Capacity building Programmes and their impacts at Cauvery basin

CLIMARICE: " Sustaining the rice production in a changing climate uncertainties and validating selected adaptation techniques on farmer's field"

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Adapting to changing climate is essential for individuals and communities to sustain their livelihoods. Improving adaptive capacity at various levels is essential, and this can be done by strengthening ongoing initiatives, introducing new measures, training and capacity building. One of the main focus areas of the Climarice projects is to train the farmers on implementing various adaptation technologies that would increase the water and nutrient use efficiencies at field level. Climarice project scientists have identified various technologies such as usage of biofertilizers such as blue green algae and azolla to improve the nutrient use efficiency in paddy cultivation, application of green manures to enhance soil organic matter content, introduction of short duration rice cultivar during delayed monsoon, cultivation of alternate crops for income generation, System of Rice intensification for enhancing water and grain productivity, usage of bio control agents such as *Trichoderma* and *Pseudomonas* for eco friendly management of pest and diseases etc.,. For the successful implementation of these technologies at field level, the farmers have to be given with training and exposure visits. ClimaRice project scientists have undertaken many capacity building programmes to farmers of Cauvery basin on various adaptation technologies and these programmes have created confidence among the farmers. Many farmers who have attended the training programmes are following the technologies with great interest. A summary of the training programmes and their impact are furnished in this report.

i) Training on Biofertilizers and Bio control agents

In Cauvery Basin of Tamil Nadu, to sensitize the farmers on the multiplication and usage of Azolla and Blue green algae, one-day training programme was organized at ADAC&RI, TNAU, TN, India on 11-05-2011.

Fig. 1. Farmers observing Azolla germplasm at ADAC&RI, Trichy, India

ADAC&RI, Trichy is one among the dissemination centers under ClimaRice II Project. Azolla germplasm and mother inoculum centre has been established at ADAC&RI, Trichy recently under ClimaRice programme. 50 Farmers from three Climavillages including volunteers from WSHGs participated in this programme and were trained on cultivation and usage of these biofertilizers. The trainees were given with a manual on azolla and 5 kg azolla mother inoculum (seed) to initiate the cultivation in their farms. Two trainees, Mrs.Leelavathy from Nallur and Mr.Sampath from Nachaloor shared their experience on behalf of the trainees and mentioned that this training had provided hands

on experience on ecofriendly biofertilizers and thanked the organizers for providing the seed inoculum at free of cost to the trainees.

In Climarice, more than eight CB programmes have been conducted on biofertilizer and due to this effort azolla cultivation has become popular among farmers in climavilllages such as Thirumangalam, Abesekapuram, Mamaloor, Ammanpettai, Nachaloor, Neithaloor. All the villages are having azolla seed nursery maintained by the volunteers of WSHG.

ii) Training on Bio intensive Agriculture at ADAC&RI, Trichy

A training programme to ClimaFarmers was organized at ADAC&RI, Trichy on 29.08.2011 to educate them on the usage of various Biofertilizers and Biocontrol agents in Rice farming. Scientists from ADAC&RI,Trichy trained the farmers on the usage of

Fig. 2. Training inaugural session at ADAC&RI, Trichy, India

Azospirillum, Cyanobacteria, *Trichoderma* and *Pseudomonas*.

Dr.Nagothu Udaya Sekhar, Project Coordinator, ClimaRice and Dr.Nambi, MSSRF, Chennai also participated in this programme and distributed Biological inputs and seeds to farmers. He also interacted with them to understand the impact of ClimaRice programme in their area. Farmers visited the Azolla nursery and Barn yard millet field.

Fig. 3. Azolla germplasm at ADAC&RI, Trichy, India

iii) Training on SRI Cultivation.

An interactive meeting was organized at Saraswathi KVK, Karur with ClimaFarmers of Nachaloor and Neithaloor villages. Nachaloor and Neithalur villages of Trichy district are being concentrated for SRI cultivation under ClimaRice as these villages adopted SRI successfully during last season. Dr.Nagothu Udaya sekhar (Bioforsk), Dr.Nambi (MSSRF), Dr.V.Geethalakshmi and Dr.A.Lakshmanan (TNAU) and Dr.Diravium (SKVK) interacted with farmers to understand the issues in SRI cultivation.

Fig 4. Discussion with ClimaFarmers at SKVK, Karur

As a result of the SRI training programmes more than 150 acres were brought under SRI

cultivation in Neithaloor and Nachaloor during Kuruvai, 2010 and 2011. Earlier in these villages there was no SRI adoption and Climarice project intervention resulted in SRI adoption and farmers are practicing this methodology for the third year in 2012.

iv) Awareness campaign on the short duration rice cultivar- IET 5764

IET7564 is the short duration rice variety that can be described as ***"Wonder Rice"*** owing to its shortest duration and ability to withstand drought. This variety was demonstrated as a well performing short duration (75 days) variety in 1980s in Thanjavur district but its importance was neglected as there was no water scarcity during that period. Mr.Ranganathan, (CDDS) identified the potential of this variety and in coordination with ClimaRice scientists carried out basic research on this wonder rice.

First this variety was test verified at field level for its potential. This variety IET7564 and another short duration cultivar IET756 (received from DRR, Rajendranagar, Hyderabad) were screened along with other ruling short duration varieties (ADT39 and ADT43 which were of 105 days duration) in Cauvery Delta Zone during "*Kuruvai, 2009*" (*Kharif)* season. This new variety IET7564 started maturing earlier than the other ruling varieties and was harvested in 75 days with an yield of 3.240 tonnes of grain per hectare.

The results of these experiments were disseminated in the stakeholders workshop held at TNAU, Coimbatore and ADAC&RI, Trichy and the seeds of this variety were sent to different dissemination centres of ClimaRice project (SKVK, Karur, ADAC&RI, Trichy, TRRI, Kumbakonam and SWMRI, Thanjavur) for trial purpose.

Fig. 5. IET7564 variety - a close look

The crop was sown in Kuruvai, 2010 at all dissemination centres and harvested in 73-77 days. The average yield was 3.150 tonnes per hectare. The seeds of this variety have been given to selected progressive farmers of Cauvery delta zone and The Joint Director of Agriculture, Thiruvarur extended his willingness to work with ClimaRice team to promote this variety intensively in 2 selected villages in Thiruvarur and this activity is coordinated by SWMRI, Tanjore.

v) Training on Mat Nursery

One day training programme on mat nursery formation was given to the farmers of Thirubuvanam and Manalor villages during August 2011 in coordination with TRRI, Aduthurai.

Many women farmers were benefitted by this training and majority of the farmers are following mat nursery and this technique is becoming popular in Climavillages. In Manaloor village a community mat nursery was tried during Samba, 2011 where in 11 farmers collectively raised mat nursery in one farmers field (Mr.Manavalan) and they used the seedlings for 75 acres. They felt that the community mat nursery resulted in less water usage and also

helped them to use mechanical transplanter.

Fig. 6. Mat nursery at Manalur village, Kumbakonam, India

vi) Training and exposure visit on Barn yard millet

Kudiraivali (Echinochloafrumentacea L) is minor millet suited for cultivation under rainfed condition. It has the special feature of drought resistance and can withstand water logging up to 2 weeks. It has field duration of 70 – 80 days. It is used as reclamation crops on land that is too saline for rice. It is the very quickest crop among all millets. To validate this millet a field trail was taken up at ADAC&RI, Trichy during July 2011- to Oct 2011. Barnyard millet variety, CO1, was taken as the test variety. The soil type was non saline sodic soil with pH 8.5.

Farmers from Nachaloor, Neithaloor and Ondan patti villages were taken to the field trial and one day training programme was organized to these farmers during September, 2011. A seed rate of 8 kg / ha was adopted and seeds were sown in lines with a spacing of 30 cm x 10 cm. Thinning was done at 20 days after sowing (DAS) and the thinned plants were used for planting in the gaps, One weeding was done at 30 DAS.

A fertilizer dose of 60:30:30 kg / ha NPK was applied. Out of this 50 percent N and full P and K were applied basally. The remaining 50 percent N was applied in two splits during tillering and grain filling stages. Irrigation was given at sowing and life irrigation at 3 days after sowing. Afterwards irrigation was scheduled at 50 % available soil moisture. Growth attributes and yield attributes were recorded at harvest stage.

As a result of the CB programme combined with supplying seeds to the growers, more than 80 acres were brought under this millet during February, 2012 as sumer crop in Abesekapuram and Ondan patti villages and farmers got a profit of around 4000-6000 rupees per acre in 3 months period. A grain yield of 900 kg / ha was recorded and farmers sold the seeds at a rate of Rs 20/Kg.

Fig.9. Barnyard millet experimental field at ADAC & RI, TNAU

A cost of cultivation of Rs 7000/ha was incurred and farmers got a net income of Rs.11,000/ ha within a period of 70 -90 days.

Conclusion

Capacity building programmes on identified adaptation technologies are carried out in Cauvery basin regularly. Five dissemination centers such as ADAC&RI, Trichy, Krishi Vigyan Kendra, Trichy, Soil and Water Management Research Institute, Tanjore, Tamil Nadu Rice Research Institute, Aduthurai and Agricultural Research Station, Bhavani sakar are involved in carrying out the training programmes and subsequent follow

ups. During the period between 2010 and 12, thirteen training programmes were conducted in Cauvery basin by the dissemination centers and more than 400 Clima farmers were trained on various adaptation technologies. The Clima farmers, who are educated and trained in climate change adaptation programme, are disseminating the information to nearby farmers and field trials are conducted in Clima farmer's fields to encourage them. The Clima farmers are also trained on the interpretation of weather forecast in farm decision making. These trainings have created good awareness on the importance of adaptation technologies among the farmers and microbial technologies like Azolla, blue green algae, *Trichoderma, Pseudomnas* are being followed by many clima farmers. Similarly the training on SRI motivated farmers in Nachaloor, Neithaloor and Ondan patti villges and more than 30% of the area is under SRI in these villages and farmers are practicing SRI for three consecutive seasons.

CLIMARICE Project (2010-2012)

ClimaRice **is** an integrated project that aims to assess the climate variability and its impacts on the water availability and rice production systems in the Cauvery and Krishna river basin of Tamil Nadu, India. The overall goal is to contribute to the regional and national adaption strategies to sustain rice production and ensure food security amidst changing climate. The partners are:

- Bioforsk - Norwegian Institute for Agricultural and Environmental Research (Project Co-ordinator)
- Tamil Nadu Agricultural University, Coimbatore, India
- International Pacific Research Institute, Hawaii, USA
- International Water Management Institute, IWMI, Hyderabad, India.

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