



# NICRA News

## Monthly e-Newsletter

on

### Climate Resilient Agriculture

April 2012



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## Contents

[From the Research Front](#)

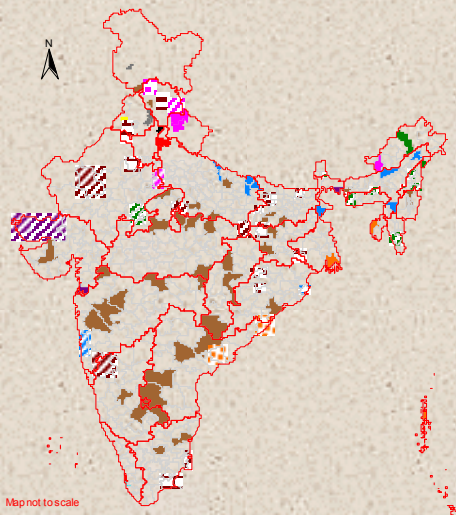
[From across the KVKs](#)

[Project Review meetings](#)

[Special Events](#)

[Technology Demonstration Component](#)

[KVKs](#)



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## From the Research Front



### Phenomics facility being established at CRIDA

During the month, all the partners were communicated about the continuation of the project for the current financial year. It was time for review and preparing work plan for the year 2012-13. Also workshops and brainstorming were held by different partner institutes. Significant among these was the brainstorming session on climate resilient agriculture organized by National Academy of Agricultural Sciences (NAAS) at New Delhi on 25<sup>th</sup> April, 2012. Prof. Abhijit Sen, Member, Planning Commission (Agriculture) inaugurated the session. He made several important suggestions for the group of scientists working on climate resilient agriculture. He showed keen interest in how the programme can be up-scaled and mainstreamed through a process of planning. He also called upon to research on critical issues like whether climate change affects women more, if so, to what extent. He asked the researchers to address yield stability in the wake of climate change, and how integrated farming addresses climate variability risk. Dr. Sen expressed concern over the challenge of up-scaling the outcomes of such projects to over five lakh villages of the country and asked if a plan can be suggested to implement the programme in 1000 blocks during the XII Plan. He also agreed that this is the job of the State and Central ministries and not that of NARS. He called upon the organizers to come out with a crisp policy document on the outcome of the brainstorming session.

**B. Venkateswarlu**  
Director  
CRIDA

## From Across the KVKs



This month marked the beginning of another year after closure of the FY 2011-12, and the first of the 12th FYP. Closing of the accounts for the year ending on 31 March 2012, taking stock of accomplishments made during past year besides planning for the new year were major activities of the month. From the coordination point of view, the process of continuous monitoring was kept going through conducting of reviews at Zonal levels. First in the series of Zonal Review and Planning workshops was held for the NICRA-KVKs of Zone V at KVK, Baramati in Maharashtra. During this workshop, the progress made and bottlenecks faced in project implementation were discussed thoroughly and plan of work prepared for the year 2012-13 was critically reviewed. Programme Coordinators were sensitized for planning and implementing NRM interventions. For, NRM interventions are the key to providing the much-needed resilience against climate variability.

It was our observation that many KVKs found it difficult to implement NRM interventions and hence could not use the funds effectively during the last year. KVK, Baramati is one of the KVKs which have implemented NRM interventions effectively. Hence a field visit was arranged to the nala desilting site in NICRA village (Jalgaon KP) to promote cross learning among KVKs. Villagers are upbeat about the immediate outcome of this intervention which has resulted in raising of the water table in the open wells. This has ensured availability of drinking water in the village even in the middle of the summer. Also many KVKs were not sure how to encourage farmers to create their own fodder banks for feeding livestock during dry season. A visit was also organised to silage pits where coarse crop residue like maize straw was blended with sugarcane tops to improve palatability.

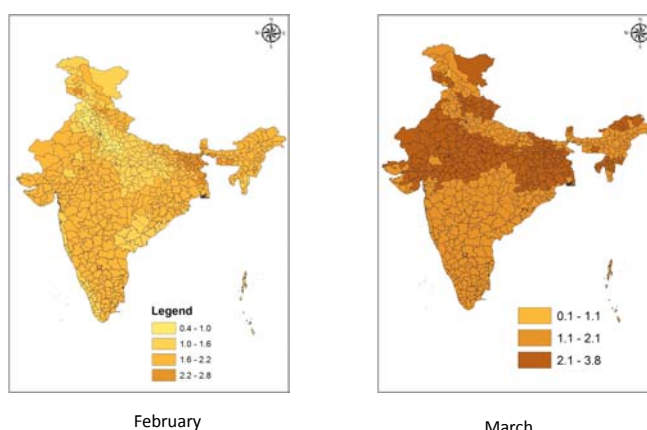
KVKs are still not very comfortable in dealing with the institutional intervention - formation and facilitation of Village Climate Risk Management Committees - as mandated under NICRA. Many KVKs have not facilitated the opening of bank accounts by VCRMCs yet. But are gradually understanding the significance of VCRMC as a village-level institution in bringing about sustainable changes in the long run.

**Sreenath Dixit**  
**Coordinator**  
**Technology Demonstration Component**

## Climate Projections Indicate Warmer and Wetter Future

As part of vulnerability assessment, changes in temperature and rainfall were examined as obtained from the downscaled projections using PRECIS for the A1B scenario. Changes were examined for the two periods, 2021-2050 and 2071- 2098 from the baseline 1961-90. The results indicate considerable increase in maximum temperature during September and October, the critical months for kharif crops and February and March which are critical for rabi crops (Maps 1-4). Maximum temperature during February was expected to increase by 1.6 to 2.2°C in more than 300 districts. Temperature was also projected to increase by more than 2°C in more than 300 districts. Temperature increases ranging between 1-2°C during September and October are likely in most of the districts.

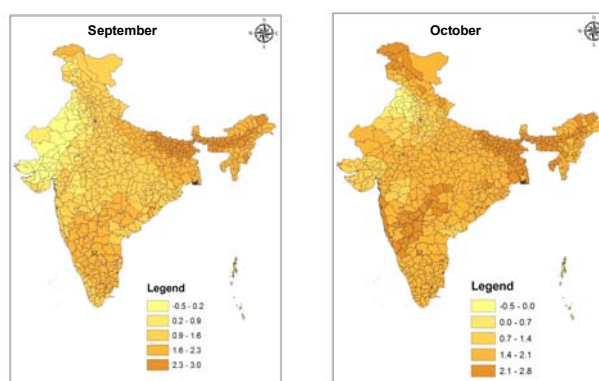
Projected Change in February and March maximum temperature during 2021-50 w.r.t 1960-90 (° C)



February

March

Projected Change in September and October maximum temperature during 2021-50 w.r.t. 1960-90 (° C)



PRECIS, A1b scenario

Accompanied by change in temperature are the increases in quantity of rainfall during June and July. It was observed that higher amount of rainfall is likely in about 20% of the districts and rainfall was expected to be less by at least 20% in about 8% of the districts during 2021-2050.

## Project Review Meeting

A Review and Planning Workshop was organized for the NICRA KVKs of Zone V during 20-21 April 2012 at KVK Baramati, Maharashtra. Dr Sudhakar, Zonal Project Director, Zone V, Dr G Rajender Reddy, Nodal Scientist - NICRA, Zone V and Dr Sreenath Dixit, Coordinator, TDC-NICRA participated. Dr (Mrs) Kaderbhai, Programme Coordinator, KVK Baramati facilitated the conduct of the 2-day workshop. On day - 1 of the workshop, all the participating PCs were taken to the KVK farm and introduced to various activities of the KVK. Of the 13 participating KVKs, nine KVKs completed their presentations on day-1. Day-2 began with the field visit to the NICRA village. Programme Coordinators visited sites where large scale de-silting of the drainage line (nala), custom hiring centre and silage making. They also discussed with farmers. Followed by the visit, review of the progress of remaining four KVKs was completed



### National Workshop on “Strategies for Climate Resilient Agriculture in NEH Region”

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 XII<sup>th</sup> 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, in his inaugural speech, highlighted the potential impacts of climate change on Indian agriculture with particular emphasis on agriculture and food security in north east India. While asserting the need of developing climate-resilient technologies in different sectors of agriculture including crop production, horticulture, livestock and fisheries, he underscored the need of judicious management of soil and water resources for future food security in the region. Dr. B. Venkateswarlu, Director, CRIDA, Hyderabad, stressing upon the vulnerability of north-eastern agriculture under climate change, underlined the need of focussed and realistic approach in research and extension activities by identifying certain most important priority areas to work on. He also clarified the basic concepts, objectives and required activities under the project ‘NICRA’



(National Initiative on Climate Resilient Agriculture). On this occasion, Dr. S.V. Ngachan, Director, ICAR Research Complex for NEH Region, presented an overall scenario of north eastern agriculture and discussed some emerging evidences of climate change and its effects in the region. While expressing concern over the prevalence of food and nutritional insecurity in northeast India, he asserted the need of developing location specific and easily adoptable climate-ready technologies to bridge the food deficit in the region in the face of changing climate. 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 required research and extension activities for climate resilient agriculture in the NEH regions of India.

## **Farmers Training Cum Field Day on “Zero tillage pea lentil and toria in rice fallow”**

Farmers’ Training Cum Field Day on Zero tillage pea, lentil and toria in rice fallow was organized at the ICAR Research Complex for NEH region, Umiam Meghalaya during March 20-21, 2012. Conventionally, after *kharif* rice, fields remain fallow in lowland, mainly due to excess moisture owing to seepage from surrounding hillocks in mid altitude. Draining water from rice field completely at physiology maturity (about 10 days before harvest) create favorable condition for cultivation of *rabi* pulses like pea, lentil and oilseeds like toria. A simple drainage channel of 30 cm depth at 5m interval creates the desirable soil moisture situations. Keeping this in view, a two-day “farmers’ training cum field day on Zero tillage pea lentil and toria in rice fallow” was organized at the Division of Natural Resource Management to disseminate the zero tillage technology in rice fallow (Low land/Up land) for cultivation of pea, lentil and toria. During this program, different aspects of zero tillage technology including suitable varieties, cultivation practices, herbicide application, opening narrow furrow with furrow opener, placing fertilizer and seed, pest and diseases management etc. were demonstrated to the farmers. Leaflets on Zero tillage technology (in English and *khasi* language) were distributed to more than 150 farmers attending the program. Dr. S. V. Ngachan, Director ICAR Research complex, Umiam asked for more collaboration and convergence among different stake holders and farmers for popularizing the zero tillage and other such resource conservation technologies for climate resilient agriculture in NEH region. An exhibition on different rice, pea, lentil and toria varieties, farm tools and implements, fertilizer & manure, pesticides etc. relevant to zero tillage technology was also organized for the benefit of the farmers.



**Furrow opener being demonstrated by  
Dr. S. V. Ngachan, Director, ICAR RC-NEH**

## Field day on happy seeder

In North Western India, combine harvesting of rice and wheat is a common practice leaving large amount of crop residue in the fields. While, at present more than 80% of wheat residue is collected by the farmers after combine harvesting using straw combine. Rice straw is considered poor feed for animals due to its high silica content therefore, it has no economic use. To vacate the fields for timely sowing of wheat crop, majority of rice straw is burnt in situ by the farmers because residue interfere with tillage and seeding operations of the next crop. Burning of rice stubble is rapid and cheap option for farmers which however, causes serious environmental pollution, besides loss of plant nutrients, organic carbons and micro-organisms of soil and thus deteriorating the soil health.

In order to overcome this problem the project has introduced happy seeder, an implement which helps sow the crop amidst standing stubble, thus not requiring the field to be cleared. A field day was organized to showcase the performance of wheat crop which was sown using happy seeder amidst standing rice stubbles. The farmers were very much convinced with the technology and with the association of climate risk committee they have set the minimum target of 100 acres under this technology in the coming season. Moreover some farmers are coming forward to buy this machine on subsidy.



**Programme Coordinator Dr. Harinder Singh interacting with farmers on the field day**



**Field day on farmers field on wheat sown with happy seeder**

## **Climate Resilient Agriculture: Key to Agricultural Growth In Saran**

Late onset and early withdrawal of monsoon has become a regular feature of Saran district of Bihar. This poses a serious threat on successful production of Kharif as well as Rabi crops in the area. Keeping this in view, renovation of water reservoir was promoted in Affaur village covering over 100 ha benefiting 70 farmers. A similar renovation has been done in Darihara village. Renovation of irrigation/drainage was done so that additional rain water may be accumulated and be used for irrigation in peak period of drought and also to serve as source of drinking water for grazing animals during heat stress.

Forest tree plantation, orchard crop plantation, in-situ vermicomposting, sowing of green manuring crop like green gram were also promoted in farmers' field. This practice has been widely accepted as climate resilient measure by the farmers of village. One small library and one farmers' club have been established in both the villages. The farmers are now using the equipments and implements provided by the KVK under NICRA as custom hiring and the rent is being deposited in saving Bank account of VCRMC. Some equipments like cultivator, Disc harrow, Paddy thresher, Rotavator, self propelled reaper and tractor mounted reaper have been provided to the farmers apart from that purchased from the NICRA project. Mass campaign on soil testing has been done and both initial and final soil samples are taken before and after the crop.

In this connection, awareness-cum-convergence workshops have been organized from March 20 to 26 March 2012. 7 days capacity building programme was also undertaken on "scaling up of water productivity in agriculture for livelihood through Training-cum-demonstration." Capacity building of at least 30 Self Help Groups of women has also been conducted on Nutrition, Tie and Dye, Mushroom cultivation, Fruit and vegetable preservation, poultry farming, dairying, etc. Free Animal Health check up camp was organized at NICRA village (Darihara & Affaur) by the scientists and doctors of the KVK and of the Government of Bihar. Dr. B.K Singh, Professor, RAU Pusa, Dr. S. K. Jain, Associate Professor, RAU Pusa, Dr. A. K. Singh, Associate Director Extension Education, RAU Pusa, Dr. J.P Singh Associate Professor, RAU Pusa, Dr. Ravi Nandan, Chairman, Department of Agronomy, Dr.M .S. Diwaker, Director Rice Research Institute, Patna and Dr. Dar from IRRI Philippines visited NICRA village.

Three exposure visits have been conducted of the NICRA village to RAU Pusa & KVK Nawada. One seminar on fruit and vegetable presentation was also organized in which at least 200 farmers were present. One stall was also erected in Kisan Mela at RAU Pusa displaying the exhibits on Climate Resilient Technology from 17<sup>th</sup> to 19<sup>th</sup> of February and that stall was star attraction of the Kisan Mela.



## Micro Irrigation to prevent droughts in Kutch, Gujarat

Krishi Vigyan Kendra, Mundra is implementing NICRA project in Bhalot village in Kutch district of Gujarat. The source of irrigation in Bhalot village is open well. Irrigation facility in the field crops is only limited during good rainfall year. Farmers were wasting the irrigation water by flood irrigation method. There was not a single drip set in the village. Hence, inefficient use of irrigation water was the main cause for the limited crop area under irrigation.

After identification of major problems, KVK decided to conduct different programmes in Bhalot village under NICRA project to increase the water use efficiency and thereby to increasing crop area under irrigation. Awareness among farmers was created by frequent meetings, trainings and exposure tours. Under NICRA project KVK implemented major two programmes.



- (i) Preparing low cost check dams for rainwater harvesting and to control soil erosion
- (ii) Installation of drip irrigation on individual farmer's field.

In convergence with the Guajrat Government's programme on promotion of micro irrigation, farmers were motivated avail 50% subsidy. Initially, 12 farmers adopted the drip irrigation system and a total area of 13 ha was covered under Cotton, Castor and Vegetables.

### Major Impact:

Earlier, area under drip irrigation in the village was nil. As per the results of the demonstration, average increase in cotton yield due to drip irrigation is 26% and farmers could irrigate additional 12 ha. area. Earlier, farmers were able to cover 13 ha. area, but after drip installation they could irrigate 25 ha. crop area. Thus, almost 92% increase in water use efficiency was found.

- i. Increase in crop productivity: Cotton yield increased by 590 kg /ha due to drip irrigation as compared to control plot resulting in an additional income of Rs. 22,000 / ha.
- ii. There was reduction in labour cost due to laying of drips , besides it also helped reduce weed infestation as used to be observed in flood irrigated plots. Savings on labour was worked out to be Rs. 4,500 /ha labour. Thus, total economic gain per ha. is Rs. 26,500 under drip irrigation in cotton in Bhalot village. Currently over 25 farmers are ready to adopt drip irrigation.



## Nandok gears up with NICRA project to be a climate resilient model village

Krishi Vigyan Kendra, East Sikkim, ICAR Sikkim Centre, Ranipool organized a day long workshop on “*NICRA: Awareness and Convergence Workshop*” at Nandok village, East Sikkim on 11th April, 2012. The key objective of the workshop was to develop awareness among all the stakeholders including farmers regarding the **Climate Resilient Agriculture** by the convergence of all the line departments, Govt. of Sikkim; ICAR, CAU, NABARD, SIMFED, NERAMAC, etc. More than 200 farmers, farm women, rural youths, emerging entrepreneurs and delegates from ICAR, line organizations & experts from the fields of agriculture and allied sector attended the conclave.

On this occasion the Chief Guest Shri K. T. Gyalsen, Hon’ble Speaker, Sikkim Legislative Assembly, Sikkim inaugurated the Village Climate Risk management Committee (VCRMC) office and Custom Hiring Centre (CHC) in the village. In this context he highly appreciated the concept of community participatory based custom hiring centre (CHC) for provision of small agricultural implements for various farm operations under NICRA project. Presiding over the session, Dr. Jay G. Varshney, Joint Director, ICAR Sikkim outlined the rationale and expected outcome of the NICRA project in the context of global climatic change. Dr. P. K. Srivastava, Dean, CAE&PHT, CAU, Ranipool who graced the occasion as Guest of Honour in his brief address highlighted the importance of mechanization in agriculture and also advised to take up some relevant post harvesting and processing technology which can fetch better market price through value addition as a better option for resilience agriculture. Initially extending a hearty welcome to the guests and dignitaries, Dr. A. K. Mohanty, Programme Coordinator, KVK, East Sikkim in his welcome address, gave a brief account of the project, its objectives and appropriate interventions taken up by KVK under climate resilient agriculture under different modules namely NRM, Crop production, livestock and fisheries and institutional interventions. On this occasion inputs like jalkund, vermicompost and ginger seeds were distributed among the beneficiaries. Two technical folders one on *Jalkund* and another on *Upland rice cultivation* (published in Nepali language) were released by the guests.



Release of technical folders by Chief Guest



Address by Hon’ble Speaker, Sikkim Legislati Assembly

[Home](#)