



Webinar
On
“CLIMATE CHANGE ADAPTATION OPTIONS IN AGRICULTURE: SCIENCE AND INNOVATIONS”

ON 24TH AUGUST, 2020

DURING 11:00- 13:30 HRS



Jointly Organized
By
National Institute of Disaster Management
Ministry of Home Affairs, Govt. of India
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&

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INTRODUCTION:-

National Institute of Disaster Management (NIDM) organized a webinar in collaboration with Rani Lakshmi Bai Central Agricultural University on ‘CLIMATE CHANGE ADAPTATION OPTIONS IN AGRICULTURE: SCIENCE AND INNOVATIONS’ on 24 August 2020 at 11:00 AM IST. The session was participated by 281 participants from diverse educational Institutes, different states of India, officials at all levels from government, private and NGOs. The entire session was also streamed on YouTube Live and more than 100 viewed online. The aim of this webinar programme was to increase awareness among the participants regarding climate change and its adaptation options in agriculture. The programme covered various topics related to climate change, adaptations, innovations and technologies adopted in agriculture, horticulture and forestry to deal with climate change.

OBJECTIVES:-

India’s agriculture is totally dependent on natural weather and climate, hence the impact of this environmental issue will be high. In order to cope up with the situation, agriculture needs to adopt certain practices which will reduce the impact of climate change on agriculture. In order to provide sufficient food for the growing population, agriculture should focus on more production on the same area of land. The aim of this webinar programme is to increase awareness among the participants regarding climate change and its adaptation options in agriculture. Agriculture sector is very important for Indian economy so to develop an understanding of climate change and its impact on agriculture, develop an understanding of different strategies/adaptations adopted to deal with climate change is the need of the hour.

TARGET GROUP:-

The intended target groups for this program were middle and senior level Government and Semi-government of officials from different line departments of Central & State government/professionals from public and private sectors/ Disaster Managers/Scientists/Academicians/Scholars/ Students/Private Sectors/NGOs, etc and most of the participants were from agriculture background. In all a total of 281 participants attended the programme. List of participants have been attached to this report.

METHODOLOGY:-

Lectures, Power point presentations & panel discussions.

FOCUS AREA:-

- **Impact of climate on horticultural crops and strategies to mitigate**
- **Agroforestry System and climate change**
- **Enhancing carbon sequestration through plantation for mitigating climate change**
- **Importance of agro meteorology**
- **Application of GIS and remote sensing in Agriculture**
- **Effect of weather related stresses on crop productivity**

INAUGURATION:-

The Inaugural Session was initiated by Programme Coordinators, Shri Ashish Kumar Panda, Consultant and Faculty Member, NIDM and Dr. Sanayanbi Hodam, Research Fellow, NIDM.

Executive Director, NIDM, Major General Shri Manoj Kumar Bindal, as Patron for the Webinar, jointly inaugurated the Webinar. The Hon'ble Vice Chancellor, RLBCAU couldn't attend the webinar due to an urgent meeting with PM. However, he extended his greetings through his colleague Dr. Ajay Pandey.

During the Opening Remarks, Major General Manoj Kumar Bindal, Executive Director, NIDM, highlighted about some challenges that the Indian agriculture is facing. He talked about sea level rise due to global warming significant changes in weather patterns with more extreme climates. He added that vast seasonal variation in temperature is resulting in frequent drought and floods. He concluded his remark by mentioning that the development of climate-smart solutions including digital farming and improved plant breeding technologies will help reduce agriculture's impact on climate change in the future, some of the many existing practices that are making a positive impact are reducing tillage, increasing efficiency of resources, optimizing nutrients, helping farmers manage changes in weather, carbon sequestration etc.



Dr. Anil Kumar Gupta in the context setting highlighted that we are in revolutionary stage, that the population is growing rapidly, infrastructure is increasing but we should also look at the carrying capacity. He talked about food security and also insuring nutritional security. He added that Agriculture being the backbone of society and that large number of people are dependent



on agriculture for their livelihood. So, focus on agriculture related issues is needed like post-harvest handling issues, storage issues, transport issue, etc, he added.

Technical Session:

A. K. Pandey, Dean, College of Horticulture and Forestry, RLBCAU talked about **Impact of Climate Change on Horticultural crops: strategies to mitigate**. The speaker has talked about how horticulture has impacted the economy by boosting the nourishment in people. He has covered the consequences of climate change on overall world and with specific



reference to India. The impact of climate change on horticulture has been explained thoroughly. He has related the water crisis with climate change. Many physiological disorders have been observed in vegetable cultivation due to increasing temperature. In order to mitigate these adverse climatic condition, various mitigation programme has been adapted like stress tolerant varieties of vegetables and trees, grafting in cucurbits and tomato, addressing underutilized vegetables like wing bean, drumstick etc. The speaker concluded the lecture by addressing that farmers should be assisted to cope up with climatic risks and ended with a note by Rajendra K. Pachauri ‘Nobody on this planet is going to be untouched by the impacts of climate change’.

Dr. Manmohan J Dobriyal, Professor and Head (Forestry) talked on the topic ‘**Agroforestry Interventions: A low cost climate change adaptation option for Sustainable Agriculture**’. He has covered the broad topic of Climate Change, Climate change adaptation measures, Sustainable Agriculture (Farm Ecological balance, Farming Quotient/Farming Index and Ecology/ Agro ecology), Agroforestry interventions, Components and approaches of agroforestry interventions, Constraints and Limitations. He has talked about the importance of Agroforestry Agro ecosystem approach, GAPs, Climate resilient agriculture, Climate smart Agriculture. Different models of agroforestry systems has been discussed thoroughly to mitigate climate change.



Dr Yumnam Bijilaxmi Devi, Assistant Professor (NRM) talked about ‘**Enhancing Carbon Sequestration through Plantation for Mitigating Climate Change**’. She has covered the broad topic of climate change and consequences of



global warming. She has put an alarm at increasing forest fire, increasing greenhouse gas emissions and increasing global temperature. Carbon sequestration is one of the most feasible way to deal with climate change and increasing global temperature. She has stated the importance and feasibility of terrestrial carbon sequestration over geoengineering techniques of carbon sequestration. The speaker has concluded the lecture by saying that along with sequestering atmospheric carbon, restoration of degraded/desertified soils/lands is also important in mitigating climate change. She has highlighted on the limitations and negatives of plantation projects and their management also.

Dr. Anil K Gupta, Professor and Head, ECDRM, NIDM, delivered his talk focusing on the various disasters affecting Agriculture sector. He pointed out that our generation is the generation which have seen greatest advancement in science and technology and that artificial intelligence is used in each and every aspect of our life and in even in this webinar. He gave few examples on disaster related agriculture sector like Bengal famine which was a



real challenge of the distribution of food and bad management, super cyclone of Orissa which led to germination of seeds which was kept for next season. Another example that he gave was the present coronavirus pandemic which has led to introduction of new cropping pattern and he raised a question whether the farmers will be able to adapt to this new cropping pattern. He highlighted about India's objective of becoming 5 billion US dollar economy by 2024 and triliion economy by 2029. He mentioned that in central India there are certain communities which generation by generation have health syndrome of stunted growth and that nutritional security is one of the major issues. He talked about weather data product, low frequency high intensity events, etc.

PANEL DISCUSSION:-

Dr. Himanshu Pathak , Director, ICAR-National Institute of Abiotic Stress Management, stated that poor people or farmers or countries who actually don't contribute to climate change are going to be affected the most. He highlighted that Indian agriculture contribute only 16% of total greenhouse gases emission but it is going to be affected the most. He suggested about five easy



steps to manage namely forecasting, adjudge with the risk, and respond to the risk, reduction of risk and capacity development. He highlighted about some significant

contribution of ICAR and said that ICAR has released more than 70 varieties of different crops which are climate resistant e.g., maize varieties which can tolerate drought. However, he said that the problem is to reach all these to poor farmers. He also said that if all the technologies which are available now are put with farmer, not only it will compensate the loss but rather it will increase the productivity. He rightly mentioned about total food grain production that inspite of all these happening now, the food production are increasing and that this year has the highest production with 295 million tonnes.

Dr. Shibendu Ray, Director, Meghalanobis National Crop Forecasting Centre, talked about satellite data and the uses of it in agriculture. He highlighted about how to improve weather data and its role towards doubling farmers' income. He highlighted that extreme weather frequencies are increasing and especially cold waves and heat waves. He also mentioned that vulnerable districts should be identified to put more focus on it. He stressed on rice production that the area under rice is 44 million hectare and the area doesn't change but there is huge jump in production. He stated that technologies should be implemented to the ground level.



Dr. M. Prabhakar, PI-NICRA, ICAR-Central Research Institute for Dryland Agriculture stated that majority of the Indian farmers are marginal farmers so developing the technologies to their level is the biggest challenge and also to implement the available technologies at ground level is another challenge. He highlighted that the fertilizer use in India is increasing and this is going to contribute to climate change. Another important point that he discussed was that there are different schemes of the government for the farmers but many farmers are unaware of these schemes and that somebody has to identify which schemes are benefitted to which groups of farmers and bring it to the villages. Further he added that this is one component in the NICRA (National Innovations for Climate Resilient Agriculture) project.



Dr. Mamta Yadav, Scientist-C, Weather Forecasting and Agro Advisory Services, Bhopal mainly talked about IMD's project for agro meteorology. She stated that IMD is the nodal



agency that is dealing with agro meteorology. She highlighted that IMD is presently working on a project GKMS (Grahmin Krishi Mausam Seva) under which IMD is giving warnings and preparing the advisories for various crops including animal husbandry. She also highlighted about the DAMU (District Agricultural Meteorology Unit) and that this has now reach to block level for disseminating the advisories so as to make the farmers understand and to take precautions. She concluded by highlighting that a dense network of observatories including the AWS (Automatic Weather System) is the key requirement to implement to reach to the end user.

Q&A SESSION:-

Participants were encouraged to submit their questions in the chat box for various speakers or in general. There were many questions from the participants, however, since the time was running short, only few questions were pick up by the moderators and the speakers and panelist gave the answers.



The webinar was concluded with a formal vote of thanks by Sri Ashish Panda, NIDM.

KEY TAKEAWAYS:-

Following are the major takeaways from the programme:

- To adopt certain practices which can cope up with effects of climate change and withstand the shortcomings from climate change.
- Many agricultural practices both traditional as well as scientific innovations can be used to reduce the emission of greenhouse gases thus reducing the impact of global warming on climate change.
- While ensuring food security, nutritional security should be ensured.
- Farmers should be assisted to cope up with climatic risks.
- Along with sequestering atmospheric carbon, restoration of degraded/desertified soils/lands is also important in mitigating climate change.
- A dense network of observatories including the AWS (Automatic Weather System) is the key requirement to implement to reach to the end user.
- Different schemes of the government for the farmers but many farmers are unaware of these schemes and that somebody has to identify which schemes are benefitted to which groups of farmers and bring it to the villages.
- Technologies should be implemented to the ground level and also to educate the farmers on the same.
- Climate change should be linked with market and development process

- **Different challenges related to crop production process like storage, processing, transportation, etc. should be a priority while dealing with agriculture sector management.**

Webinar on
“Climate Change Adaptation Options in Agriculture: Science and Innovations”
In
Collaboration with
Rani Lakshmi Bai Central Agricultural University, Jhansi-284 003

24th August, 2020

PM Agenda I: All Development Sectors must imbibe the Principles of Disaster Risk management

PM Agenda V: Leverage Technology to Enhance the Efficiency of Disaster Risk Management Efforts

PM Agenda VI: Develop a Network of Universities to Work on Disaster Issues

Programme

Time: 11.00 am

11:00- 11:05 am	Context setting by Prof. (Dr.) Anil K. Gupta
11:05–11:10 am	Keynote Remarks by Major General Manoj Kumar Bindal, Executive Director, NIDM
11:10–11:20 am	Special Address by Prof Arvind Kumar, Hon’ble Vice- Chancellor, Rani Lakshmi Bai Central Agricultural University, Jhansi
	Brief Presentations
11:20–11:30am	Dr. A. K. Pandey, Dean, College of Horticulture and Forestry, Rani Lakshmi Bai Central Agricultural University, Jhansi
11.30 am -12.15 pm	Dr M. J Dobriyal, Professor, College of Horticulture and Forestry, RLBCAU, Jhansi
12:15–12:30 pm	Dr.Yumnam Bijilaxmi Devi, Assistant Professor, College of Horticulture and Forestry, RLBCAU, Jhansi
12:30–12:40 pm	Prof. (Dr.) Anil K. Gupta, Head-ECDRM, NIDM
12:40–1:25 pm	Discussion (Q&A) Moderator: Shri Ashish Panda, Consultant and Faculty, ECDRM, NIDM Panelists/Experts: Dr. Himanshu Pathak, Director, ICAR-National Institute of Abiotic Stress Management, GOI Dr. Shibendu Shankar Ray, Director, MNCFC, GOI Dr. M. Prabhakar, PI-NICRA, ICAR-Central Research Institute for Dryland Agriculture Dr. Mamta Yadav, Scientist-C, Weather Forecasting and Agro Advisory Services, Bhopal
	Vote of Thanks

***Moderator: Shri Ashish Panda, Consultant and Faculty, ECDRM, NIDM**
Dr. Sanayanbi Hodam, Research Fellow, NIDM

POSTER:



सत्यमेव जयते

Resilient India - Disaster Free India

Implementation of Prime Minister's Agenda 10 on DRM:

PM Agenda 1: All Development Sectors must imbibe the Principles of Disaster Risk management

PM Agenda 5: Leverage Technology to Enhance the Efficiency of Disaster Risk Management Efforts

PM Agenda 6: Develop a Network of Universities to Work on Disaster Issues

WEBINAR

Climate Change Adaptation Options in Agriculture: Science and Innovations

24th

August 2020 | 11:00 am - 01:30 pm



Keynote address
Maj. Gen. Manoj K. Bindal
Executive Director, National Institute of Disaster Management, New Delhi



Special address
Prof. Arvind Kumar
Vice-Chancellor, Rani Lakshmi Bai Central Agricultural University, Jhansi



Chairs
Prof. Anil K Gupta
Head, ECDRM Division, NIDM



Dr. A. K. Pandey
Dean, College of Horticulture and Forestry, RLBCAU, Jhansi



Moderators
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Consultant and Faculty, ECDRM Division, NIDM



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SPEAKERS



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In collaboration with

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