Proceedings of the National workshop on "Strategies for climate resilient agriculture in NEH region" held at ICAR Research Complex for NEH Region, Barapani during 28 - 29 February 2012

A National Workshop on "Strategies for Climate Resilient Agriculture in NEH Region" was held during 28-29 February, 2012 at ICAR Research Complex for NEH Region, Umiam. The workshop was aimed at exploring the likely impacts of climate change on different sectors of agriculture in northeastern hill regions of India, deliberating the current progress made in this direction and formulating the future roadmap (for XIIth plan) for imparting climate-resilience to north-eastern hill agriculture under the impending climate crisis. Dr. A. K. Singh, Deputy Director General, (NRM), ICAR, New Delhi was inaugurated the workshop while Dr. B. Venkateswarlu, Director, CRIDA, Hyderabad participated as Guest of Honour and Dr. S.V. Ngachan, Director, ICAR Research Complex for NEH Region, Barapani as Co-Chairman. For focussed deliberation on specific areas, six technical sessions for the major subject areas, *viz*. Plant Breeding, Livestock Production, Natural Resource Management, Fisheries, Horticulture and Technology Demonstration, were held over two days wherein current progress and achievements made by the host institute were presented in details. Subject experts from across the country including ICAR Institutes, CAU, SAU, and State Departments, offered their insights and valuable suggestions in formulating the future roadmap for climate resilient agriculture in north eastern region. Expressing satisfaction over the two-days long discussion on a wide range of subjects, Dr. D.J. Rajkhowa, Principal Scientist (Agronomy) and PI, NICRA (ICAR Research Complex for NEH Region, Umiam), assured to accelerate the research and extension activities, as required and suggested by the experts, for climate resilient agriculture in the hill regions of India. Altogether 200 delegates were participated in the workshop.

The following recommendations and suggestions were emerged from this national workshop.

Theme1: Breeding strategies for climate ready traits

Chairman- Dr. B. Venkateswarlu

Co- Chairmen- Dr. S.V. Ngachan and Dr. Premjit Singh

1. Model outputs predict a loss of 10-40% in crop production by 2100 in which *Rabi* crops are more affected.
2. Sahabhagi Dhan and Pyari are drought tolerant rice varieties, while Swarna sub1 and IR64 sub1 are promising in the water logged areas.
3. Imparting submergence tolerances, altering the planting dates with suitable varieties are some adaptation measures.
4. Nutrient use efficiency has to be evaluated in detail.
5. Reassessment of germplasm available with the NBPGR, inclusion of crops other than the mandated ones as per the new altered climatic situations.
6. One network programme is needed in the northeast for evaluating the elite breeding materials.
7. Early and extra early maturity group maize hybrids and composites should be preferred under erratic climatic conditions to avoid crop loss.
8. New genetic materials from other climatic zones should be evaluated in various parts of NEH region; the superior hybrids/composites should be popularized.
9. Efforts on abiotic and biotic stresses tolerance must be strengthened through breeding as well as management practices.

Theme 2: Livestock production strategies under climate change scenario

Chairman- Dr. A. K. Singh

Co-Chairmen- Dr .B. Venkateswarlu and Dr .S.V. Ngachan

1. Emphasis should be given on development and promotion of suitable livestock management practices including housing and feeding to adapt and mitigate the climate change effect.
2. Research on gene and environmental interactions on physiology and production performance in different livestock species in different agro-climatic conditions is need to be addressed.
3. Disease surveillance, monitoring and development of medium/long term forecasting model need to be done for climate smart livestock production.
4. Emerging livestock and poultry diseases in different agro climatic conditions in north east region needs to be addressed.
5. New breeds need to be developed for facilitating quick adoption to climate change effects.
6. Research on thermostabilisation of vaccines, gametes (oocyte and spermatozoa), stem cells, other cell lines, cell culture in climate change scenario particularly global warming need to be focused.

Theme 3: Strategies for soil and water management for climate resilient agriculture.

Chairman- Dr. A. K. Singh

Co- Chairman- Dr. B. Venkateswarlu and Dr. S.V. Ngachan

1. Erosion and acidity are the main problems of soils in this region.
2. Initiatives to be made for conservation agriculture, zero tillage, promotion of fodder crop within the forest areas, crop configuration in the wet and marshy land areas.
3. Provision for in situ harvesting of rainwater should be taken up based on land physiography and climatic peculiarities.
4. District wise metrological data sets and climatic resilient technology should be collected and documented.
5. Special attention should be given for carbon sequestration, nutrients dynamics, GHG emissions and management.
6. Simulation and modeling for climate risk assessment to be done on priority basis.
7. Nutrient use efficiency and water productivity are to be assessed.

Theme 4: Strategies for climate resilient freshwater fisheries production

Chairman- Dr. A. K.Singh

Co-Chairman- Dr .B. Venkateswarlu and Dr .S.V. Ngachan

1. *Brachydanio rerio* was found to be more thermo tolerant and adaptable in comparison to *Danio dangila*

2. Conservation of indigenous fish resource needs to also be stressed upon.

3. Identification of the potential native fish species comfortable in increased water temperature and their incorporation in culture system for production enhancement in the region is warranted.

4. Studies are required on thermal tolerance and reproductive competence of native fishes of NEH region vis-a-vis increasing water temperature and changing precipitation pattern along with habitat dynamics and breeding patterns of natural fish stock in open water bodies.

Theme 5: Strategies for climate resilient horticulture

Chairman- Dr. A. K.Singh

Co-Chairmen- Dr .B.Venkateswarlu and Dr S.V. Ngachan

1. Moisture stress due to scarcity and erratic rain during April-October causing serious problems in fruit and vegetable productions need to be considered.
2. Screening 50 tomato genotypes are in progress in respect of drought tolerance.
3. Need to focus on strategic research on tomato and khasi mandarin with respect to climate change, production problem and management issues.
4. Available technologies from northeastern region should be complied for effective implementation and horizontal dissemination.

Theme 6: Technology demonstration and community participation for climate smart agriculture

Chairman- Dr. A. K.Singh

Co-Chairman- Dr. B. Venkateswarlu and Dr. S.V. Ngachan

1. Suitable and proven technologies to be identified to cope with the adverse climatic conditions.
2. Focus on demonstration of identified technologies through participatory mode.
3. Since community participation is the key factor for adaptation and mitigation of climate change, different outreach programmes need to be taken to create awareness among different stakeholders including farmers, rural youth etc.
4. Emphasize on training programmes and exposure visits of KVK staffs to model KVKs both within and outside the region. Focus should be given on development of district-wise contingency plans after identification of drought and flood prone areas.


WORKSHOP
Climate Resilient
NEH Region"
February, 2012


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