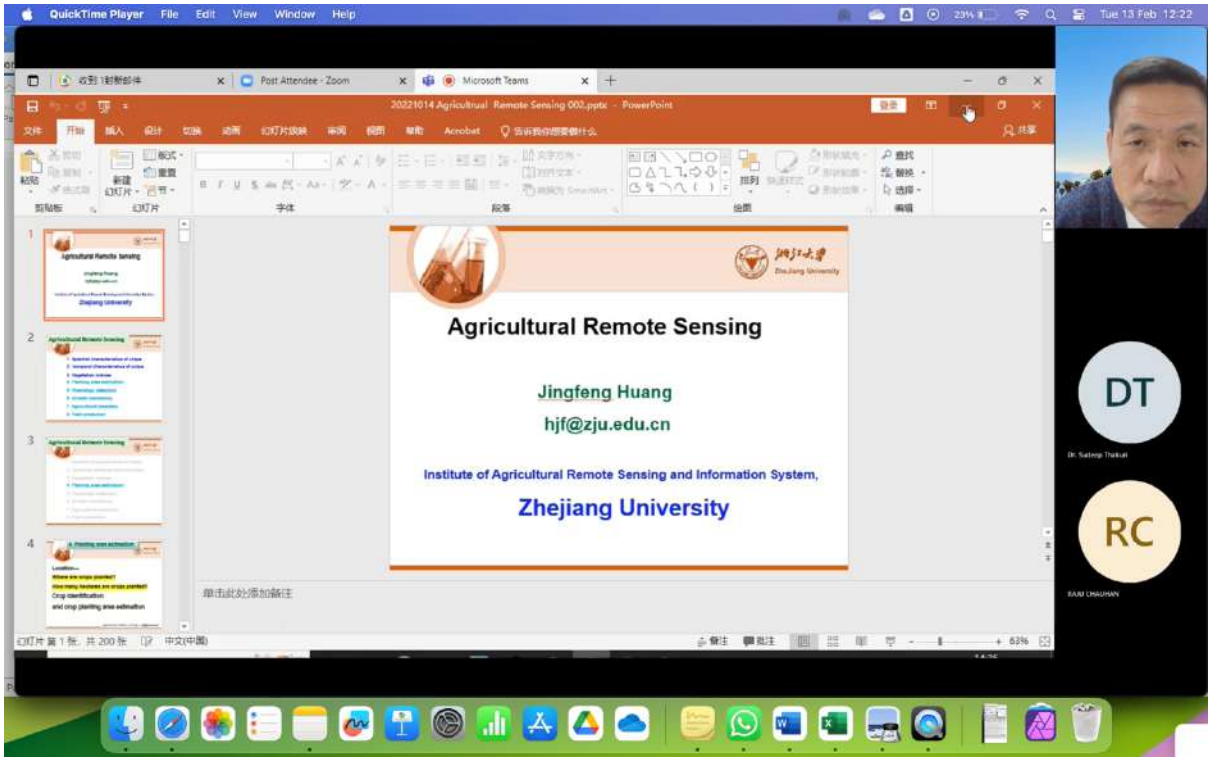
4. Glimpses of the Training Program


APN
Integrating Geospatial Technologies in
Climate-Smart Agriculture Planning and
Management in South Asia
APN CAPaBLE
Training Workshop: October 13-15, 2

Inaugural session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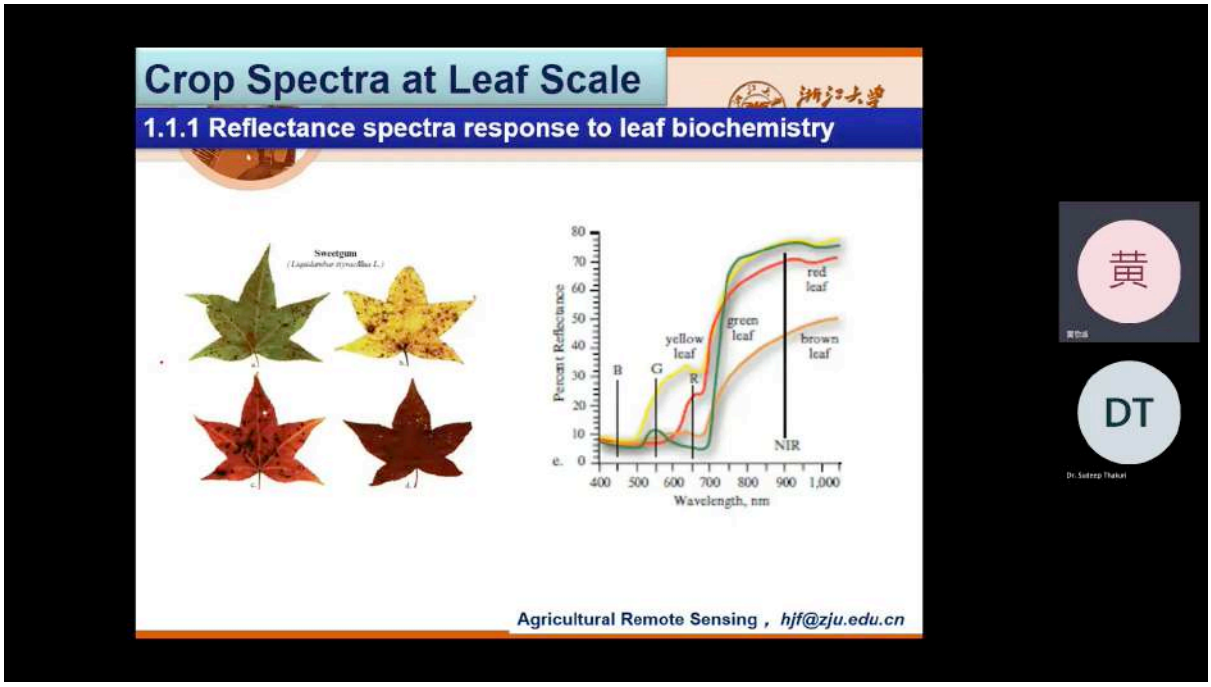
Crop Spectra at Leaf Scale
1.1.1 Reflectance spectra response to leaf biochemistry
Sweetgum
Percent Reflectance
Wavelength, nm
B
G
R
NIR
yellow leaf
green leaf
red leaf
brown leaf
Agricultural Remote Sensing , hjf@zju.edu.cn
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Training Technical session

Closing Session

Certificate Ref. No. 20221015-15

Mid-West University
Graduate School of Science and Technology

On Behalf of Collaborating Partners
under the Project

Integrating Geospatial Technologies in Climate-Smart Agriculture Planning and Management in South Asia
(CBA2020-13MY-Thakuri)

Funded by
Asia Pacific Network for Global Change Research (APN gcr)

Awards this Certificate to

Barsha Thapa Magar

for
Participation in the Training Workshop from October 13 to 15, 2022 at Surkhet, Nepal.

Dr. Sudeep Thakuri
Dean/Project Leader

Prof. Dr. Narayan Prasad Poudel
Registrar, Mid-West University

Annex 1. Programme Schedule

Day 1: Inaugural Session (Thursday, October 13, 2022)

Inaugural Session		
Time	**Activity**	**Resource Person**
15:00-15:30	Registration and arrival of guests/participants	
Inaugural Session		

15:30-15:35	<u>*Guests on the dais*</u> *Chairperson*: Prof. Dr. Narayan Prasad Paudel, Registrar, Mid-West University (MU) *Chief guest*: Prof. Dr. Nanda Bahadur Singh, Vice Chancellor, MU *Guest*: Prof. Dr. Bimal Lal Karna, Dean, Graduate School of Agriculture and Forestry, MU Secretary, Ministry of Land Management, Agriculture & Co-operative, Karnali Province Secretary, Ministry of Industry, Tourism, Forests and Environment, Karnali Province *Principal Investigator*: Dr. Sudeep Thakuri, Graduate School of Science and Technology, MU *Project collaborator:* Dr. Madan Lall Shrestha, Nepal Academy of Science and Technology (NAST) *Project collaborator:* Dr Shaukat Ali, Pakistan *Project collaborator*: Dr. Sonam Tashi, Bhutan

15:35-15:40	Welcome note	Dr Pushpa Raj Acharya, Graduate School of Science and Technology, MU
15:40- 15:50	Workshop and Project overview	Dr Sudeep Thakuri, Project Leader, MU
15:50-16:00	Brief remarks	Dr Shaukat Ali, Project Collaborator, Global Change Impact Studies Centre (GCISC) Pakistan
16:00-16:10	Brief remarks	Dr Madan Lall Shrestha, Project Collaborator, NAST, Nepal
16:10-16:20	Brief remarks	Dr Sonam Tashi, Project Collaborator, Royal University of Bhutan
16:20-16:30	Remarks	Dr. Lekh Raj Dahal, Secretary, Ministry of Land Management, Agriculture & Co-operative
16:30-16:50	Inaugural address	Chief Guest: Prof. Dr. Nanda Bahadur Singh, Vice Chancellor, MU
16:50-17:00	Vote of thanks and closing	Chairperson: Prof. Dr. Narayan Prasad Paudel, Registrar, MU
	Group Photo	
19:00-21:00	*Welcome Dinner*	

Day 2: Technical Sessions (Friday, October 14, 2022)

Technical session 1: Climate change and agriculture practices		
9:00-9:10	Climate change and agriculture	Mr Suraj BC, MU
9:15-9:30	Agriculture meteorology	Dr Madan Lal Shrestha, NAST
9:30-9:45	Climate-smart agriculture	Dr Pashupati Chaudhary, ADPC
9:45-10:00	Questions and Answers	All
Tea/Coffee (10:00-10:20)		

Technical session 2: Climate-smart agriculture and geospatial applications		
10:20-10:40	CSA and geospatial applications	Dr Sudeep Thakuri, MU
10:40-12:40	Agriculture Remote Sensing: Theory and Application - I	Prof Dr Jingfeng Huang, College of Environmental and Resource Sciences, Zhejiang University, China
Lunch break (12:40-13:30)		
Technical session 3: Geospatial tools and technologies		
13:30-15:30	Agriculture Remote Sensing: Theory and Application - II	Prof Dr Jingfeng Huang, College of Environmental and Resource Sciences, Zhejiang University, China
15:30-16:00	Topic	Mr Rajan Bajracharya
16:00-16:30	Topic	Dr Uttam Babu Shrestha
16:30-17:00	ICT and agriculture	Mr Madhav Dhakal, MU

Day 3: Technical Sessions and Closing (Saturday, October 15, 2022)

Technical session 4: Country-report presentation		
9:00-9:15	Bhutan	Dr Sonam Tashi and Mr Karma Sherub
9:15-9:30	Nepal	Dr Pushpa Raj Acharya
9:30-9:45	Pakistan	Dr Shaukat Ali
9:45-10:00	Discussion	All
Technical Session 5: Training Module		
10:00-12:00	Planning for the training module	All
Lunch break (12:00-13:00)		

Sites Visit		
13:00-16:30	Nearby site visit	Nepal Project Collaborators
Concluding Session		
16:30-16:40	Summary of the Workshop	Dr Sudeep Thakuri
16:40-17:00	Views of the Participants and satisfaction checklist form filling by each participant with working tea	Training participants
17:00-17:10	Distribution of certificates	Chief Guest
17:10-17:20	Remarks by the Chief Guest	TBD
17:20-17:30	Vote of Thanks	
Project Planning Session		
19:00-20:00	Meeting among Pakistani and Nepalese project collaborators regarding future project activities	Project Team Leader and Project Collaborators