

Project Site Visit Report

Assessment and Dissemination of Climate Resilient Agricultural Technology in Bihar –A multi stake holder convergence

Muzaffarpur and Vaishali, Bihar Date: 6-9/08/2018

Muzaffarpur:

A team of scientists comprising of Dr. S. Chakravorty, CATAT and Dr. Renu Singh, CESCRA ICAR-IARI visited the project sites of Muzaffarpur for Farmer-Scientist Interaction and monitoring the interventions in the field under the collaborative project '**Assessment and Dissemination of Climate Resilient Agricultural Technology in Bihar**'. The team was accompanied by Mr. Sandeep Rai, SRF of the project and Mr. Allwyn Gladston of World Vision India.

Day I-6.8.18

Farmers of village Bhagwatpur, Dwarikanathpur and Mohmmadpur met the team at the local office of WVI at Dwarikanathpur Town of Muzaffarnagar. The problems of farmers regarding cultivation of paddy variety CSR 30 by applying DSR technique were discussed. In all 52 farmers and woman farmers attended the meeting. The issues raised by the farmers were as follows:

- Paucity of water due to erratic rain fall threatened crop stand, as frequent power cut and high cost of diesel fuel deter farmers from keeping their field moist enough, required for healthy rice seedling. This has resulted in low germination and yellowing of plants.
- Severe weed problem – no application of pre-emergence herbicide,
- Attack of termite causing destruction to the crop.
- The guideline of project financers to follow organic methods of crop production, which, however, could not be implemented all of a sudden by resource poor farmers, with no access to the niche markets of organic products.

The need of using nitrogenous fertilizers judiciously and the use of Leaf Colour Chart was discussed in the meeting, assisted by practical demonstration in field. Most of the Paddy (CSR 30) fields with DSR were not properly irrigated and plants were weak. Some leaves of plants were cut by some insect and the causal problem was traced to infestation of termites in the field. Problem of Iron deficiency was rampant as according to expert scientists, lack of moisture in the field or standing water hampers Iron uptake in the crop. It was explained to the farmers and light irrigation along with Ferrous Ammonium (0.5%) along with urea (2%) was advised. Smaller demonstration area of the adoption of any new technology was suggested for future. DSR with drum seeder in puddled field was recommended for better germination. A lady farmer namely Mrs. Jamila Khatun village Mohammadpur Kaje who planted CSR30 due to the saline soil for DSR has good paddy field because of standing water. Yellow seedlings were also in her field where soil was almost dry on surface so laser leveler should be introduced in the farming practices may be on custom hire basis on the community level. In the mean time for the small field, Buck scrapper can be used for field leveling. In her field Leaf Colour Chart was also demonstrated among the farmers. Deep ploughing of the field with mould board plough and disc harrow instead of rotavator and solarization of field soil may check the weed growth in the field before sowing of the crop. During later stages manual weeding or mechanical weeding by use of paddy weeder may be the only recourse.

Day II- 07.08.18

Interaction with farmers was organized at Bhagwatpur village which is famous for organic vegetable cultivation and notified as organic village by Bihar government. Farmers talked about different pest and diseases in their vegetable crops especially cauliflower, cabbage, brinjal, tomato and onion. Pest related advisory and necessary practices to be followed at the very beginning of the cropping system viz. soil solarization, protected low cost chamber for nursery raising, root dipping, bird perch, monitoring of control pheromone trap, coloured sticky trap, method of home production of Trichoderma by dry fermentation was explained. Preliminary idea of labels of pesticide containers and the attributes that indicates their genuineness was explained with example. Nursery of farmer Akhilesh Rai of Dwarikanathpur village for onion, cauliflower and brinjal was visited to check the related crop problems. The frequent rain removed the vermi-compost cover and in onion crop, germination is patchy. Scorching sunlight after rain is affecting the seedlings of moist patches. The farmer was suggested to wait and see and to spray cattle dung urine extract to the seedlings. The demonstration of LCC was done with different group of farmers at Karza village local office of WVI for paddy, wheat and maize crop with the help of short film and lecture. Field visit was extended to the vermicompost unit established by Mr. Rajesh Ranjan Kumar village Bhagwatpur.

Vaishali

Day III-8.8.18

On the third day the district Vaishali was visited and in the village Lakhanpur, a meeting with thirty five farmers and farm women was arranged at a degree college. The farmers were chiefly dealt with Paddy crop and evolution and importance of IPM, its feasibility and hurdles of implementation, simple adoptable nonchemical methods and the role of FPO in wide adaptation of IPM was explained. The importance of judicious use of nitrogenous fertilizers and the use of Leaf colour chart was described in the meeting. Farmers' queries about rice mealy bug, seed problem, termite damage etc. were addressed. In the afternoon, field visit at village Ufraul revealed the same weed problem in DSR, though the rice fields visited were with healthier seedlings. The nut grass was so similar to rice seedlings that it could not be easily weeded out. Spraying of bispyribac sodium 10% SC was suggested in one month old crop consultation with expert from IARI.

Day IV-9.8.2018

Farmers interested in vegetable cultivation were met in village Gazipur and necessary instructions were given to them regarding sowing and raising of seedlings of cauliflower, brinjal and tomato. Use of site nylon mosquito-net like net was suggested to avoid whitefly infestation. Other protective measures to minimize insect infestation from the initial 40 days of the crop were suggested. Follow up will be done by the SRF, Mr. Sandeep Kumar. One page back to back printout of crop wise instructions will be provided to him for distribution among farmers. Young farmers were also initiated about the Leaf colour chart for diagnosis of Nitrogen health status of rice.

General Suggestions of the team:

1. Subabul (*Leucaena leucocephala*) plantation around the field is essential for the villages. Initially all plants should grow to certain height then some plants should be left for timber, seed and leaf and some

plants will be coppiced at ground level for regeneration of long poles to be used for season purpose and seeds of all plants would be used regularly for green manure crop to add more organic matter to the soil.

2. Soil solarization could be promoted among vegetable farmers and required training and logistics can be provided to the interested farmers.
3. Blue bull is a menace to the farmers. Vegetables and the borders crops of maize could not be grown due to the animal. Fencing with subabul trees, first allowed to grow and then pollarded to certain height will create a stout live fence with bushy top that may deter jumping action of the animal. ITK could be applied to deter feeding. Already the spray of egg water mixture has been suggested. Follow up is needed.
4. Every village should have the inventory of poisonous plants at non cropped area like bunds, village periphery etc. the plants like milk weed, Nirgundi (*Vitexnegundo*), custard apple, neem, Persian Lilac (Bakain) and the leaf suggested for preparation of *Dasparni ark* should be available at door step at large amount.
5. Farm women capable of preparing candle, papad, incense stick should get chance to prepare those items to be sold through FPO.
6. Stale seed bed technique should be adopted before every DSR seeding to reduce weed population.
7. The *Byasi* method of DSR traditionally followed in Chattisgarh, broadcasting rice seedling in high-banded rice field and criss-cross ploughing with narrow plough and bullock followed by irrigation, as described by Mr. Sandeep Kumar, if found successful at the farmers field in Muzaffarnagar, should be upscaled in all farmers field.
8. Sudden jump to non-chemical methods is risky, viewing the ground situation of small farmers with small monetary back up. Chemicals could be slowly phased out trying feasible non chemicals after testing their economic fitness in the social system.
9. Buck scraper and rake should be provided to farmers to carry out leveling in fields at wide and small scale respectively.
10. Whatsapp can be utilized to exchange photos, videos and information in real time among farmers, SRF and experts in Delhi.
11. Provision of single wheeled or narrow chasis hand pushed weeder should be done to all farmers. Simple models are available and modified versions can be manufactured by village machinists.
12. Meeting of experts of other divisions and Co-PI should immediately be convened to chalk out the action plan for the coming vegetable season. Early procurement of chemicals, nets, plastic sheet, fungal bioagents, enrichment of organic manure with bio-agents for 15-20 days before application in nursery as well as main field has to be done at war-footing as time is very short for keeping the farmers' enthusiasm for joining FPO alive.
13. Vermicompost production takes time and investment in the structures. Though the Government is giving due support, there should be an alternative arrangement till the farmers are ready to harness the benefits of the subsidy etc. for vermicomposting. Leaf manure, cowdung manure etc could be prepared in the farmers' field for enhancement of bioagents before spreading them in the field. The compost making consortia of IARI or National Center of Organic Farming, Ghaziabad should be introduced in the village for quick composting of the above organic wastes.
14. For termite control in the field, 1 Kg/1 litre solid or liquid *Beauveriana bassiana* or *Metarrhizium* formulation mix it with 100 Kg of manure /compost with jiggery water. Keep it semi moist in shade

for 20 days, turn occasionally. After the fungus spread all over the manure spread it in the field and irrigate lightly. Keep it repeating occasionally.

photos:





