

## Knowledge Multiplication and Mass Communication for Agriculture in the Arena of Climate Change

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### General Note



Article is recommended to print as color version in recycled paper. *Save Plants, Save Climate.*

# Knowledge Multiplication and Mass Communication for Agriculture in the Arena of Climate Change

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## Climate Change

- ▶ **Effects of Climate Change :**
- ▶ Rise in average global temperatures
- ▶ Changes in rainfall and snowfall patterns
- ▶ More frequent droughts
- ▶ Rising sea levels
- ▶ Wilder weather-frequent storms, hurricanes, heat and cold waves
- ▶ Shrinking sea ice, melting glacier
- ▶ ARE WE PREPARED ENOUGH TO HANDLE?

## Indian Agriculture: Some Characteristics

- ▶ Diverse agro climatic conditions
- ▶ Contribution to GDP :17%
- ▶ Population dependent on Agri sector: 60% (approx.)
- ▶ Average Growth rate : 2.6%
- ▶ Predominantly small holder farming
- ▶ Highly dependent on monsoon
- ▶ High degree of vulnerability to adverse weather conditions

## Impact of Climate Change on Agriculture

- ▶ Impact on plant physiological growth and crop production
- ▶ Effect on soil and soil organic matter
- ▶ Reduced crop yield and crop loss due to drought/floods
- ▶ Reduced soil water availability
- ▶ Erosion of top soil and sediment transport
- ▶ Increased pests and diseases and spread of weeds
- ▶ Increased salinization and alkalinization of soils

## Present Knowledge Base

- ▶ IARI, CRIDA and many other research institutes studied the impact of climate change on Agriculture
- ▶ Evaluation done through crop growth models
- ▶ Variables used included temperature, Carbon-di-oxide levels, precipitation and solar radiation
- ▶ Studies examined the impact of interaction of variables
- ▶ Studies examined the impact of on both rain-fed and irrigated crops

## Broad Outcomes

- ▶ The predicted changes due to climate change vary significantly from region to region and crop to crop
- ▶ In general, increase in temperature resulted in a reduction in grain yields of wheat and rice
- ▶ Wheat -high yielding regions like North India showed less vulnerability as compared to low yielding regions
- ▶ Paddy-Yield reduction observed to be higher in East India compared to Northern India
- ▶ Reduction in yields more pronounced in rain fed areas than irrigated areas
- ▶ Neutral or Positive changes in yields observed in case of crops like Soybean, Groundnut and Coconut in some regions
- ▶ Difficult to plan long term measures as research findings are not fully validated and established

## More Studies Needed..

- ▶ Impact of climate change needs to be understood better.
- ▶ More region specific studies needed to accurately predict the impacts of climate change
- ▶ Studies on pest-disease incidence due to climate change needed
- ▶ Developing zone/region wise data base on climate change and its impact on Agriculture
- ▶ Suggesting alternative cropping options based on study outcomes
- ▶ Impact of climate change on livelihoods of people and coping mechanisms

## Climate Change Coping Strategies

- ▶ Farmers' awareness regarding short term climate variations is low
- ▶ Required:
  - ▶ Accurate ,timely and localized weather forecast
  - ▶ Relevant Advisory services on crop and livestock management
  - ▶ Capacity building of farmers on climate change coping mechanisms
  - ▶ Ultimate goal- adoption of climate change resilient agriculture practices
- ▶ Two pronged approach
  - ▶ Communication
  - ▶ Capacity Building

## Suggested Model

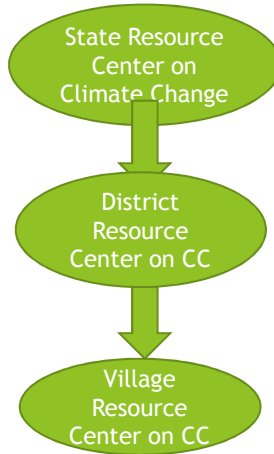
- ▶ The model envisages :
- ▶ Integrating the isolated efforts of various stake holders for
  - ▶ Effective Communication of available body of knowledge on Climate Change
  - ▶ Creating awareness on climate change ,coping strategies and risk management
  - ▶ Transfer of technology related to location specific coping strategies
  - ▶ Empowering farmers for informed decision making through capacity building
- ▶ Initially to be implemented on pilot basis, in Most Vulnerable Districts of the country (25% districts)

## Stake holders

- ▶ Agriculture Universities, Research centers
- ▶ State departments of Agriculture, Horticulture and its extension officers/staff
- ▶ Krishi Vigyan Kendras (KVKs)
- ▶ Indian Meteorological Department (IMD)
- ▶ Agriculture Marketing Departments/APMCs
- ▶ FARMERS

## Suggested Model

▶ Three Tier Model



## Village Level Resource Centre on CC (VLRC)

- ▶ This Centre is expected to play a pivotal role in mobilizing farmers for creating awareness and action on Climate change
- ▶ It is equipped with a computer and internet connectivity
- ▶ The funds for initial infrastructure to be provided by State Resource Centre
- ▶ Main objective to communicate weather forecast, crop advisory services and agri commodity prices
- ▶ Facilitate diagnosis of pest/disease and control measures by using ICT with the help of district and state level resource centres
- ▶ The center to employ local educated youth to operate computer and disseminate information
- ▶ Organize awareness programmes and capacity building programmes with the help of District centre

## District Resource Centre on CC

- ▶ Draws resources and information from State Resource Centre, local agri research centres, APMCs, Agri extension departments
- ▶ Mandated to plan, coordinate and communicate:
  - ▶ Localized weather forecast
  - ▶ Crop production and animal husbandry practices relevant to the area
  - ▶ Information on availability of agri inputs like seed, fertilizer, pesticides
  - ▶ SMS service to farmer members on subscription basis
  - ▶ Diagnostic services
- ▶ Plan and implement Climate Change awareness, coping strategies and risk mitigation programmes
- ▶ Undertake various capacity building programmes based on community participation
- ▶ Centre to have limited technical personnel with agriculture and ICT background

## State Level Resource Centre on CC

- ▶ An autonomous body registered under Societies Act or as a section 25 company
- ▶ Main responsibility to facilitate functioning of district and village level centres
- ▶ Mobilize funds for infrastructure and operations
- ▶ Funding support from Companies (CSR activities), Central and State Governments
- ▶ State Agri university, Agriculture department Marketing department and other universities, NGOs to be promoters
- ▶ Plan and coordinate knowledge building, knowledge sharing and capacity building activities on climate change
- ▶ Centre to have experts on crop production, AH, ICT to address farmers needs and develop suitable communication modules
- ▶ Develop programmes for farmer awareness on climate change, coping and risk mitigation mechanisms
- ▶ Manpower resources may be drawn on deputation basis

Thank You