

ICAR-IIVR technologies: A step to reach the North Eastern region of India

Diverse agro-climatic regions, wide variety of soils supplemented with substantial rainfall has made the NE region a forerunner in agriculture sector. Small and marginal farmers holding maximum area of the total arable land of the NE region have chosen vegetable growing as the best alternative for their livelihood along with food grain production. In spite of immense scope for production of quality vegetables in the region, there are some constraints representing low productivity of vegetables. About 40% of the people are below the poverty line in terms of energy intake as well as socio-economic status. Low production of vegetables leads to low availability of vegetables to the rural and city dwellers. Maximum amount of vegetables thereby need to be imported from the nearby areas and other states.

ENHANCING vegetable supplies through low-cost production and consumption technology, demonstration of improved production and protection technology, regularizing basic inputs, advance vegetable cooking and processing methods coupled with educational programs to improve productivity, promotion of balanced diet, etc. are considered the most effective strategies to solve the problem of less productivity, mineral and vitamin deficiency among vulnerable communities of NE region throughout the year as part of 'Promotional Activities of Vegetables' under ICAR-IIVR-NEH Component. Under this backdrop, presently ICAR-IIVR, Varanasi is undertaking different activities/module with following objectives:

- To train small and marginal farmers of the region.
- To distribute quality seed materials of vegetables and other inputs in the form of minikit.
- To enhance awareness and assist in the promotion of production technologies, processing, and utilization of selected micronutrient-rich vegetables through front line demonstration.
- Introduction of different promotional activities.
- Crop cafeteria or Homestead garden creation.
- Low cost poly-house for growing of high value vegetable crops (like Capsicum, Cherry tomato and/or Broccoli).
- Introduction of new crops in the non-traditional areas (like *kharif* onion)
- Nursery raising of vegetable by covering with 60 mesh nylon net and nursery raising of high value vegetable crops by plug tray techniques under low-cost poly-house.
- Off-season vegetable cultivation.
- Use of Poly-mulch or Agri-mulch for better yield and productivity.

- To promote vegetable based value-added products.

Farming system selected for improvement

Maximum number of farming family of NE region are in small or marginal farming condition which involves less involvement of inputs in their cultivation practices resulting in low productivity and less outcome per unit of area. Low productivity (7-8 t/ha) of vegetable crop production is the major constraint usually found in farming community. This was due to mono-cropping or less cropping intensity (Rice-Pea, Rice-Okra, Rice-Tomato, and Rice-Brinjal) with less diversity of crops and improved varieties, and along with little integration with others farming systems, viz. fishery, goaterly, poultry and cattle based farming system. Supply of basic inputs like improved open pollinated and hybrid varieties of public sector and private sector can substantially improve the productivity as maximum farmers are using or acquainted with local land races (having less productivity). Other inputs like organic compost, inorganic fertilizer, neem cake, vermin-compost, organic plant growth regulators, plant protection chemicals, pheromone trap, yellow sticky trap, knap sack sprayer, poly mulch and different horticultural small tools were incorporated to improve the productivity of small and marginal farm holdings.

Principal milestones reached through ICAR-IIVR technologies

- i) Training on improved package of practices of vegetables crops.
- ii) Distributed quality seed materials of vegetables and other critical inputs in the form of minikit.
- iii) Adopted proper plant protection measures for vegetable crops.

Table 1. ICAR-IIVR varieties in NEH region- Covered area (ha)

Crop	Variety	Covered area (ha)	State covered
Chilli	Kashi Anmol	11.5	Manipur, Nagaland, Tripura, Mizoram
Tomato	Kashi Aman	38.9	Arunachal Pradesh, Tripura, Mizoram, Manipur, Nagaland
	Kashi Adarsh	20.0	Mizoram, Tripura, Sikkim, Assam, Nagaland, Manipur, Arunachal Pradesh
Okra	Kashi Lalima	42.0	Tripura, Sikkim, Assam, Nagaland, Manipur, Meghalaya, Arunachal Pradesh
Ash gourd	Kashi Dhawal	31.5	Tripura, Sikkim, Assam, Nagaland, Manipur, Meghalaya, Arunachal Pradesh, Mizoram
Cauliflower	Kashi Gobhi-25	32.0	Mizoram, Tripura, Assam, Meghalaya
Cowpea	Kashi Nidhi	26.5	Tripura, Sikkim, Assam, Nagaland, Manipur, Meghalaya, Arunachal Pradesh, Mizoram
	Kashi Kanchan	23.5	Tripura, Sikkim, Assam, Nagaland, Manipur, Meghalaya, Arunachal Pradesh, Mizoram
Vegetable Pea	Kashi Ageti	12.5	Assam, Tripura, Meghalaya

SUCCESS STORY

Scientific intervention improved the socio-economic status of rural farmer

Cabbage is a well-known vegetable crop in the state of Tripura. It is being cultivated by almost every farmer and is used for both domestic and selling purposes. Some of the major challenges faced by farmers with respect to improved cultivation of cabbage include the inadequate availability of quality seeds at the right time, lack of knowledge on technical aspects about scientific cropping and its application, non-availability of improved and critical inputs such as organic fertilizers and low market rate of product in the local market. During the months of January and February, price of cabbage per kg remains very less and in many cases farmers are unable to cover the cost of production of the crop. Even though farmers have access to town markets, due to availability of low space and other lateral factors, the income earned is very less.

Initiative: Supply of basic input like improved variety of cabbage seed – Rare ball along with other inputs like inorganic fertilizer, vermin-compost, etc. were incorporated to improve the productivity of small and marginal farm hold of the crop, integration of vegetable based farming system such as improved techniques of vegetable nursery and nursery bed preparations, getting the farmer acquainted with line sowing of vegetable besides broadcasting method and dissipation of knowledge on Improved Good Horticultural Practices in vegetable cultivation.

Key result/insight/interesting fact: As a result of the scientific intervention during the trainings and demonstrations conducted, the farmer got acquainted with improved package of practices of vegetables; quality high yielding seeds of cabbage and other critical inputs in the form of minikits were distributed and awareness/know-how regarding proper plant protection measures for vegetables was provided.

Lessons learned: From initial sowing of Cabbage and with repeated interventions, the following observations were made with respect to the farmer:

- Replacement with improved variety – Rare Ball and on-farm seed production of cabbage
- Proper plant protection measures
- Increased productivity of cabbage crop
- Socio - economic upliftment and livelihood improvement through more earning with higher production
- Gathering of knowledge on balanced application of agro-chemicals and organic fertilizer.



Demonstration of harvested improved variety of Cabbage by farmer Sri Bijoylal Majumder in Tripura after scientific intervention and supply of quality Cabbage seed– Rare Ball by ICAR-IIVR, Varanasi

SUCCESS STORY

Livelihood improvement through successful cultivation of Radish var Kashi Hans

Cultivation of radish involves high input cost. Lack of knowledge on expansion of vegetable production, inadequate availability/supply of quality seeds at the right time, lack of knowledge on technical aspects about scientific cropping and its application, non-availability of improved and critical inputs such as organic fertilizers and low market rate of product in the local market are some of the major constraints observed in radish cultivation by farmers in Tripura.

Initiative: Supply of basic input like improved variety of seed of radish variety Kashi Hans along with other inputs like inorganic fertilizer, vermin-compost, etc. to be incorporated to improve the productivity of small and marginal farmhold of the crop, integration of vegetable based farming system such as improved techniques of vegetable nursery and nursery bed preparations, getting the farmer acquainted with line sowing of vegetable besides broadcasting method and dissipation of knowledge on Improved Good Horticultural Practices in vegetable cultivation.

Name of Cultivator	Sri Bijoy Lal Majumder
Address	S/O: Arabinda Majumder Vill.- Purba Ramchandra, PO: Uttar Ramchandraghat, PS: Khowai, Block: Khowai, Dist: Khowai, Tripura 799207
Name of crop and variety	Radish variety – Kashi Hans
Area Covered	0.16 ha (1Kani)
Cost of Cultivation and Income	₹15,000/- for 0.16 ha (Land preparation, sowing, irrigation, intercultural operation) and seed cost (₹4000) ₹30,000/- (Income) B:C ratio: 2: 1
Benefits and Income increase	Support in form of Improved Seed, other inputs and Improved package and practices Cost of Cultivation: ₹ 12000/- per 0.16 ha (Seed Cost Low – ₹1120/-), Income: ₹40,000/- per 0.16 ha (Income more due to high yield) B:C ratio: 3.33:1
Net Profit	₹ 40,000/ - ₹12,000/ = ₹28000/per 0.16 ha
Farmer's view	a. Cropping intensity has been increased with incorporation of this short duration crop. b. Seeds of high-yielding varieties, proper seed treatment and timely management practices. c. Following Good Horticultural practices increases yield. d. Technical support for effective and judicious use of inputs and pesticides through training.



Demonstration of improved variety of Radish by farmer Sri Bijoy Lal Majumder after scientific intervention and supply of quality seed variety Kashi Hans from ICAR- IIVR, Varanasi under ICAR-IIVR, NEH Component

Principal results obtained

From the initial findings, following trends were seen and the repeated intervention for 3 more years may give concrete results in the respective aspect.

- Productivity of the vegetables has been increased.
- Socio-economic upliftment through more earning with higher production.
- Balanced application of agro-chemicals.

Socio-economic, scientific and technological significance of the results

Income of the farmers has been increased with increase in the production and productivity with scientific cultivation and technological intervention. Success stories of farmers are evidence of success of the intervention. However, the ICAR-IIVR activities have been started

recently in the Aspirational districts of the NE region and after repeated intervention and introduction of new technologies, promising results are expected.

Technologies demonstrated/Kisan Mela/Field day organized in NE region

A total of 72 Trainings, 55 Technology demonstrations, 13 Kisan melas and 29 Field days were organized for dissemination of information to the farmers.

For further interaction, please write to:

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