

Report on Climate Resilient Agriculture Workshop

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Venue: Purwanchal Campus, Dharan, Nepal

Organized by



Supported by



Prepared By
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Acknowledgement

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I want to express my sincere gratitude to Mr. Sagar Kafle, Secretary of Nepalese Society of Agricultural Engineers as well as a teaching assistant of Institute of Engineering for reaching out to facilitators on behalf of us. My sincere gratitude to the Department of Agricultural Engineering – Purwanchal Campus and Assoc. Prof. Jawed Alam sir for providing us the venue and coordinating with campus administration.

I am also thankful to Nepal Agricultural Engineering Students Society for providing us volunteers for the workshop. At last, I would like to thank the participants for their active participation during the workshop.

Shasank Pokharel
Program Coordinator,
Climate Resilient Agriculture Workshop;
And,
Local Representative
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Summary

The workshop on Climate Resilient Agriculture was organized in the Department of Agricultural Engineering – Purwanchal Campus, located in Dharan, Nepal. The facilitators of the workshop were Dr. Bhesh Raj Thapa, Dr. Anup Gurung, Mr. Mahesh Yadav, Ms. Aastha Bhusal and Mr. Abhishek Khadka. The workshop was for two days and different sessions were covered in it. A few months ago, YPARD Café on Climate Smart Agriculture was hosted in Agriculture and Forestry University, Chitwan district, Nepal, which motivated to conduct two days' workshop in Eastern Nepal. This was the very first activity of YPARD Nepal in Eastern Nepal. Altogether there were 35 participants and seven volunteers in the program who attended the workshop. In the two days' workshop the session included, scientific tools and methods for the assessment and evaluation of climate smart agriculture, introduction to climate change, impact of climate change on agriculture and food security, contribution of agriculture in greenhouse gas emission and introduction to climate change adaptations and climate-smart agriculture. Likewise, the other sessions were climate smart agriculture: time to embrace good practices, using modeling tools for agriculture and group as well as interactive works. There were different groups formed among the participant where they were given a case study and prepare the plan related to resilient climate agriculture. From the group work, the participants listed out the climate-related programs in various agro-ecological regions and devised the ways to solve them. The group work gave the participants direct exposure to climate-related problem-solving skills.

Introduction

Young Professional for Agricultural Development (YPARD) is an international network by young professionals for empowering young people toward the development of the agriculture sector.

Since its establishment in 2006, YPARD has encouraged a stronger voice of youth in their organizations and share their views and ideas with other young professionals in the network. This global on-line and off-line communication and discussion platform are meant to enable and empower young agricultural leaders around the world to shape sustainable food systems. YPARD has a good presence in Nepal through the national network since 2012, YPARD Nepal, having active members in all major agriculture colleges. YPARD Nepal has also organized many events, workshops and training and has been successful in providing a platform for young professionals in the nation. For more information about YPARD Nepal, please visit <https://ypard.net/country/nepal>.

Climate change has a profound impact on agriculture with dwindling crop production, putting global food security at risk. Nepalese agriculture is at great risk of losing the battle against climate change due to undiversified, traditional and monsoon-dependent farming practices. A study funded by the Climate and Development Knowledge Network (CDKN) revealed that by 2070, net agricultural losses in Nepal due to climate change are estimated to be the equivalent per year of around 0.8% of current GDP, or US\$140 million per year in current prices(source: [CDKN](#), 2014).

Rationale

Climate change affects every sector and level of society, with agriculture on the front line facing its impact. It is very vital to educating the future workforce, to make them ready to work on mitigation measures and help them adapt to the impacts of climate change.

Among all the measures to tackle climate change from an agricultural perspective, development and implementation of resilient climate agriculture are vital. Development of a resilient variety of crops, introduction of smart practices to optimize the production and better access to climate-related information system are among the cores of resilient climate agriculture. The workshop aimed at educating the participants, the majority from agriculture and food-related academic background, who study very little or nothing about climate change.

Objectives

The objectives of the program include

- To aware the participants of the workshop about the impact of climate change on agriculture;
- To educate participants about various tools to analyze climate change;
- To help participants plan their way forward to contribute to acting against climate change.

Expected Outcomes

The expected outcomes of the workshop include

- Increased awareness regarding the impact of climate change on agriculture among the participants;
- Knowledge and information among participants about tools to analyze climate change, its impact and mitigation measures;
- Integration of components of climate change in the researches and projects carried out by the participants.

Methodology

All the participants for the workshop were selected through online application, which was hosted on Google Forms platform. Although the workshop was open for all, the relevance of climate change and adaptation measures to his/her field of study was also considered along with the general interest of the participant on climate change.

The concepts briefed in the sessions of the workshop were interrelated. Involvement of participants during the session was highly prioritized and a question-answer time was provided at the end of the session to get on clear any queries.

Day One

Inauguration Ceremony

The workshop was formally inaugurated by chief guest Mr. Devraj Niraula, President of Nepalese Society of Agricultural Engineers. The guest list of inauguration ceremony also included faculty members of Department of Agricultural Engineering, IOEPurwanchal Campus – Mr. Sameer Shakya, Mr. Sagar Kafle, and Mr. Yam Kumar Rai; and Mr. Pralad Phuyal, President of Nepal Agricultural Engineering Students' Society. Mr. Abhishek Khadka, Country Representative of YPARD Nepal welcomed guests and participants in the workshop.

Chief guest Mr. Niraula mentioned the need for co-curricular activities during student life to broaden the horizon of knowledge. He further emphasized on the need for understanding about climate change by today's students. Mr. Sameer Shakya on the behalf of the Department of Agricultural Engineering thanked the organizers for bring such kind of workshops at the campus.

Session: Scientific Tools and Methods for the Assessment and Evaluation of Climate-Smart Agriculture

The first session of the workshop was facilitated by Dr. Bhesh Raj Thapa, Researcher at the International Water Management Institute. Dr. Thapa started by defining CSA as agricultural practices that sustainably increase productivity and system resilience while reducing Greenhouse Gas (GHG) emissions. The participants learned about the pillars of CSA – adaptation, mitigation and food security; and also about its outputs – increased productivity, increased net return, improved input use efficiency, reductions in emissions, increased resilience and increased gender and social inclusions.

The participants further learned about evaluation of CSA through water availability assessment and climate variability assessment, along with the various CSA tools and techniques.

Session: Introduction to Climate Change

Mr. Abhishek Khadka, Country Representative of YPARD Nepal presented about the basics of climate change. The session helped participant know about the differences between weather and climate. Furthermore, the participants learned about the basic science behind climate change phenomenon, greenhouse emissions and observed impacts of climate change in Nepal.

Session: Impact of Climate Change on Agriculture and Food Security

After a short tea break, Mr. Khadka presented on the impacts that climate change has on agriculture and food security. The session was largely focused on the four pillars of food security – availability, affordability, stability and productivity. The effects of climate change are more profound on the stability and productivity pillars.

As climate change is so closely related to food security and agriculture, the knowledge gained from this session would be valuable to participants to analyze by themselves the impact climate change has on food and agriculture, in the places close to them.

Session: Contribution of Agriculture in Greenhouse Gas Emission

Ms. Aastha Bhusal facilitated the session on the role of agriculture in greenhouse gas GHG emission. The session was centered on agricultural sources of GHG emissions such as enteric fermentation, soil nitrification and denitrification, farm management practices, etc. and other GHG emission factors such as energy supplies. Emissions through agricultural activities are generally linked to the management of agricultural soil, livestock, rice production and biomass burning. The emissions are both directly through productive activities and indirectly through changes in land use.

The session was unique as it dealt with the topic almost unheard in mainstream; the impact agriculture sector has on greenhouse emission.

Session: Introduction to Climate Change Adaptations and Climate-Smart Agriculture

In her second consecutive session, Ms. Bhusal focused on various adaptation measures to fight climate change in Nepal. Some of the examples presented were the development and plantation of drought-resistant varieties and water-logged resistant varieties, conservation of local varieties of seeds and crops, etc. As the session had a lot of examples of CSA and other adaptation practices, it helps simplify and make more relatable the concepts of CSA.

Group Work: Designing CSA Technologies for Different Agro-Ecology

The participants were divided into six groups and were assigned the task of designing CSA technologies for the different agro-ecological region (Midhills and Terai). After designing the CSA technologies, the respective team presented it to other participants. Ms. Bhusal facilitated group work.

Day Two

Session: Climate Smart Agriculture - Time to Embrace Good Practices

The first session of the second day was facilitated by Dr. Anup Gurung, Water Quality Specialist at Youth Alliance for Environment. The session began with a brief discussion about various challenges agriculture sector is facing currently. Impacts of climate change on agriculture were discussed with a focus on rapid-onset disasters and slow-onset disasters of climate change in Nepal.

Dr. Gurung helped participants visualize the potential impact of climate change, which according to him cannot be compensated by any amount. The facts and number crunching in the session helped participants understand the scale of economic impact due to climate change.

Session: Using Modeling Tools for Agriculture

The final session of the workshop was facilitated by Mr. Mahesh Yadav, Divisional Engineer at Okhaldhunga Irrigation Division Office. The session largely focused on climate modeling and development of different climate models. Participants got to know about the three main agro-climatic categories in Nepal –sub-humid, humid and per-humid along with the types of climate models – Global Climate Models (GCMs) and Regional Climate Models (RCMs). All these information when grouped with other factors that affect climatic patterns like surface temperature, humidity, extreme precipitation, tropical cyclone, etc. serves as a basis of climate and hydrological modeling.

Group Work: Climate Change Story Sharing

The participants were assigned a group work to write and recite stories relating to climate change which they had to do in the same group of the first day. The stories could be fictional or non-fictional and had to be related to impact, mitigation and/or adaptation of climate change.

Group Work: Implement CSA Technology

The participants were assigned the next group work in which they had to prioritize CSA technologies or solutions from previously discussed solutions and make a plan of achieving/implementing the solution in different agro-ecology. Ms. Aastha Bhusal provided feedback on the presentation and discussed the solution.

Closing Ceremony

The closing ceremony began in the special presence of Mr. Jawed Alam, Head of Department of Agricultural Engineering, Purwanchal Campus. Token of love were distributed to supporting organizations – Nepalese Society of Agricultural Engineers, Nepal Agricultural Engineering Students Society and Department of Agricultural Engineering. Certificates were distributed to all the participants and feedback about the workshop was collected too.

ANNEX – I: Program Schedule

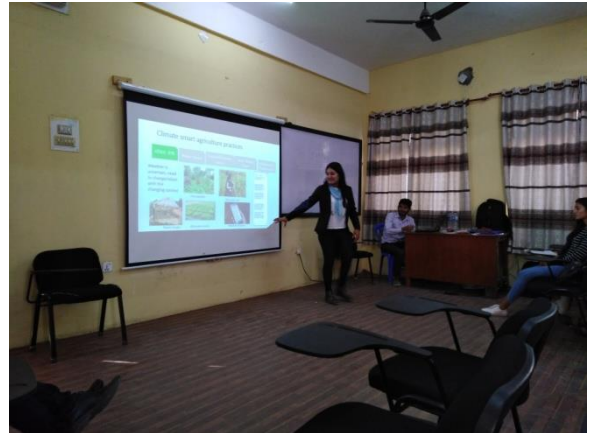
Time	Topic/Session	Session by
2 nd February, 2019 (First Day)		
9:30 AM	Registration	
9:45 - 10:25 AM	Inauguration Ceremony	
10:30 – 11:30 AM	Scientific tools and methods for the assessment and evaluation of CSA	Dr. Bhesh Raj Thapa
11:30 – 11:40 AM	Teak Break	
11:40 AM – 12:20 PM	Introduction to Climate Change	Mr. Abhishek Khadka
12:20 – 1:05 PM	Impact of climate change on Agriculture and Food security	Mr. Abhishek Khadka
1:05 – 1:30 PM	Break	
1:30 – 2:05 PM	Contribution on Agriculture in Greenhouse Gas emission	Ms. Aastha Bhusal
2:05 – 3:05 PM	Introduction to Climate Change Adaptations (CSA) and Climate Smart Agriculture (CSA)	Ms. Aastha Bhusal
3:05 – 4:05 PM	Group Work: Designing CSA technologies for different agro-ecology	
4:05 PM	End of Day 1	
3 rd February, 2019 (Second Day)		
10:15 AM – 12:20 PM	Impact Assessment of CSA	Dr. Anup Gurung
12:20 – 12:30 PM	Tea Break	
12:30 – 1:45 PM	Using Modeling tools for agriculture	Mr. Mahesh Yadav
1:45 – 2:10 PM	Lunch Break	
2:10 – 3:30 PM	Idea Discussion in Group	
3:30 – 4:00 PM	Idea Presentation	

4:00 PM	Closing Ceremony	
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ANNEX – II: Program Pictures



Dr. Bhesh Raj Thapa talking about DigoJal Bikas project during his session



Ms. Aastha Bhusal mentioning about various climate smart practices in Nepal



Dr. Anup Gurung presenting data about agriculture and climate in the context of Nepal



Participants during Ms. Bhusal's session



Design of action plan about adaptation of CSA (group work)



Presentation of the action plan



Token of Love for session facilitators and supporting organizations



Participants with chief guest and other guest after program inauguration

ANNEX –III: Program Participants

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