

**International ITEC Training Programme on  
“Climate Resilient Agriculture for Extension Professionals– Indian Experience”  
(Two weeks Programme)**

**Prelude**

Climate change alters the production systems, thereby threatening the food security of the billions of population across the globe. It would be a threat to the livelihood of 2.6 billion of the global population as their income source is directly dependent on agriculture and allied activities (Dickie et al, 2014). The presence of Greenhouse gases in the atmosphere and their variations are the major cause of climate change. India’s share of GHG emissions to the total emission of the world is about 6.55 %, thereby becoming the third largest GHG emitter in the world. India may have to face a loss of 2.5 % GDP by 2050 due to climate change. Similarly, climate change induced yield loss was estimated to be 4.5 to 9 % in India, which will lead to a loss of 1.5 % of GDP on an annual basis (Vijayan and Viswanathan, 2018). In India, the loss of productivity and increase in food price are the two extremities of climate change, which might push about 42 million population additionally into the poverty trap and cause a 0.4 % loss in overall consumption rates. In order to address the risks of climate change, India is taking many policy and programmatic interventions. Importantly, India’s Intended Nationally Determined Contributions (INDCs) is to reduce the emissions intensity of GDP to 33–35% by 2030 for the period 2021 to 2030 below 2005 levels and also to create an additional (cumulative) carbon sink of 2.5 to 3 billion tonnes of carbon dioxide (CO<sub>2</sub>) equivalent through additional forest and tree cover by 2030. Notably, in the recent COP26 summit held at Glasgow, 2021, India has pledged that it would adopt a net-zero emissions target by 2070. In this context, agriculture will be one of the major sectors that can also contribute to achieving net-zero emissions by adapting various suitable technologies and best agricultural practices.

**Present landscape on Climate Resilient Agriculture**

The Government of India has launched a National Action Plan for Climate Change (NAPCC) in 2008 with eight sub-missions to mitigate and adapt to the adverse impact of climate change. One of the missions namely the National Mission for Sustainable Agriculture (NMSA) aims at promoting sustainable agriculture to improve the adaptive capacity of farms. Also, the National Innovations in Climate Resilient Agriculture (NICRA) was launched in 2011 as a network project of the Indian Council of Agricultural Research (ICAR) to enhance the resilience of Indian agriculture to climate

change and climate vulnerability. Notably, NICRA has identified a total of 151 climate vulnerability villages and is improving the climate adaptation capacity of these villages through strategic research and technology demonstration. Further, the National Disaster Management Authority (NDMA) plays a major role in formulating the policies, plans and guidelines to prepare for unlikely disaster and post-disaster management. Further, Climate Smart Villages (CSVs) are promoted in India by CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) as a response to climate change risks. In addition to this, the climate smart agricultural projects and programmes financially supported by the World Bank such as the Tamil Nadu Irrigated Agriculture Modernization Project (TNIAM)-Tamil Nadu, Project on Climate Resilient Agriculture (PoCRA)-Maharashtra, Climate Change Knowledge Network in Indian Agriculture (CCKN-IA) project in Maharashtra, Jharkhand and Odisha are enabling the extension professionals to support the decision making of farmers to the risks of climate change. Also, the National Bank for Agriculture and Rural Development (NABARD) is providing the Adaptation Fund (AF) and Green Climate Funds (GCF) to encourage the stakeholders to implement the projects related to Climate Resilient Agriculture (CRA).

This apart, the private sectors are implementing several climate smart agricultural projects through their Corporate Social Responsibility (CSR) funds. Some of the notable CSR agricultural initiatives include the development of watersheds, development of Climate Smart Community, introduction of water and soil management technologies and practices, creation of climate smart institutions, etc. Also, social mobilization plays a major role in Climate Smart Agriculture. Institutions such as Farmers Producer Organisations, Commodity Groups, Self Help Groups etc., are contributing significantly to the adaptation. Moreover, the research institutes of public and private are involved in the development of climate resilient technologies such as resilient varieties, improved seeds, improved breeds, improved agronomic practices, development of organic amendments etc.,

India has rich experience of both public and private on in climate smart agricultural research and development as well as the implementation of climate smart agricultural projects and support services that ensure adaptation and mitigation. However, utilization of these innovative technologies, practices and services by farmers is possible only when the extension professionals are aware of them. Therefore, to enhance their technical competencies, National Institute of Agricultural Extension Management (MANAGE), being an apex extension Organisation under the Ministry of Agriculture and Farmers Welfare (MoA&FW) has created an exclusive Centre for Climate Change and Adaptation (CCA) to organise a series of capacity development programmes for extension professionals of agriculture and allied departments, scientists, private sectors, NGOs engaged in

climate change and adaptation activities. In turn, the trained extension professionals will organise the training programme at their work areas among farmers to disseminate the climate smart agricultural technologies, practices and services and facilitate them in the adoption of good practices in addressing the climate change risks.

With this rich experience, MANAGE is proposed to conduct an International ITEC Training Programme on “**Climate Resilient Agriculture for Extension Professionals – An Indian Experience**” to improve overall competency of extension professionals associated with climate change adaptation and mitigation activities in agriculture and allied sectors.

### **Aims and learning objectives**

- ✓ To provide overview about the policies and programmatic interventions of India to mitigate and adapt to climate change risks.
- ✓ To inculcate the technical competency among the extension functionaries of ITEC countries on various climate resilient agricultural technologies, practices and services
- ✓ To expose the delegates to the Research and Development on climate resilient agriculture and field experience of Indian farmers.

### **Course duration**

The duration of the course will be for 14 days with 10 days of theory classes and 04 days of practical/field visits.

### **Tentative Programme Schedule**

	<b>Day - 1</b>
9.30 am – 10:30am	Registration
10.30 am – 11:15 am	Inauguration
11.15 am	Tea Break
11.30 am	Icebreaking – Interactive Session
11.45 am	Pre-Training Test
11.45 am to 1.00 pm	Experience Sharing: Climate change impact in Agriculture – Gap Analysis on technologies, practices and support services in their respective countries
01.00 pm	Lunch
02.00 pm	SWOT Analysis of climate change extension technologies and support services in their respective countries
03.30 pm	Tea Break
03.45 pm	Presentation of SWOT Analysis of climate change extension

	technologies and services by team representatives
05:15 pm	Close
	<b>Day- 2</b>
09:30 – 11:15 am	Impact of Climate Change in Agricultural Sector – An Overview
11.15 am	Tea Break
11.30 am	Climate Trend Analysis
01.00 pm	Lunch
02.0 0 pm	Policy Initiatives related to Climate Change Adaptation and Mitigation in Agriculture
03.30 pm	Tea Break
03.45 pm	Varietal Improvement for Enhanced Productivity in Drought-Prone Ecology
05:15 pm	Close
	<b>Day -3</b>
09:30 – 11:15 am	National Innovations in Climate Resilient Agriculture (NICRA) – Field Experience Sharing
11.15 am	Tea Break
11.30 am	National Innovations in Climate Resilient Agriculture (NICRA) Discussion
01.00 pm	Lunch
02.0 0 pm	Integrated Farming Systems (IFS) to Minimize the Climate Induced Risk with Discussion
03.30 pm	Tea Break
03.45 pm	Alternative seed system in the context of Climate Change
05:15 pm	Close
	<b>Day - 4</b>
09:30 – 11:15 am	Integrated Pest Management (IPM)
11.15 am	Tea Break
11.30 am	Climate Farm Schools – Concept and Operationalization
01.00 pm	Lunch
02.0 0 pm	Soil Health Management – Indian Experience on Soil Health Card
03.30 pm	Tea Break
03.45 pm	Impact of climate change in Horticultural Sector and adaptation strategies
05:15 pm	Close
	<b>Day - 5</b>
09:30 – 11:15 am	Ecological Engineering for Ecosystem-based Adaptation - Visit to

	National Institute of Plant Health Management (NIPHM)
11.15 am	Tea Break
11.30 am	Ecological Engineering for Ecosystem-based Adaptation - Visit to NIPHM
01.00 pm	Lunch
02.00 pm	Ecological Engineering for Ecosystem-based Adaptation - Visit to NIPHM
03.30 pm	Tea Break
03.45 pm	Ecological Engineering for Ecosystem-based Adaptation - Visit to NIPHM
05:15 pm	Close
	<b>Day - 6</b>
	Study Tour to progressive farmer field on Climate Resilient Agriculture
	<b>Day- 7</b>
	Sunday
	<b>Day - 8</b>
09:30 – 11:15 am	Climate-Resilience and Profitability of Smallholder Farming Systems -Experience of Project on Climate Resilient Agriculture (PoCRA)
11.15 am	Tea Break
11.30 am	Project on Climate Resilient Agriculture (PoCRA) – Discussion
01.00 pm	Lunch
02.00 pm	Integrated Watershed Approach – Experience of public sector
03.30 pm	Tea Break
03.45 pm	Integrated Watershed Approach – Experience of private sector
05:15 pm	Close
	<b>Day - 9</b>
09:30 – 11:15 am	Weather based Agro Advisory Services
11.15 am	Tea Break
11.30 am	Climate Change Knowledge Network (CCKN) – An Indian initiative in pilot districts and NICE application
01.00 pm	Lunch
02.00 pm	NICE software demonstration
03.30 pm	Tea Break
03.45 pm	Role of Custom Hiring Centre (CHC) in Adapting to Climate Vagaries – Indian Experiences
05:15 pm	Close

<b>Day-10</b>	
09:30 – 11:15 am	Weather based Crop Insurance as Risk Mitigation Option
11.15 am	Tea Break
11.30 am	Organic Farming – A tool for climate change adaptation
01.00 pm	Lunch
02.00 pm	Agroforestry promotion through consortium model - A success from Tamil Nadu
03.30 pm	Tea Break
03.45 pm	Agroforestry promotion through consortium model - A success from Tamil Nadu – Discussion
05:15 pm	Close
<b>Day-11</b>	
09:30 – 11:15 am	Climate change related research on mandated crops of ICRISAT in dry land ecosystem - Visit to ICRISAT
11.15 am	Tea Break
11.30 am	Climate change related research on mandated crops of ICRISAT in dry land ecosystem - Visit to ICRISAT
01.00 pm	Lunch
02.00 pm	Climate change related research on mandated crops of ICRISAT in dry land ecosystem - Visit to ICRISAT
03.30 pm	Tea Break
05:15 pm	Climate change related research on mandated crops of ICRISAT in dry land ecosystem - Visit to ICRISAT
<b>Day-12</b>	
09:30 – 11:15 am	Impact of climate change on animal Husbandry sector and adaptation strategies
11.15 am	Tea Break
11.30 am	Impact of climate change on Fisheries and adaptation strategies
01.00 pm	Lunch
02.00 pm	Climate Resilient Villages and their Role in Mitigating Climate Change and Improving Farm Profitability
03.30 pm	Tea Break
03.45 pm	Role of Indian Meteorological Department (IMD) on Forewarning on Climate related Extreme Events
05:15 pm	Close
<b>Day-13</b>	
	Research activities related to dry land agriculture – Visit to Central Research Institute for Dryland Agriculture (CRIDA)
<b>Day-14</b>	

09:30 – 11:15 am	BACK AT WORK PLAN
11.15 am	Tea Break
11.30 am	BACK AT WORK PLAN
01.00 pm	Lunch
02.0 0 pm	Post-Training Test Review and Feedback of the Training Programme
03.30 pm	Tea Break
03.45 pm	Valedictory
5:30 pm	Close

### **Expected outcome/Deliverables**

- At the end of the training course, the extension professionals are expected to acquire knowledge on various adaptation and mitigation strategies in agriculture and allied sectors to address the climate change risks.
- The delegates gain an insight into research and field activities related to climate resilient agriculture in India.
- The delegates will understand the extension support services required to prepare farmers to the changing climate scenario to enhance the coping capacity of farmers

### **Eligibility criteria**

- The Officials from Public/ Private/ Civil Societies in Agriculture and allied sectors associated with climate change from ITEC countries.
- Working knowledge of English is mandatory to understand the training content on Climate Resilient Agriculture.