ANNUAL REPORT 2022

ICAR-Agricultural Technology Application Research Institute, Zone-VII
Umiam, Meghalaya-793103
(An ISO 9001:2015 Certified Organization)

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PREFACE

Greetings from Team ICAR-ATARI, Umiam!

The ICAR- Agricultural Technology Application Research Institute (ATARI), Umiam, headquartered in Umiam, Meghalaya, holds the primary responsibility of systematically coordinating, monitoring, and reviewing mandated activities across five North Eastern Hill States of India—Manipur, Meghalaya, Mizoram, Nagaland, and Tripura. These activities include technology assessment, demonstrations, planting material production, training programs, and various extension activities involving 43 Krishi Vigyan Kendras (KVKs). Additionally, the institute is actively engaged in formulating and implementing need-based research projects to strengthen agricultural extension research and knowledge management.

In the fiscal year 2022-23, the institute, in collaboration with selected KVKs, research institutes, and agricultural universities, successfully executed five funded projects. These projects encompassed diverse areas such as National Innovations on Climate Resilient Agriculture (NICRA), Attracting and Retaining Youth in Agriculture (ARYA), Farmer FIRST Programme (FFP), and Cluster Frontline Demonstration (CFLD) on Oilseeds and Pulses under NMOOP/NFSM through different KVKs in the zone. Special programs, including Poshan Maah Celebration, Jal Shakthi Abhiyan, Skill development, Micro-irrigation, Natural farming, Soil and water testing and MGMG etc. ; were also effectively implemented during this reporting period.

Throughout the year, KVKs in the zone conducted 440 On Farm Testings (OFTs) to assess and refine 5 technologies. Furthermore, a total of 4145 Frontline Demonstrations (FLDs) were organized in crops, livestock, and enterprises across the states of Manipur, Meghalaya, Nagaland, Tripura, and Mizoram. The KVKs played a crucial role in organizing 3255 training courses, benefitting 11,281 farmers, farm women, rural youth, and extension personnel. Moreover, 2269 extension programs and activities were organize to reached over 202,927 farmers and other targeted beneficiaries, including individuals from general and SC/ST categories of farmers, as well as extension personnel in the region. The extension activities conducted by KVKs were classified into five major groups: field trips and visits, group activities, mass outreach programs, camps and campaigns, and publications. Notably, KVKs produced 18,103.03 quintals of quality seeds, 1,731,721 nos. of planting materials, 1447.41 quintals of bio-products, and 11.93 lakh of livestock and fingerlings.

This document aims to spotlight the significant achievements of the institute and the KVKs during the year 2022. I express my sincere thanks and gratitude to Dr. Himanshu Pathak, Secretary, DARE & DG, ICAR, Govt. of India, Dr. U.S. Gautham, DDG (AE), Dr. R. R. Burma, ADG (AE), Dr. R. K. Singh, ADG (AE) and all the colleagues of Agricultural Extension Division in the Council HQ for their constant encouragement, guidance and support in executing the mandates of the institute. Special acknowledgment is extended to Dr. A. K. Singha (Pr. Scientist), Dr. R. Bordoloi (Pr. Scientist), Dr. Amrutha, T, and their entire team, including project staff, for their commendable efforts in producing this publication within the stipulated time period.

Place: Umiam, Meghalaya

Date:

(Dr. A.K. Mohanty)

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EXECUTIVE SUMMARY

The ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-VII, which oversees 43 Krishi Vigyan Kendras (KVKs) spread across five North Eastern states including Manipur, Meghalaya, Nagaland, Mizoram, and Tripura, has been diligently working to meet the diverse needs of various stakeholders, particularly farmers in the region. The institute has received valuable support from the Directorate of Extension Education of Central Agricultural University, Imphal, and 12 host organizations. This collaboration has enabled the Institute to address the requirements of different stakeholders, providing technological and methodological support, information, skill enhancement, and entrepreneurship development in crops and livestock enterprises.

In the fiscal year 2022-23, the institute, in conjunction with selected KVKs, research institutes, and agricultural universities, has been executing five externally funded projects. These projects encompass National Innovations on Climate Resilient Agriculture (NICRA), Attracting and Retaining Youth in Agriculture (ARYA), Farmer FIRST projects (FFP), and Cluster Demonstrations on Oilseeds and Pulses under NMOOP/NFSM. Additionally, special programs like Poshan Maah Celebration, Jal Shakthi Abhiyan, Skill development, Micro-irrigation, Natural farming, Soil and water testing and MGMG scheme have been effectively implemented during this reporting period.

Throughout the year, a total of 440 On-Farm Trials (OFTs) were conducted through 2013 trials by KVKs of ATARI, Barapani. These trials covered 333 on crops and 107 on livestock and fisheries. The KVKs refined a total of 5 technologies during this period, comprising 4 crop-based technologies with 19 trials and 1 livestock and fishery-based technology with 3 trials.

KVKs of ATARI Zone VII played a pivotal role in conducting 4145 frontline demonstrations, covering crops, livestock, fisheries, agri-based industries, and farm implements over an area of 1105.89 hectares. These demonstrations spanned various categories, with a focus on cereals, millets, pulses, oilseeds, vegetables, fruits, spices, tuber crops, and crop hybrids.

Training remained a crucial activity, with KVKs organizing 3255 training programs in 2022, benefiting 11,281 participants, including farmers, farm women, rural youth, and extension personnel. Sponsored training programs were also conducted, totaling 415 sessions and benefiting 8,969 participants. These covered critical areas such as crop production, post-harvest and value addition, livestock and fisheries, and income generation activities.

In terms of extension activities, KVKs utilized traditional and modern means of technology dissemination, including Information and Communication Technologies (ICTs). A total of 2269 extension programs and activities were conducted, reaching over 202,927 farmers and other beneficiaries.

During the reporting period, KVKs produced substantial quantities of quality seeds, planting materials, bio-products, and livestock and fingerlings. Notably, the institute also organized an annual action plan workshop and an Annual Zonal

Workshop of KVKs in 2022 to formulate, finalize activities, and review progress.

Efforts were also directed towards strengthening the Directorate of Extension Education (DEE) and Agricultural Technology Information Centres (ATIC) under the zone through regular monitoring mechanisms. This included participation in various scientific advisory committee meetings, field days, workshops, technological weeks, training programs, On Farm Trials, and Frontline Demonstrations.

As part of their additional support to farmers, KVKs conducted laboratory-based analysis of soil, water, and plant samples. A total of 14,756 samples were analyzed, benefiting 18,625 farmers across 707 villages.

The institute contributed to knowledge dissemination through publications, including two technical bulletins and one research paper at the ATARI level. KVK staff contributed significantly with 14 research articles, 78 popular articles, 68 training manuals, 40 extension folders, 94 leaflets/ pamphlets, 10 technical bulletins, 13 CD/DVD/YT videos, and 111 newspaper coverage, covering various technological aspects of agriculture and allied enterprises.

1 Introduction

Genesis of ICAR-Agricultural Technology Application Research Institute (ATARI)

The Indian Council of Agricultural Research (ICAR) established eight Zonal Coordinating Units (ZCUs) in 1979 as part of the Lab-to-Land program, with a staff strength of six individuals in each unit. Their primary purpose was to implement the program, which aimed to reach 50,000 farm families across the country. During the VIIIth Plan (1992-1997), when the total number of KVKs reached 261, the ICAR adjusted the staff strength of Zonal Coordinating Units to fifteen members. Throughout the XIth Plan, each Zonal Coordinating Unit managed an annual budget averaging around Rs. 55 crores. To enhance the efficient management of the growing number of KVKs, the Zonal Coordinating Units were elevated to the status of Project Directorates, known as Zonal Project Directorates (ZPD), with a sanctioned staff strength of 17, effective from March 19, 2009.

Considering its revised mandates, the ZPD was further promoted to the status of a research institute, officially named the Agricultural Technology Application Research Institute (ATARI), on August 11, 2015.

ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-VII

The ICAR-Agricultural Technology Application Research Institute (ATARI), Zone-VII, headquartered in Umiam, Meghalaya, has the primary responsibility of monitoring and reviewing technology assessment, refinement, demonstration, training programs, and other extension activities conducted by Krishi Vigyan Kendras (KVKs) in the North East Hills Region. This region comprises five states: Manipur, Meghalaya, Mizoram, Nagaland, and Tripura. Additionally, the institute plays a crucial role in guiding KVKs to fulfill their technical activities, ensuring the seamless flow and access to technologies for these KVKs. ICAR-ATARI, Zone-VII, is actively involved in providing need-based Human Resource Development (HRD) programs for KVK staff, backed by adequate financial support. It also engages in liaison with various stakeholders and collaborates with other line departments in the region. At present, this zone oversees 43 KVKs operating under 12 different host institutes (Table 1.1).

Table 1.1: State and host organization wise KVKs under ICAR-ATARI Zone VII, Umiam

State	KVKs (No.)	Host Institutions
Manipur (9)	1	UJFPCS, Bishnupur, Manipur (NGO)
	5	ICAR RC for NEH Region, Barapani
	1	CAU Imphal, Manipur
	1	FEEDS, Hengbung (NGO)
	1	State Dept of Agriculture
Meghalaya (7)	3	State Dept of Agriculture
	2	ICAR RC for NEH Region, Barapani
	2	CAU Imphal, Manipur
Mizoram (8)	1	CAU Imphal, Manipur
	7	State Dept. of Agriculture
Nagaland (11)	5	ICAR RC for NEH Region, Barapani
	4	State Dept. of Agriculture
	1	NRC on Mithun
	1	Nagaland University
Tripura (8)	4	State Dept of Agriculture
	2	ICAR RC for NEH Region, Barapani
	1	Rama Krishna Seva Kendra (NGO), Kolkata
	1	CAU Imphal, Manipur
Total	**43**	

Mandates of the Institute (ATARI)

- Coordination and monitoring of technology application and frontline extension education programmes, and
- Strengthening agricultural extension research and knowledge management.

Major functions of the Institute

- Planning, monitoring and reviewing of KVK activities in the zone; to identify, prioritize and implement various activities related to technology integration and dissemination.

Profile of the Institute

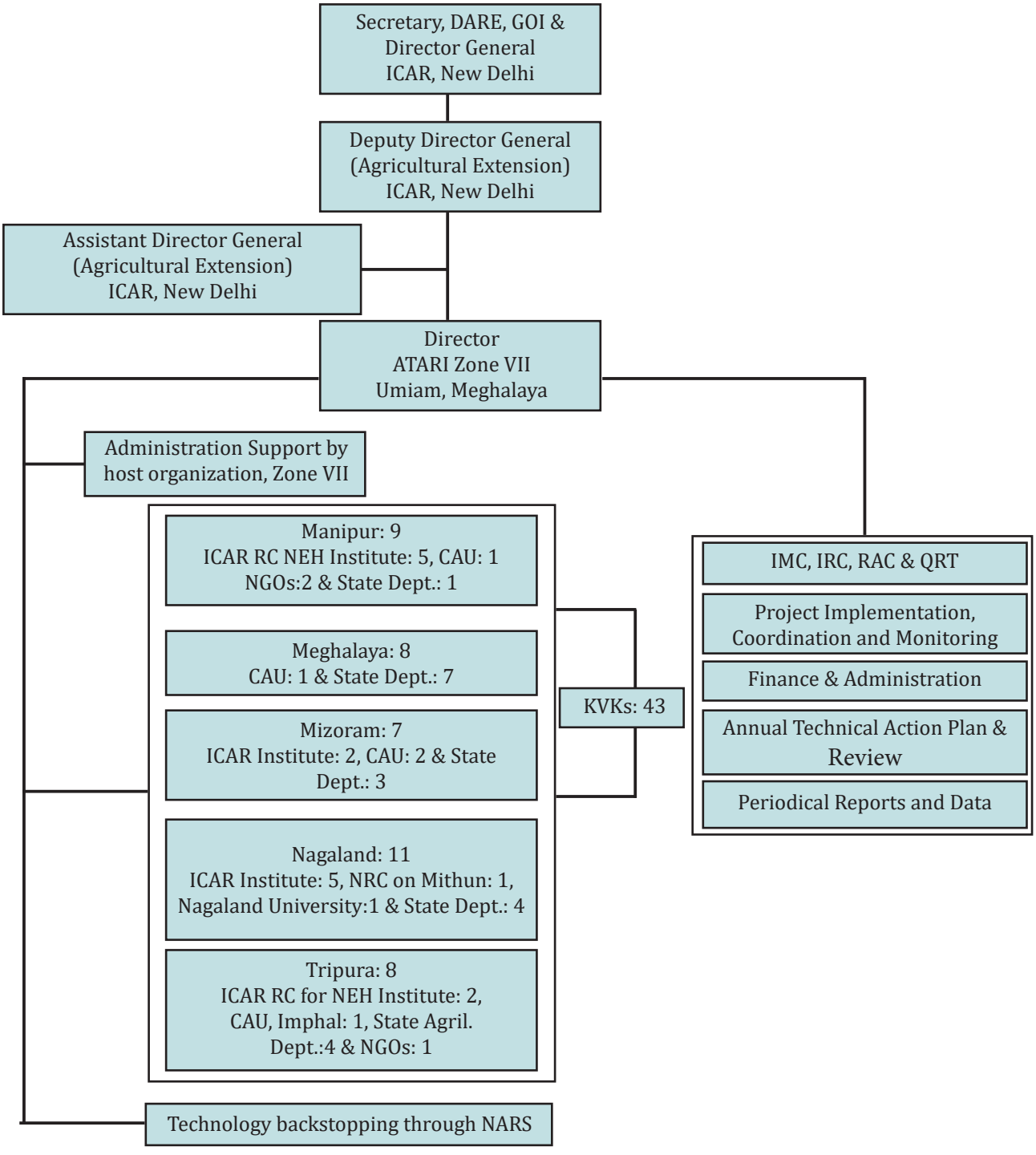

Fig 1: Organizational Structure of ICAR-ATARI, Zone VII, Umiam

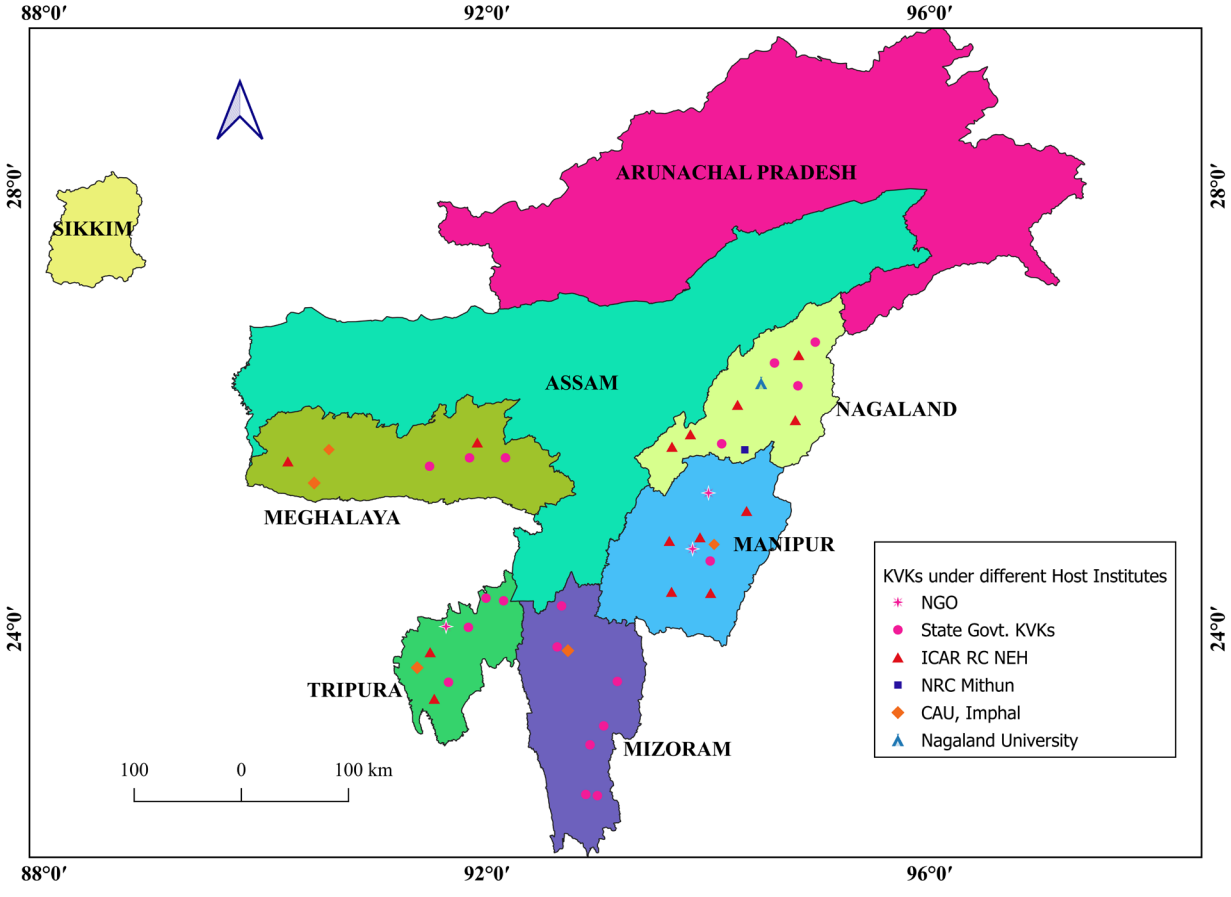

Fig 1.2: Operational Area and Network of KVKs under ICAR-ATARI ZONE-VII, Umiam

Staff Position of Agricultural Technology Application Research Institute (ATARI), Zone-VII

Out of the sanctioned staff strength of 20, presently the Agricultural Technology Application Research Institute, Zone-VII has 10 staff in position. The details of the staff position of the institute are given in Table 1.2.

Table 1.2: Present Staff Position of Agricultural Technology Application Research Institute, Zone-VII

Sl. No.	Category	Sanctioned Strength	In Position	Vacant
1.	Director	1	1	0
2.	**Scientific Post**			
	Principal Scientist	1	1	0
	Senior Scientist	3	1	2
	Scientist	2	2	0
	Total	**6**	**4**	**2**

3.	**Technical Staff**			
	Asst. Chief Technical Officer	1	1	0
	Driver	1	0	1
	Total	**2**	**1**	1
4.	**Administrative Post**			
	Assistant Finance & Accounts Officer	1	0	1
	Assistant Administrative Officer	1	0	1
	Private Secretary	1	0	1
	Assistant	2	0	2
	U.D.C	1	1	0
	Stenographer Grade-III	1	1	0
	LDC	2	0	2
	Total	**9**	**2**	**7**
5.	Supporting Staff			
	(SSG-I, II, III, IV)	2	**2**	0
	Total	**20**	**10**	**10**

Ongoing Research Projects

Project: Profitability Analysis of Rice (Oryza sativa L.) Cultivation in North Eastern Hill (NEH) Region of India.

PI-Dr. A. K. Singha, Principal Scientist, ATARI, Umiam

Co-PI: A. K. Mohanty, Director, ATARI, Umiam

Dr. R. Bordoloi, Principal Scientist, ATARI, Umiam

Dr. Amrutha, T, Scientist, ICAR-ATARI, Umiam

The findings of the study revealed that the cultivation of High-Yielding Varieties (HYVs) of rice was relatively beneficial to the farmers in all Agro-Climatic Zones (ACZs) in the region. The findings also indicate that among the HY rice varieties, the highest gross profit margin (GPM) in percentage (66.90%) was observed in the cultivation of RC Maniphou-7 under the Sub-Tropical Plain Zone with a B:C ratio of 3.02. This was followed by RC Maniphou-13 (65.50%) with a B:C ratio of 2.89 under the Mild Tropical Plain Zone, IR-64 (54.40%) in the Temperate Sub-Alpine Zone with a B:C ratio of 2.19, and Shasharang (47.90%) with a B:C ratio of 1.92 in the Sub-Tropical Hill Zone.

Project: Cultural Diversity of Ethnic Foods of Indigenous Tribes in NEH : A Socio-Economic Analysis.

PI- Dr. Amrutha, T, Scientist, ICAR-ATARI, Umiam

Co-PI: A. K. Mohanty, Director, ATARI, Umiam

Dr. A. K. Singha, Principal Scientist, ATARI, Umiam

Dr. R. Bordoloi, Principal Scientist, ATARI, Umiam

The primary focus of the project is to document traditional foods and their economic significance in improving livelihoods. We collected primary data from women representing five states: Manipur, Meghalaya, Mizoram, and Nagaland. Currently, we are in the process of entering and cleaning the data.

New Extension Methodologies and Approaches (NEMA)

The ICAR sponsored project- **"New Extension Methodologies and Approaches (NEMA)"** was associated with generating data on adoption of selected improved technologies, the determinants of adoption, constraints and impact from a large pool of samples across the country for generalization and drawing meaningful conclusion is conceived with the following objectives-

- ❒ To study the extent and determinants of adoption of selected improved NARS technologies
- ❒ To develop technology map for different agro-ecosystem
- ❒ To assess the impact of the technologies in different agro-ecosystem
- ❒ To undertake yield gap analysis and suggest suitable strategies to reduce gaps

At present, ATARI, Umiam is associated with eight (8) National network projects under the purview of **New Extension Methodologies and Approaches (NEMA)**. These Network projects are Climate change, Gender and Nutrition, Residue Management, Doubling Farmers Income (DFI), Tribal Sub-Plan (TSP), Aspirational Districts, ARYA network project and Pulses Network Project, having financial provision under different project for proper implementation of the project. The Scientists of ICAR-ATARI, Umiam were actively involved in these project as Co-PI. The achievements of these network projects are presented in the last RAC meeting held at ATARI -Bengaluru by respective leading ATARI's.

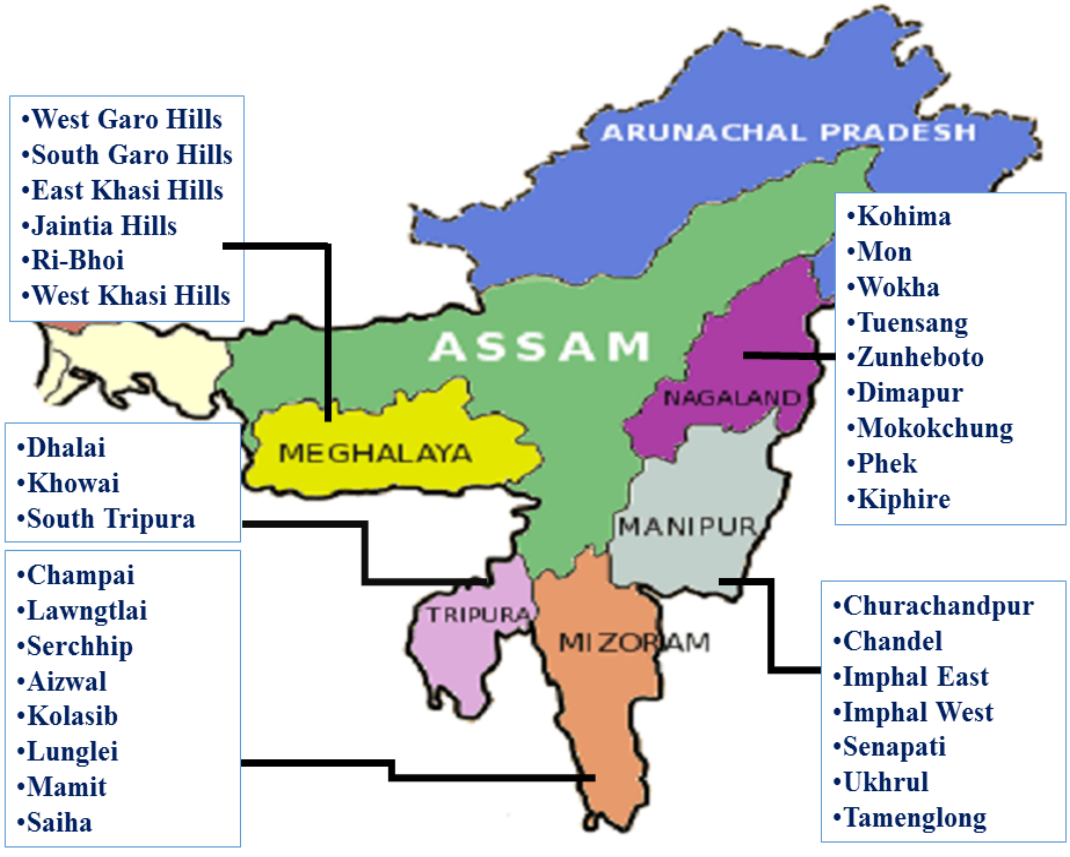

Figure 1.3. KVKs Under NEMA Project

BRIEF ACCOUNT OF KVK GENESIS, MANDATE AND GROWTH

KVK Genesis

The Education Commission (1964-66) recommended that a concerted effort be made to establish specialised institutions to provide pre and post-matriculate vocational education in agriculture and allied fields to meet the training needs of a large number of youths in rural areas. The Commission further suggested that such institutions be named as Agricultural Polytechnics. The Commission's recommendations were thoroughly discussed by the Ministry of Education, Ministry of Agriculture, Planning Commission, ICAR and other associated institutions between 1966 and 1972. Finally, the ICAR mooted the idea of establishing KVKs as innovative institutions for imparting vocational training to the practicing farmers, school dropouts and field level extension functionaries. ICAR Standing Committee on Agricultural Education in its meeting held in August, 1973 observed that since the establishment of KVKs was of national importance because it would help in accelerating agricultural production and improving the socio-economic conditions of the farming community and that all related institutions should be involved in implementing this scheme. As a result, in 1973, the ICAR formed a committee chaired by Dr. Mohan Singh Mehta of Seva Mandir in Udaipur (Rajasthan) to devise a thorough plan for implementing this scheme. The Committee submitted its report in 1974.

The first KVK, on a pilot basis, was established in 1974 at Puducherry (Pondicherry) under the administrative control of the Tamil Nadu Agricultural University (TNAU), Coimbatore. In 1976-77, the Planning Commission approved the proposal of the ICAR to establish 18 KVKs during the Fifth Five Year Plan. With the growing demand for more such KVKs, the Governing Body (GB) of the ICAR approved 12 more KVKs in 1979 and they were established in the same year from Agricultural Produce Cess Fund (AP Cess Fund). Pending the clearance of Sixth Five-Year Plan scheme on KVK by the Planning Commission, the GB of the ICAR again approved 14 KVKs in 1981, which were established during 1982-83 from AP Cess Fund.

A High Level Evaluation Committee on KVK constituted by the ICAR in 1984, after thorough review of the programme, strongly recommended for establishment of more KVKs in the country. Keeping this in view the Planning Commission approved to establish 44 new KVKs during the Sixth Plan. Thus by the end of Sixth Plan, 89 KVKs had started functioning in the country. During the Seventh Plan, 20 new KVKs were established. The success of KVKs at many locations created a great demand for establishment of more KVKs in the remaining districts of the country. Accordingly, the Planning Commission further approved 74 new KVKs to be established during the period 1992-93. Again in the Eighth Plan (1992-97), 78 new KVKs were approved and the same were established in the country, making the total number of functional KVKs 261 by the end of the Eighth Plan. The number of KVKs increased to 290 during Ninth Plan with the establishment of 29 more KVKs.

On the occasion of the Independence Day Speech on 15th August, 2005 the Hon'ble Prime Minister of India announced that by the end of 2007 there should be one KVK in each of the rural districts of the country. This has taken the total number of KVKs to 551 at the end of Tenth Plan. At present, there are 722 KVKs established in the Country. This is an excellent network for exchange of technology and empowerment of farmers to enhance productivity and profitability.

All KVKs are working towards minimising the time lag between generation of technology at the research institution and its adoption in location specific farmer fields for increasing production, productivity and net farm income on a sustained basis.

KVK Mandates

The mandate of KVK is *Technology Assessment and Demonstration for its wider Application and to enhance Capacity Development (TADA-CD).*To implement the mandate effectively through creation of awareness about improved agricultural technologies; the following activities have been defined for each KVK.

i. On-farm testing to assess the location specificity of agricultural technologies under various farming systems.

ii. Out scaling of farm innovations through frontline demonstration to showcase the specific benefits/ worth of technologies on farmers' fields.

iii. Capacity development of farmers and extension personnel to update their knowledge and skills in modern agricultural technologies and enterprises.

iv. Work as Knowledge and Resource Centre for improving overall agricultural economy in the operational area.

v. Conduct frontline extension programmes and provide farm advisories using ICT and other media on varied subjects of interest to farmers

vi. Data documentation, characterization and strategic planning of farming practices.

KVK should produce technology related quality inputs/products (seeds, planting materials, bio-agents, livestock, fingerlings etc.) and make them available to farmers while operating as a single window Agricultural Technology Information Centre (ATIC). Besides, identifying and documenting selected farmer-led innovations and converge them with on-going schemes and programmes within the mandate of KVK.

Growth of KVKs under ICAR-ATARI, Zone VII, Umiam

The first KVK in the region was established in Kolasib district of Mizoram in February, 1979 during Rolling year (1978-1980) to impart training to furnish the farmers with skill and knowledge required for practicing advanced agricultural and allied practices. Gradually with the increase in number, the sphere of KVKs also widened to shoulder other responsibilities like conducting front line demonstrations, on-farm trials, providing trainings to other stakeholders *etc.* During the IXth plan, the zone had only 13 KVKs with most of them were under ICAR administration. Presently in Zone-VII, Umiam, KVKs are functioning under 12 different host organisations namely; ICAR Research Complex for NEH Region, Umiam (14), Central Agricultural University, Imphal (5), Department of Agriculture, Govt. of Manipur (1), Department of Agriculture, Govt. of Meghalaya (3), Department of Agriculture, Govt. of Nagaland (4), Department of Agriculture (Research & Education), Govt. of Mizoram (7), Dept. of Agriculture and Farmers Welfare, Govt. of Tripura (4), NRC on Mithun, Jharnapani, Nagaland (1), Nagaland University, Kohima (1), Utlou Joint Farming Cum Pisciculture Co-operative Society (UJFPCS), Bishnupur, Manipur (1), Foundation for Environment & Economic Development Services (FEEDS), Senapati, Manipur (1) and Sri Ramakrishna Seva Kendra, Kolkata, West Bengal (1). The state and host organization wise KVKs under ICAR-ATARI, Umiam is depicted in Fig 1.4.

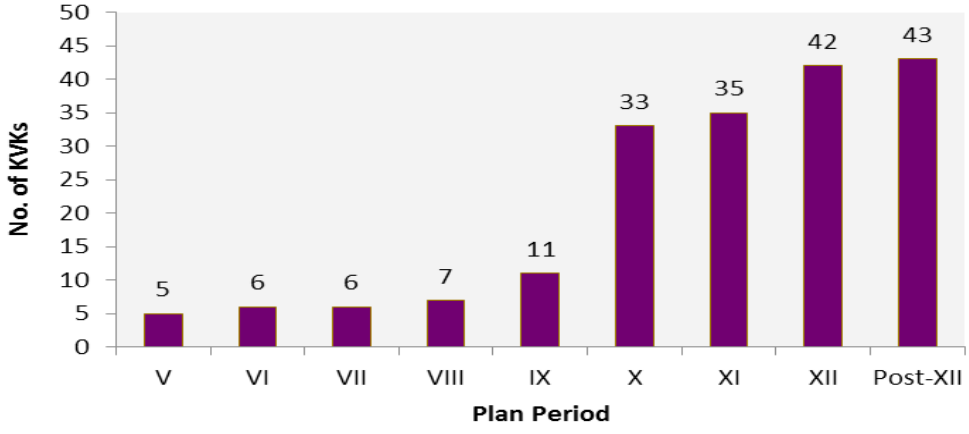

Fig 1.4. Growth of KVKs over five year plans under ATARI, Zone VII, Umiam

MANPOWER AND INFRASTRUCTURAL FACILITIES IN KVKS

Status of Manpower in KVKs of ICAR-ATARI

The KVKs under ICAR-ATARI, Zone VII, Umiampresently have 530 (77.03%) staff are in position out of 688 sanctioned strengths in different positions including Sr. Scientist & Head, Subject Matter Specialist, Programme Assistant, Assistant, Stenographer, Driver and Supporting Staff. The remaining vacancies of different cadres are in the process of recruitment by the concerned host institutes. The State and KVK-wise present staff position of KVKs under this institute is given in Table 1.3.

Table 1.3: Present State-wise and category wise staff strength of KVKs

Sl. No.	Category	Manipur (9)		Meghalaya (7)		Mizoram (8)		Nagaland (11)		Tripura (8)		Total	
		S	F	S	F	S	F	S	F	S	F	S	F
1.	Senior Scientist & Head	9	3	7	6	8	8	11	6	8	2	43	25
2.	Subject Matter Specialist	54	52	42	38	48	42	66	44	48	41	258	217
3.	Programme Assistant	18	12	14	13	16	16	22	15	16	10	86	66
4.	Farm Manager	9	7	7	6	8	7	11	7	8	6	43	33
5.	Assistant	9	3	7	3	8	7	11	4	8	4	43	21
6.	Stenographer	9	8	7	5	8	8	11	9	8	2	43	32
7.	Driver	18	15	14	13	16	16	22	14	16	6	86	64
8.	Skilled Supporting Staff	18	18	14	14	16	15	22	16	16	9	86	72
Total		**144**	**118**	**112**	**98**	**128**	**119**	**176**	**115**	**128**	**80**	**688**	**530**
Filled posts (%)		**81.95**		**87.5**		**92.96**		**65.34**		**62.50**		**77.03**	

Status of infrastructural facilities in KVKs of ATARI, Umiam

The state wise details of infrastructure in KVKs of Zone VII are given in Table 1.4. During the reporting period, 42 KVKs are having administrative building, 17 KVKs have farmers hostel, 32 KVKs have staff quarters, 30 KVKs have established 546 demonstration units, 28 soil and water testing laboratories, 11 e-connectivity, 56 rain water harvesting structures, 15 portable carp hatchery units, 32 IFS models and 12 minimal processing facility, 21 solar panels, 3 technology information units and 10 micro-nutrient analysis units.

Table 1.4: Present State wise details of infrastructure in KVKs of ATARI, Umiam

Sl. No.	Type of infrastructure	Infrastructure (No.)					
		Manipur	Meghalaya	Mizoram	Nagaland	Tripura	Total
1.	Administrative building	8	7	8	11	8	42
2.	Farmers hostel	4	2	8	2	1	17
3.	Staff quarter	6	1	8	7	1	32
4.	Demonstration unit	36	12	33	27	438	546
5.	Soil and water testing lab	7	6	6	7	4	28
6.	E-connectivity	3	2	2	2	2	11
7.	Rain water harvesting structure	17	3	16	9	11	56
8.	Portable carp hatchery	6	0	1	0	8	15
9.	Integrated Farming System (IFS) unit	7	3	7	4	11	32
10.	Minimal processing units	7	0	0	2	3	12
11.	Solar panels	15	0	3	2	1	21
12.	Technology information units	1	0	0	2	0	3
13.	Micro-nutrient analysis units	6	1	0	0	3	10

DDG inauguration of foundation stone of Adm building of KVK West Garo Hills

Revolving Fund

The KVKs had an opening balance of Rs. 11,230,959.64 on April 1st , 2022. Over the course of 2022, they generated income amounting to Rs. 11,208,114.00, resulting in a closing balance of Rs. 13,363,626.64 by the end of March 2023. These revolving funds were strategically utilized to generate revenue and resources from the available land of the KVKs farm.

The KVKs play a crucial role in producing high-quality seeds and planting materials for a diverse range of crops and enterprises, including rice, oilseeds, pulses, fruits, vegetables, spices, ornamental crops, plantation crops, bio-fertilizers, bio-agents, bio-pesticides, piglets, fingerlings, chicks, and more. These products are then supplied to farmers and relevant line departments for further distribution to farmers during the specified period. the state-wise details of the opening balance and the current status of the revolving funds for KVKs are given below (Table 1.5).

Table 1.5: Status of Revolving Fund (RF) of KVKs during 2022

Status of Revolving Fund of KVKs during Jan 22 to Dec 22					
Sl. No	**States**	**No of KVKs**	**Opening Balance**	**Income Generated during the Year (Rs)**	**Closing Balance (as on 31st March 2018)**
1	Manipur	6	3209991.00	2143299.00	3249468.00
2	Meghalaya	2	756282.64	482941.00	829723.64
3	Mizoram	8	3346988.00	1172136.00	4185715.00
4	Nagaland	9	1883001.00	1514999.00	2455704.00
5	Tripura	5	2034697.00	5894739.00	2643016.00
Total		**30**	**11230959.64**	**11208114.00**	**13363626.64**

2 Technology assessment through On Farm Trials (OFTs)

In order to assess the production potentiality of crops, livestock, fishery and other enterprises, the KVKs under this Zone accomplished all the mandated activities like technology assessment, refinement, front line demonstrations for crops, training to farmers/farm women, rural youth, extension personnel, production of seeds and planting materials, conducting various extension programmes. The specific achievements made in various categories during 2022 are presented below.

In 2022, the KVKs of ATARI, Umiam assessed and refined several agricultural technologies on farmers' fields in order to analyse the site specificity of agricultural technologies under various farming systems. In the area of crop-based technologies, a total of 333 technologies were assessed across five states, with the highest number of technologies (94) in Manipur and a total of 1,483 trials conducted. Additionally, four crop-based technologies were refined, with 19 trials conducted by the KVKs. In the realm of livestock technologies, 107 technologies were assessed involving 530 trials. Among these, Meghalaya had the highest number of technologies assessed (26). Moreover, one livestock technology was refined, with three trials conducted by the KVKs of Mizoram state. These assessments and refinements represent ongoing efforts to enhance agricultural practices and benefit the farming communities in these region, with a focus on both crop-based and livestock technologies (Table 2.1.).

Varietal Evaluation of Sweet Corn

Table 2.1: State wise summary of Agriculture Technologies Assessed and Refined by KVKs during 2022

Sl. No.	Area	States					
		Agricultural Technologies Assessed During 2022					
1	**Crops Based Technologies**	**Manipur**	**Meghalaya**	**Mizoram**	**Nagaland**	**Tripura**	**Total**
	i) No of Technologies	94	51	64	62	62	**333**
	ii) No of Trials	375	217	255	242	394	**1483**
	iii) No of Beneficiaries	384	329	267	346	1174	**2500**
2	**Livestock Technologies**						
	i) No of Technologies	17	26	24	20	20	**107**
	ii) No of Trials	66	144	86	118	116	**530**
	iii) No of Beneficiaries	64	144	86	135	119	**548**

	Agricultural Technologies Refined during 2022						
1	**Crops Based Technologies**						
	i) No of Technologies	0	1	0	1	2	**4**
	ii) No of Trials	0	2	0	3	14	**19**
	iii) No of Beneficiaries	0	4	0	8	14	**26**
2	**Livestock Technologies**						
	i) No of Technologies	0	0	1	0	0	**1**
	ii) No of Trials	0	0	3	0	0	**3**
	iii) No of Beneficiaries	0	0	3	0	0	**3**

Crop based technologies assessed during 2022

During the year 2022, about 333 technologies were taken up on different areas of crop enterprises under 23 thematic areas by the KVKs of the Zone for their assessment to identify location specific technologies under local farming situations with 1483 trials in 974 different locations.

About 99 technologies were assessed under varietal evaluation thematic area with 450 trials conducted in 295 different locations, 47 technologies were assessed under INM with 194 trials, 12 technologies in integrated crop management with 48 trials, 45 technologies in IPM with 143 trails, 25 technologies in integrated disease management with 74 trails, five technologies assessed under weed management, 18 technologies were assessed under thematic area value addition with 104 trails in 66 different locations etc. (Table 2.2).

Table 2.2: Summary of Crop-based technologies assessed under different thematic areas during 2022

Thematic area	No. of Technology Assessed	No. of Trials	No. of Locations	Farmer Beneficiary (No.)
Varietal Evaluation	99	450	295	474
Integrated Nutrient Management/ Soil health management	47	194	135	347
Integrated Crop Management	12	48	42	52
Integrated Pest Management	45	143	108	265
Integrated Disease Management	25	74	56	74
Weed Management	4	20	10	20
Water management	2	5	4	5
Value addition	24	104	66	132
Seed / Plant production	9	39	32	49
Post-harvest lost/ technology	1	5	1	5

Resource Conservation Technology (RCTs)	9	28	22	26
Drudgery reduction	2	7	3	7
Cropping system	1	3	3	3
Storage technique	4	18	18	25
Farm Machineries	0	0	0	0
Mushroom cultivation	0	0	0	0
Protected Cultivation	1	3	3	3
Biological control	0	0	0	0
Small scale income generating enterprise	3	9	7	9
Impact Assessement	2	65	17	65
Nutrition Management	1	9	1	9
Benchmark Survey (PRA tools etc.)	2	20	13	300
Others	40	239	138	630
Total	**333**	**1483**	**974**	**2500**

OFT on Rice Var. RC Maniphou by KVK Tamenglong

OFT on Assessment of Organic Cultivation System for Carrot by KVK West Khasi Hills

Livestock based technologies assessed during 2022

During the reporting period, a total of 107 technologies with 530 trials under thirteen different thematic areas related to livestock enterprises such as cattle, piggery, fishery, poultry, duckery, goatery, rabbitry and so on were assessed in 312 different locations of this institute. 28 technologies in breed evaluation with 174 trails, 19 technologies in fish production with 116 trails, 13 technologies in production and management with 61 trails, 8 technologies in feed and fodder management with 33 trails, 15 technologies in nutrition management with 53 trails, one technology in integrated farming system with 5 trails, seven technologies in disease management with 33 trails , small scale income generating enterprises with 4 etc. are the major thematic areas under livestock technologies were assessed in 2022 (Table 2.3).

Table 2.3: Summary of livestock based technologies assessed under different thematic areas during 2022

Thematic area	No. of Technology Assessed	No. of Trials	No. of locations	Farmer Beneficiary (No.)
Disease Management	7	22	18	22
Evaluation of breed	28	174	82	191
Small Scale income generating enterprises	1	4	4	4
Feed and fodder Management	8	33	21	35
Nutrition Management	15	53	48	53
Fish production	19	116	52	117
Integrated Farming System	1	5	5	5
Production and Management	13	61	33	59
Value Addition	4	16	14	16
Fish Processing	1	5	5	5
Breed Introduction	1	3	3	3
Composite Fish Culture	1	3	2	3
Others	8	35	25	35
Total	**107**	**530**	**312**	**548**

OFT on White Perkin Duck by KVK Kohima

OFT on Poultry cum Fish cum Horticulture

Technology Refinement

During 2022, six crop-based technologies related to cereals, oilseeds, vegetables and fruit crops were taken up for refinement under six different thematic areas with 19 trials at 7 various locations under Zone VII. the major thematic areas were value addition with seven no. of trails, Post-Harvest lost/ technology with seven trials, Seed/ Plant production with three trails and Low tunnel cultivation with two trials. In livestock sector, only one technology was refined with three trials under thematic area Small Scale income generating enterprises with three farmer beneficiaries (Table 2.4 & 2.5).

Table 2.4: Summary of crop based technologies refined under different thematic areas during 2022

Thematic area	No. of technology refined	No. of trials	No. of Locations	Farmer Beneficiary (No.)
Low tunnel cultivation of strawberry	1	2	2	4
Seed / Plant production	1	3	3	8
Value addition	1	7	1	7
Post-harvest loss management	1	7	1	7
Enriched compost technology	0	0	0	0
Any other	0	0	0	0
Total	**4**	**19**	**7**	**26**

Table 2.5: Summary of Livestock Technologies Refined under different thematic areas during 2022

Thematic area	No. of Technology Refined	No. of Trials	No. of locations	Farmer Beneficiary (No.)
Small Scale income generating enterprises	1	3	3	3
Total	**1**	**3**	**3**	**3**

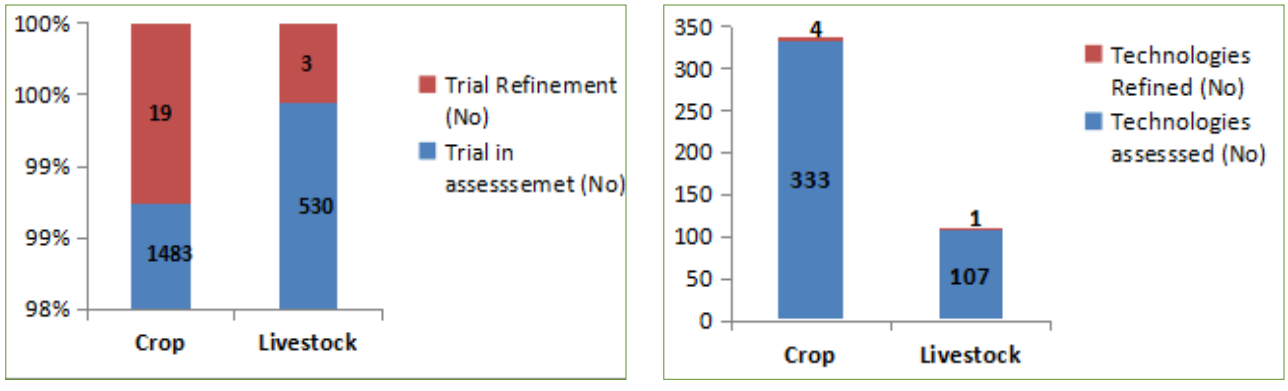

Fig 2.1: Trials conducted for assessment and refinement of agricultural technologies by KVKs during 2022

3 Front line Demonstrations

KVKs operating under ICAR-ATARI, Umiam carried out Frontline Demonstrations (FLDs) on farmers' fields across different locations within specific farming systems are presented in table 3.1. These demonstrations were aimed at showcasing the productivity potential of newly introduced agricultural technologies. In addition, these KVKs also organized a variety of extension activities and programs intended to disseminate these technologies to farmers, farm women, and extension workers.

In the year 2022, KVKs successfully conducted a total of 4144 FLDs, which spanned 710.44 hectares of land. These demonstrations were conducted in close partnership with farmers to evaluate the effectiveness of enhanced agricultural technologies in various categories, including cereals and millets (914 FLDs), pulses (451 FLDs), oilseeds (592 FLDs), vegetables (581 FLDs), fruits (96 FLDs), spices (127 FLDs), tubers (75 FLDs), hybrid crops (358 FLDs), farm implements (12 FLDs), enterprises (80 FLDs) and livestock and fisheries (858 FLDs).

FLD on Cereals and Millets

Table 3.1: Frontline demonstrations conducted on cereals and millets by KVKs of Umiam during 2022

Crop	Variety	No. of Farmers/ Demo.	Area (ha)	Average yield (q/ha)		Avg.% Increase in yield	Economics of the FLD					
							Avg.cost of cultivation (Rs/ha)		Avg. Gross return		Benefit-Cost ratio	
				Demo	Check		Demo	Check	Demo	Check	Demo	Check
CEREALS												
Rice (Paddy)	Gomati, Tripura Hakuchuk-2, Tripura Nirog, Hari-narayan, Khowai, CAU R-1, Shahsarang, RCM-10, RCM-7, RCM-13, RC Maniphou-7, 12, 13, 14,15,16	484	168.78	40.30	31.41	28.30	52322	49828	154076	82282	2.94	1.65
Maize	RCM 75, RCM-1-76, DA61A, HQPM 5, RCM-16, Makka 4, DMRH 1308, VL sweety corn 1	417	52.25	29.49	22.32	32.14	61911	65429	112286	93781	1.81	1.43
Sub Total		901	221.03									
MILLETS												
Finger Millet	VL-376	2	1	7.50	6.2	20.96	20000	18000	37500	31000	1.87	1.72
Sorghum (Jowar)	CSV 27	12	3	6.27	2.15	191.62	15250	9325	43890	10750	2.87	1.15
Sub total		**14**										
Total		**915**										

FLD on Pulses

A total of 451 field demonstrations were carried out, spanning an area of 166.5 hectares, focusing on various pulse crops including Black gram, Lentil, French bean, Field pea, Rajma, Garden pea, and Cow pea (as detailed in Table 3.2). Fieldpea emerged as the crop with the highest number of demonstrations, totaling 183, featuring varieties such as Aman, Prakash, and TRCP-9. These demonstrations encompassed 73.5 hectares of land and showcased an impressive average yield of 16.31 quintals per hectare, a substantial improvement compared to the local check's yield of 11.38 quintals per hectare. This outstanding performance resulted in a remarkable 43% increase in yield over the local check, underpinning the crop's promising potential. Furthermore, the cost-benefit ratio for Fieldpea was notably favourable, standing at 2.5:1.87, indicating a highly economically viable choice for cultivation.

Table 3.2: Frontline demonstrations conducted on Pulses by KVKs of Umiam during 2022

Crop	Variety	No. of Farmers/ Demo.	Area (ha)	Average yield (q/ha)		Avg.% Increase in yield	Economics of the FLD					
							Avg.cost of cultivation (Rs/ha)		Avg. Gross return		Avg. Benefit-Cost ration	
				Demo	Check		Demo	Check	Demo	Check	Demo	Check
PULSES												
Blackgram	PU-31, Tripura Maskolai-1	123	52	9.10	6.90	31.98	30761	28776	71692	49758	2.33	1.73
Field pea	Aman, Prakash, TRCP-9	183	73.5	16.31	11.38	43.35	35167	31324	87954	58444	2.50	1.87
Frenchbean	Zorin, Local Improved	45	5	79.13	59.20	33.67	75220	64370	345000	297500	4.59	4.62
Lentil	IPL-316, HUL-57	20	10	9.03	6.71	34.50	28910	22478	74234	46780	2.57	2.08
Rajma	Tripura Rajmash- 1	50	20	13	9.80	40.50	29431	25794	65000	49000	2.20	1.89
Garden Pea	KashiAgethi	20	5	15	12	125	44122	48750	89476	60000	2.03	1.23
Cowpea	Lafa	10	1	12.8	8.6	48.84	38000	35343	76800	51600	2.02	1.45
Total		**451**	**166.5**									

FLD on Management of Damping off in French bean by KVK Kolasib

FLD on Oilseeds

In the year 2022, a total of 592 demonstrations were carried out in various oilseed crops, including groundnut, mustard, sesamum, soybean, and toria, covering a total area of 238.96 hectares (Table 3.3). The demonstrations on different varieties of Soybean (DSB 19, JS-97-52, VL-Bhat, JS-335) resulted in an average yield of 13.47 quintals per hectare, representing a significant increase of 26.65 percent over the local check yields, which stood at 10.63 quintals per hectare. Similarly, different Groundnut cultivars, such as ICGV 91114, Girnar 4, and ICGS 76, produced an average yield of 19.392 quintals per hectare, surpassing the local check yield of 14.384 quintals per hectare by a substantial 34.82 percent. Mustard cultivars, specifically NRCHB 101, demonstrated an impressive performance with an average yield of 11.63 quintals per hectare, compared to the local check yield of only 8.0125 quintals per hectare, showcasing a remarkable yield increase of 45.14821 percent. Toria varieties, including TS-67 and Tripura Toria, exhibited an average yield of 13.19 quintals per hectare, outperforming the local check yield of 9.27 quintals per hectare by an appreciable 42.35 percent.

The sesame cultivar, Tripura siphing, achieved a yield of 8.5 quintals per hectare, a significant improvement over the local yield of 5 quintals per hectare, representing a yield increase of 41.18 percent. Among the oilseed crops, the highest number of demonstrations, totaling 225, were conducted for Toria, covering an area of 98 hectares. Mustard followed with 153 demonstrations and an area of 63.96 hectares. Mustard demonstrated the highest percentage increase in yield at 45.14821 percent, accompanied by the highest Benefit-to-Cost (B: C) ratio of 2.32. Toria also showed a substantial yield increase of 42.35 percent, followed by Sesame with 41.18 percent and Groundnut with 34.82 percent.

Table3.3: Frontline demonstrations conducted on Oilseeds by KVKs of Umiam during 2022

Crop	Variety	No. of Farmers/ Demo.	Area (ha)	Average yield (q/ha)		Avg.% Increase in yield	Economics of the FLD					
							Avg.cost of cultivation (Rs/ha)		Avg. Gross return		Avg. Benefit-Cost ration	
				Demo	Check		Demo	Check	Demo	Check	Demo	Check
OILSEEDS												
Soybean	Umiam Soya, JS 335, JS 97-52, JS 95 60, Dsb-19, VL Bhat	83	25.75	13.47	10.63	26.65	28652	27247.27	73249	65769	2.56	2.41
Groundnut	ICGV 91114, Girnar 4, ICGS 76	81	31.25	19.392	14.384	34.82	67150	62284	201737	148486	3.00	2.38
Mustard	NRCHB 101	153	63.96	11.63	8.0125	45.14821	28054	24393	65133	46670	2.32	1.91
Toria	TS-67, Tripura Toria	225	98	13.19	9.27	42.35	25230	21844	61551	44362	2.44	2.03
Sesamum	Tripura Siphing	50	20	8.5	5	41.18	29823	27550	68000	40000	2.28	1.45
Total		**592**	**238.96**									

FLD on Vegetables

During the year 2022 a total of 581 demonstrations were conducted in different vegetables crops like cabbage, Broccoli, Brinjal, Tomato, Bitter gourd, Okra, cauliflower, Fieldbean, French bean, Chilli (Green), Cowpea, Green pea, Broad bean, Onion, otherscovering 153.76 ha area (Table 3.4). Demonstration on different varieties of Cabbage (Golden acre, Green Hero, Rare ball, Wonderball, BC-76) produced an average yield of 230.67 q/ha, a 26.67 percent increase above the local check yields of 182.09 q/ha. Similarly, Broccoli cultivars such Green magic, T5X0788 produced 124.75q/ha compared to the local check 92.62 q/ha with 34.68 per cent increase in yield over local check. Brinjal cultivars such as (Pusa purple round, Arka Keshav, Arka Annand, Lafa, Brinjal TRC- Singnath) produced an average yield of 183.79 q/ha in demonstration, compared to only 141 q/ha for the local check, a yield increase of 30.34 percent. While Tomato varieties such as Arka Samrat, Arka Abhed, Arka Rakshak yielded 320.97 q/ha on average against a local check of 198.80 q/ha, an increase of 61.46 percent. Bitter Gourd cultivar (Bolder) yielded 99 q/ha as compared to local yield (97 q/ha) with yield increase of 2.06 percent. Okra varieties such as Radhika yielded 26.37 q/ha on average against a local check of 20.15 q/ha, an increase of 30.86 percent. Cauliflower varieties such as Madhuri yielded 128.10 q/ha on average against a local check of 119.10 q/ha, an increase of 7.56 percent. Field bean varieties such as HFP-715, IPF 5-19, VL Matar-47yielded 14.20 q/ha on average against a local check of 12.78 q/ha, an increase of 5.49 percent. French bean varieties such as Zorin, Samrat, Arka Arjun yielded 60.785 q/ha on average against a local check of 50.545 q/ha, an increase of 20.26 percent. Chilli (Green) varieties such as Arka Khyati yielded 68.52 q/ha on average against a local check of 53.60 q/ha, an increase of 27.84 percent. Cowpea varieties such as Kashi Kanchan yielded 84.3 q/ha on average against a local check of 71.25 q/ha, an increase of 18.41 percent. Green pea varieties such as VL Sabji Matar 14, Pride-1112, Kashi Nandini, Arkel yielded 58.73 q/ha on average against a local check of 44.11 q/ha, an increase of 33.15 percent. Broad bean local variety yielded 1 q/ha on average against a local check of 7.8 q/ha, an increase of 6.3 percent. Onion varieties such as Arka kithiman, Bhima Shakti yielded 156.10 q/ha on average against a local check of 141.90 q/ha, an increase of 10.01 percent. Other vegetables local varieties yielded 450 q/ha on average against a local check of 385 q/ha, an increase of 29.8 percent

Table 3.4: Frontline demonstrations conducted on Vegetables by KVKs of Umiam during 2022

Crop	Variety	No. of Farmers/ Demo.	Area (ha)	Average yield (q/ha)		Avg.% Increase in yield	Economics of the FLD					
							Avg.cost of cultivation (Rs/ha)		Avg. Gross return		Avg. Benefit-Cost ration	
				Demo	Check		Demo	Check	Demo	Check	Demo	Check
VEGETABLES												
Cabbage	Golden acre, Green Hero, Rare ball, Wonderball, BC-76	49	9.03	230.67	182.09	26.67	82135	75955	286259	224031	3.49	2.95
Broccoli	Green magic, T5X0788	92	10	124.75	92.62	34.68	128725	139038	379778	266633	2.95	1.92
Brinjal	Pusa purple round, ArkaKeshav, ArkaAnnand, Lafa, Brinjal-TRC-Singnath	63	12.23	183.79	141	30.34	86854	89490	280414	236024	3.23	2.64
Tomato	ArkaSamrat, ArkaAbhedArkaRakshak	150	42.3	320.97	198.80	61.46	149924	136448	480627	336638	3.21	2.47
Bitter Gourd	Bolder	23	5.2	97	99	2.06	134300	142000	375208	395600	2.79	2.78
Okra/Bhindi	Radhika	8	4	26.37	20.15	30.86849	45000	42000	56000	45000	1.24	1.07
Cauliflower	Madhuri	3	0.5	128.10	119.10	7.56	127000	122000	384300	357390	3.03	2.93
Field bean	HFP-715, IPF 5-19, VL Matar-47	45	5.75	14.20	12.78	5.49	38000	35000	73840	60000	1.94	1.71
French bean	Zorin, Samrat, Arka Arjun	32	6	60.785	50.545	20.26	85091	84259	294000	223200	3.46	2.65
Chilli (Green)	ArkaKhyati	42	10.25	68.52	53.60	27.84	76114	87442	354133	204667	4.65	2.34
Cowpea	Kashikanchan	15	5	84.3	71.25	18.41	106562.5	100750	269760	228000	2.53	2.26
Green pea	VL SabjiMatar 14, Pride-1112, KashiNandini, Arkel	31	9.5	58.73	44.11	33.15	81981	77931	220484	169232	2.69	2.17
Broadbean	Local	Local	12	1	7.8	6.3	23.81	20100	18940	70200	56700	3.49
Onion	ArkaKirthiman, Bhima Shakti	18	12	156.10	141.90	10.01	149201	127321	591300	445100	3.96	3.50
Other	Local	10	10	450	385	29.8	500000	400000	2500000	1500000	5	3.75
Total		**592**	**238.96**									

FLD on Fruits

During the year 2022 a total of 96 demonstrations were conducted in different Fruits crops like Mandarin, Mango, Watermelon, Peach, Musk Melon, Banana, Pineapple and Kiwi covering 43.94 ha area (Table 3.5). Demonstration on different varieties of Mandarin (Khasi Mandarin) produced an average yield 156.05 q/ha, a 23.50 percent increase above the local check yields of 126.35 q/ha. Similarly, Mango cultivars such as Amrapali produced 41.25 q/ha compared to the local check 29.25 q/ha with 41.02 per cent increase in yield over local check. Watermelon cultivars such as (Sweet Prince) produced an average yield of 210 q/ha in demonstration, compared to only 120 q/ha for the local check, a yield increase of 75 percent. While Peach varieties such as Alton yielded 100 q/ha on average against a local check of 68 q/ha, an increase of 48.50 percent. Musk melon cultivar (Arka Siri) yielded220 q/ha as compared to local yield (180 q/ha) with yield increase of 22.22 percent. Banana varieties such as Tall Cavendish yielded 387.5 q/ha on average against a local check of 317.33 q/ha, an increase of 22.52 percent. Pineapple varieties such as Kew yielded 40500 no. on average against a local check of 30500 no. , an increase of 32.78 percent. Kiwi varieties such as Allison, Hayward, Monty, Bruno yielded 62.80 q/ha on average against a local check of 40.60 q/ha, an increase of 54.68 percent.

Table 3.5: Frontline demonstrations conducted on Fruits by KVKs of Umiam during 2022

Crop	Variety	No. of Farmers/ Demo.	Area (ha)	Average yield (q/ha)		Avg.% Increase in yield	Economics of the FLD					
							Avg.cost of cultivation (Rs/ha)		Avg. Gross return		Avg. Benefit-Cost ration	
				Demo	Check		Demo	Check	Demo	Check	Demo	Check
FRUITS												
Mandarin	Khasi Mandarin	50	23	156.05	126.35	23.50613	55833	41333	246798	166949	4.42	4.04
Mango	Amrapali	3	0.48	41.25	29.25	41.02	81831	95812	13100	112200	2.72	2.12
Water melon	Sweet Prince	10	2	210	120	75	87000	58000	210000	120000	2.41	2.06
Peach	Alton	5	4	100	68	48.50	134735	117910	295000	190000	2.19	5
Musk Melon	ArkaSiri	10	10	220	180	22.22	121815	99642	690000	450000	5.66	4.52
Banana	Tall Cavendish	10	1.5	387.5	317.33	22.52	265400	233500	977540	634660	4	3
Pine apple	Kew	3	0.96	40500 no.	30500 no.	32.78	80000	120000	607500	152500	7.5	1.27
Kiwi	Allison, Hayward, Monty, Bruno	5	2	62.80	40.60	54.68	341000	301000	628000	406000	1.84	1.35
Total		**96**	**43.94**									

FLD on Spices

During the year 2022 a total of 127 demonstrations were conducted in different Spices crops like Turmeric, Ginger and Chilli covering 16.6 ha area (Table 3.6). Demonstration on different varieties of Turmeric (Lakadong, Megha Turmeric-1) produced an average yield 125.665 q/ha, a 35.72 percent increase above the local check yields of 92.59 q/ha. Similarly, Ginger cultivars such as Nadia, Localproduced 123.02 q/ha compared to the local check 92.03 q/ha with 33.67 per cent increase in yield over local check. Chilli cultivars such as (King chilli) produced an average yield of 62 q/ha in demonstration, compared to only 43 q/ha for the local check, a yield increase of 41.86 percent.

Table 3.6: Frontline demonstrations conducted on Spices by KVKs of Umiam during 2022

Crop	Variety	No. of Farmers/ Demo.	Area (ha)	Average yield (q/ha)		Avg.% Increase in yield	Economics of the FLD					
							Avg.cost of cultivation (Rs/ha)		Avg. Gross return		Avg. Benefit-Cost ration	
				Demo	Check		Demo	Check	Demo	Check	Demo	Check
SPICES												
Turmeric	Lakadong, Megha Turmeric-1	36	6	125.665	92.59	35.72	116817	122900	305745	266840	2.62	2.17
Ginger	Nadia, Local	42	9	123.02	92.03	33.67	119240	149980	418350	315538	3.51	2.10
Chilli	King Chilli	45	1.6	62	43	41.86	106540	95000	448500	305100	4.2	3.21
Total		**127**	**16.6**									

FLD on Tubers

During the year 2022 a total of 75 demonstrations were conducted in different Tuber crops like Potato and Sweet potato covering 16.5 ha area (Table 3.7). Demonstration on different varieties of Potato (Kufri Himalini, Kufri Jyoti) produced an average yield 177.66 q/ha, a 28 percent increase above the local check yields of 138.80 q/ha. Similarly, Sweet Potato cultivars such as Bhu Krishna produced 102.9 q/ha compared to the local check 96.73 q/ha with 6.39 per cent increase in yield over local check.

Table 3.7: Frontline demonstrations conducted on Tuber crops by KVKs of Umiam during 2022

Crop	Variety	No. of Farmers/ Demo.	Area (ha)	Average yield (q/ha)		Avg.% Increase in yield	Economics of the FLD					
							Avg.cost of cultivation (Rs/ha)		Avg. Gross return		Avg. Benefit-Cost ration	
				Demo	Check		Demo	Check	Demo	Check	Demo	Check
TUBER CROPS												
Potato	KufriHimalini, KufriJyoti	65	15.5	177.66	138.80	28.00	142483	114996	329230	259640	2.31	2.26
Sweet Potato	Bhu Krishna	10	1	102.9	96.73	6.39	93750	85000	308700	198460	3.2	2.3
Total		**75**	**16.5**									

FLD on Crop Hybrid

A total of 208 FLDs were conducted by KVKs of Zone VII on crop hybrids which include cereals (180), vegetables (18), Pulses (10), Tuber crops (150) are presented in Table 3.8. Among cereals paddy (125) and maize (55) are two important crop hybrid were taken up for FLDs at KVK level. Among vegetable crops tomato (5) and Okra (13). Among pulses Field pea (5) and Rajma (5). Among tuber crops Potato (150). Resulted indicated that maize hybrid like HQPM-5 gave 46.91 percent increase in yield as compared to check. Paddy hybrid Suruchi-MRP-540, CAU-R1gave 31.91 percent increase in yield as compared to check. The hybrid of tomato and okra gave an increase in yield of 33.94 percent and 28.02 percent respectively. Field pea and rajma gave an increase in yield of 49.11 percent and 34.64 percent respectively. Potato gave an increase in yield of 33.33 percent as compared to local check.

Table 3.8: Frontline demonstrations conducted on hybrid crops by KVKs of Umiam during 2022

Crop	Name of the hybrid	No. of Farmers/ Demo.	Area (ha)	Average yield (q/ha)		% Change
				Demo	Check	
Cereals						
Maize	HQPM-5	55	16	46.82	31.87	46.91
Rice (Paddy)	Suruchi-MRP-540, CAU-R1	125	50.5	49.60	37.60	31.91
Total/Weighted Average of Cereals		**180**	**66.5**			
Vegetable Crops						
Okra/Bhindi	Arka Nikita, Radhika	13	5	64.40	50.30	28.02
Tomato	ArkaSamrat	5	1.5	265	221	33.94
Total/Weighted Average of Vegetables		**18**	**6.5**			
Pulses crops						
Field pea	KashiMukti	5	0.5	33.7	22.6	49.11
Rajma	HUR-301 and HUR-203	5	0.5	9.24	6.87	34.64
Total/Weighted Average of Pulses		**10**	**1**			
Tuber crops						
Potato	KufriJyoti	150	40	280	210	33.33
Total/Weighted Average of Tuber crops		**150**	**40**			
Grand Total		**358**	**114**			

FLD on Agri-based enterprises

The KVKs have also demonstrated various enterprises beyond crops, livestock, and fisheries to improve the livelihoods of our farmers. One such promising initiative is the popularization of crop value addition, as the demand in the region is on a growing trend and it also fetches a good value in the local market. In 2022, 172 farmers were engaged in the value addition of agricultural products, with 101 units established. Another popular enterprise among farmers is the cultivation of mushrooms, involving 111 farmers and 116 units established in 2022. The total number of farmers and units established in Field Level Demonstrations (FLD) under these enterprises was 1399 and 1184, respectively (Table 3.9).

Table 3.9: Frontline demonstrations conducted on agri-based enterprises by KVKs of Umiam during 2022

Category	No. of KVKs	No. of FLDs	No. of Farmers	No. of Units
Apiculture	4	4	26	35
Fodder	3	3	30	30
IFS	5	6	60	160
Jalkund	3	3	11	11
Mushroom	12	9	111	116
Nutri-garden	4	4	88	40
Poly house	1	1	10	1
Residues management	1	1	10	10
Vermicompost	2	2	20	20
Storage	2	2	52	4
Value addition	15	17	172	101
Others	21	28	809	656
Total Enterprises			1399	1184

FLD on Jalkund by KVK Kiphere

FLD on Livestock and Fishery sector

In the livestock sector, a total of 858 demonstrations were conducted by the KVKs of ATARI Umiam, and they distributed 540,485 animals. The KVKs from the state of Manipur conducted 149 demonstrations, covering 214,110 animals, including poultry, piggery, duckery, and fishery. The state of Meghalaya conducted 155 demonstrations, covering 49,391 animals, including poultry, piggery, fishery, and duckery. In Mizoram, 110 demonstrations were conducted, covering 7,995 animals, including piggery, poultry, goatry, cattle, and fishery. In the state of Tripura, 176 demonstrations were conducted, covering 262,785 animals, including poultry, goatry, cattle, and fishery. Similarly, in Nagaland, 268 demonstrations were conducted, covering 6,204 animals, including piggery, poultry, cattle and duckery (Table 3.10).

Table 3.10: Frontline demonstrations conducted on livestock and fisheries by KVKs of Umiam during 2022

Enterprise	Manipur		Meghalaya		Mizoram		Tripura		Nagaland		Total	
	No. of farmers/Demo	No. of animals/units	No. of farmers/Demo	No. of animals/units	No. of farmers/Demo	No. of animals/units	No. of farmers/Demo	No. of animals/units	No. of farmers/Demo	No. of animals/ units	No. of farmers/Demo	No. of animals/ units
Piggery	25	184	5	5	38	45	0	0	88	139	156	373
Poultry	43	400	45	625	46	540	29	435	162	6000	325	8000
Goatry	0	0	5	10	11	15	15	40	0	0	31	65
Cattle	0	0	0	0	5	10	5	10	5	15	15	35
Fishery	61	213126	65	48031	10	7385	127	262300	0	0	263	530842
Duckery	20	400	35	720	0	0	0	0	13	50	68	1170
Total	149	214110	155	49391	110	7995	176	262785	268	6204	858	540485

FLD on Jalkund by KVK Kiphere

FLD on Farm Machanization

Several tools and implements were used for agricultural and allied activities by the KVKs of ATARI, Umiam during 2022, which aided farmers in reducing costs, manpower requirements, and saving time. Sowing and planting machinery, including the Paddy drum seeder, Self-propelled eight-row rice transplanter, and Naveen Dibbler, were used for sowing crops such as paddy and maize, benefiting 6 farmers and covering an area of 6.57 hectares. Intercultural operation tools and machinery like the Wheel Hand Hoe and Conoweeder were used for weeding and other cultural practices, benefiting 118 farmers and covering an area of 47 hectares. Gravity-Fed Drip Irrigation System and Treadle Pump were utilized for irrigation purposes in vegetable crops like tomatoes, benefiting 4 farmers and covering an area of 0.53 hectares. Harvesting tools and machinery, including the Manual Paddy Thrasher, Tubular maize sheller, and Tractor-drawn potato harvester, were employed for crops like potato, paddy, and maize, benefiting 163 farmers and covering an area of 76.5 hectares (Table 3.11).

Table 3.11: Frontline demonstrations conducted on farm mechanization by KVKs of Umiam during 2022

Category	Name of the implement	Crop	No. of KVKs	No. of FLDs	No. of Farmers	Area (ha)
Sowing and planting tools and machineries	4- row paddy drum seede	Paddy	1	1	3	0.32
	Paddy drum seeder	Paddy	1	1	1	3
	Self-propelled eight row rice transplanter	Paddy (CAU-R1)	1	1	1	3
	Naveen Dibbler	Maize	1	1	1	0.25
Sub total			4	4	6	6.57
Intercultural operation tools and machineries	Wheel Hand Hoe	Potato	1	1	115	45
	Conoweeder	Paddy	1	1	3	2
Sub total			2	2	118	47
Irrigation management tools and machineries	Gravity Fed Drip Irrigation System	Tomato	1	1	3	0.03
	Treadle Pump	Vegetable Crops	1	1	1	0.5
Sub total			2	2	4	0.53
Harvesting tools and machinery	Manual Paddy Thrasher	Paddy	1	1	90	60
	Tubular maize sheller	Maize	1	1	60	10
	Manual paddy thresher	Paddy	1	1	10	5
	Tractor drawn potato harvester	Potato	1	1	3	1.5
Sub total		4	4	4	163	76.5
Total			12	12	291	130.6

4 Training for Farmers and Extension Personnel

In 2022, KVKs (Krishi Vigyan Kendras) conducted a comprehensive array of training programs with the aim of equipping farmers, farm women, rural youth, and extension personnel with the latest knowledge and skills in various agricultural and allied activities (Table 4.1). These programs served to keep everyone updated on technological advancements, government initiatives, and enhance their management capabilities for effective engagement with the farming community. A total of 3,903 training courses were organized by KVKs throughout the year. These courses covered diverse thematic areas across rural livelihood options. The duration of each training session varied depending on the content and budgetary considerations. The training endeavours successfully equipped a total of 86,701 participants with valuable skills and knowledge. This diverse group included farmers, farm women, rural youth, and extension personnel. The KVKs from various regions played a pivotal role in these efforts, with Manipur hosting 628 courses with 14,551 participants, Meghalaya conducting 1,416 courses attended by 20,710 participants, Mizoram organizing 636 courses with 15,223 participants, Nagaland providing 678 training courses to 19,021 participants, and Tripura arranging 545 training courses that were well-received by 17,196 participants.

Table 4.1: State-Wise Summary for Training Programmes by KVKs during 2022

Training	Courses (No.)						Participants (No.)					
	Manipur	Meghalaya	Mizoram	Nagaland	Tripura	Total	Manipur	Meghalaya	Mizoram	Nagaland	Tripura	Total
Farmers & Farm Women	346	828	350	485	340	**2349**	8348	13991	10092	13112	11754	**57297**
Rural Youth	147	266	160	110	87	**770**	3162	3513	3078	3050	2070	**14873**
Extension Personnel	57	62	56	39	35	**249**	1018	484	728	1075	695	**4000**
Vocational Training Programme	32	31	20	21	16	**120**	489	227	208	264	374	**1562**
Sponsored Training Programme	46	229	50	23	67	**415**	1534	2495	1117	1520	2303	**8969**
Total	**628**	**1416**	**636**	**678**	**545**	**3903**	**14551**	**20710**	**15223**	**19021**	**17196**	**86701**

Demonstration on Application of bio fertilisers for farm women by KVK West Khasi Hills

Demonstration training for extension personnel by KVK West Khasi Hills

Training on vermicomposting and input distribution under SAP Programme by KVK Dimapur

Training of Farmers and Extension Personnel

Training for Rural Youth

Training courses organized for rural youth are presented in Table 4.2. During the year 120 courses were conducted and 1562 youth were trained (723 Male and 839 Female)of which 1121 (447 Male and 607 Female) were SC/ST and 343 (207 Male and 136 Female) belong to General Category. The major thrust areas of the training programme included Crop production and management (35 courses for 321 participants), Post harvest technology and value addition (31 courses for 273 participants),Livestock and fisheries (20 courses for 389 participants), Income generation activities (31 courses for 531 participants) and Agricultural Extension (3 courses for 48 participants).

Table 4.2: Training Programmes Conducted for Rural Youth by KVKs during 2022

Area of trainings	Courses (No.)	Participants (No.)								
		General			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Crop production and management	35	47	22	69	114	82	196	195	126	321
Post harvest technology and value addition	31	9	36	45	62	166	228	71	202	273
Livestock and fisheries	20	104	29	133	61	86	228	200	189	389
Income generation activities	31	35	43	78	187	266	453	222	309	531
Agricultural Extension	3	12	6	18	23	7	16	35	13	48
Total	**120**	**207**	**136**	**343**	**447**	**607**	**1121**	**723**	**839**	**1562**

Training for Farmers and Farm Women

The training programs organized for farmers and farm women in Zone VII by KVKs are detailed in Table 4.3. The data reveals that a total of 23,254 training courses were conducted, benefiting 57,419 Farmers and Farm Women. Among these participants, 26,646 were male, and 30,653 were female. Additionally, out of the total participants, 47,609 belonged to the SC/ST category, while 8,476 were from the General category. These training programs covered various important areas, including Crop Production (494 courses), Horticulture (318 courses), Soil Health and Fertility Management (153 courses), Livestock Production and Management (366 courses), Home Science and Women Empowerment (180 courses), Agricultural Engineering (74 courses), Plant Protection (303 courses), Fisheries (241 courses), Production of Input on-site (60 courses), Capacity Building and Group Dynamics (144 courses), and Agro-forestry (21 courses).

Table 4.3 : Training programmes conducted for Farmers and Farm Women by KVKs during 2022

Area of trainings	Courses (No.)	Participants (No.)								
		General			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Crop Production	494	1121	793	1999	5060	5586	10535	6253	6435	12742
Horticulture										
a) Veg. Crops	196	287	153	440	2090	2716	4806	2433	2912	5345
b) Fruits	55	63	32	95	664	987	1651	753	1040	1793
c) Ornamental Plants	15	52	152	147	227	263	490	279	415	694
d) Plantation crops	8	0	0	0	107	79	186	107	79	186
e) Tuber crops	13	25	29	54	134	148	282	159	177	336
f) Spices	22	29	23	52	142	279	421	171	302	473
g) Medicinal and Aromatic Plants	9	11	9	20	44	73	117	55	82	137
Soil Health and Fertility Management	153	425	220	645	1374	2006	3371	1824	2367	4191
Livestock Production and Management	366	1068	358	1426	3391	3868	7276	4550	4295	8845
Home Science/Women empowerment	180	83	425	508	451	2750	3151	534	3125	3659
Agril. Engineering	74	83	72	155	649	499	1148	732	571	1303
Plant Protection	303	324	213	537	2524	2999	5384	2909	3229	6204
Fisheries	241	943	286	1229	1981	1591	3572	3043	1914	4957
Production of Input at site	60	72	330	402	413	533	946	528	896	1424
Capacity Building and Group Dynamics	144	531	227	758	1482	2134	3609	1963	2494	4457
Agro-forestry	21	9	0	9	344	320	664	353	320	673
Total	**2354**	**5126**	**3322**	**8476**	**21077**	**26831**	**47609**	**26646**	**30653**	**57419**

Training for Extension Personnel

In the year 2022, a series of diverse training programs aimed at enhancing the knowledge and skills of extension personnel in the agricultural sector were organized, with the objective of keeping them updated on cutting-edge agricultural technology developments. The specifics of these training programs for extension personnel are summarized in Table 4.4. A total of 249 capacity development courses were conducted, benefiting 4,000 in-service extension personnel, consisting of 2,207 males and 1,793 females. Among these participants, 3,307 individuals (1,697 males and 1,697 females) were from the SC/ST category, while 595 participants (447 males and 148 females) belonged to the general category. These 249 courses covered a wide range of crucial areas, including improving field crop productivity, integrated pest management, integrated nutrient management, revitalizing aging orchards, adopting protected cultivation technology, promoting the production and utilization of organic inputs, mainstreaming gender through self-help groups (SHGs), and ensuring the care and maintenance of farm machinery and implements.

Table 4.4: Training programmes conducted for Extension Personnel by KVKs during 2022

Area of trainings	Courses (No.)	Participants (No.)								
		General			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Productivity enhancement in field crops	18	26	4	30	83	187	270	118	195	313
Integrated Pest Management	17	47	10	57	153	100	253	212	118	330
Integrated Nutrient management	6	8	2	10	61	34	95	69	36	105
Rejuvenation of old orchards	6	0	0	0	58	41	99	58	41	99
Protected cultivation technology	24	15	13	28	111	52	163	137	69	206
Production and use of organic inputs	26	35	7	42	174	171	345	209	178	387
Care and maintenance of farm machinery and implements	0	0	0	0	0	0	0	0	0	0
Gender mainstreaming through SHGs	2	0	0	0	98	28	126	98	28	126
Formation and Management of SHGs	9	11	5	16	19	16	35	42	27	69

Women and Child care	2	0	0	0	7	43	50	7	43	50
Low cost and nutrient efficient diet designing	2	0	0	0	0	43	43	0	43	43
Group Dynamics and farmers organization	9	67	16	83	25	85	110	101	108	209
Information networking among farmers	3	0	0	0	58	43	101	58	43	101
Capacity building for ICT application	2	0	0	0	15	18	33	15	18	33
Management in farm animals	15	26	0	26	106	120	226	132	120	252
Livestock feed and fodder production	20	21	2	23	83	101	184	114	109	223
Household food security	8	3	0	3	47	72	119	50	72	122
Other	80	188	89	277	599	456	1055	787	545	1332
Total	**249**	**447**	**148**	**595**	**1697**	**1610**	**3307**	**2207**	**1793**	**4000**

Sponsored training programmes

During the reporting period, KVKs of ATARI Zone VII conducted a range of sponsored capacity development training programs, as outlined in Table 4.5. The data reveals that a total of 415 sponsored capacity development courses were organized, benefitting 8,969 participants. Among these participants, 4,407 were male, and 4,562 were female. Furthermore, 7,927 participants hailed from the SC/ST category, with 3,758 males and 4,169 females, while 902 participants belonged to the general category, consisting of 565 males and 337 females. These sponsored training programs catered to a diverse audience, including farmers, farm women, rural youth, in-service extension personnel, and members of various NGOs and civic organizations. These programs were designed to enhance their knowledge and skills in key areas such as crop production and management (149 courses with 3,493 participants), post-harvest technology and value addition (35 courses with 515 participants), farm machinery (8 courses with 195 participants), livestock and fisheries (183 courses with 3,801 participants), home science (19 courses with 252 participants), and agricultural extension (21 courses with 713 participants).

Table 4.5 : Sponsored training programmes conducted by KVKs during 2022

Area of trainings	Courses (No.)	Participants (No.)								
		General			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Crop production and management										
Crop production and management	5	220	97	317	1540	1552	3092	1813	1680	3493
Post harvest technology and value addition	35	30	68	98	104	313	417	134	381	515
Farm machinery	8	13	37	50	69	76	145	82	113	195
Livestock and fisheries	183	225	75	300	1754	1691	3445	2010	1791	3801
Home Science	19	0	41	41	32	179	211	32	220	252
Agricultural Extension	21	77	19	96	259	358	617	336	377	713
Total	**415**	**565**	**337**	**902**	**3758**	**4169**	**7927**	**4407**	**4562**	**8969**

Vocational training programmes

Vocational capacity development programs conducted by KVKs of TARI Zone VII are presented in Table 4.6. The information indicates that a total of 117 vocational capacity development courses were organized, benefitting 1,514 participants. Among these participants, 688 were male, and 826 were female. Moreover, 1,105 participants (445 males and 660 females) were from the SC/ST category, while 325 participants (195 males and 130 females) belonged to the general category. The participants in these vocational training programs primarily consisted of farmers, farm women, and rural youths. The main objective of these programs was to enhance their knowledge and skills in critical areas such as crop production and management (35 courses with 321 participants), post-harvest and value addition (31 courses with 273 participants), livestock and fisheries (20 courses with 389 participants), and income generation activities (31 courses with 531 participants).

Table 4.6. Vocational training programmes conducted by KVKs during 2022

Area of trainings	Courses (No.)	Participants (No.)								
		General			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Crop production and management	35	47	22	69	114	82	196	195	126	321
Post Harvest and Value addition	31	9	36	45	62	166	228	71	202	273
Livestock and fisheries										
Dairy farming	1	0	0	0	0	0	0	14	14	28
Composite fish culture	5	48	9	57	25	34	59	73	43	116
Sheep and goat rearing	0	0	0	0	0	0	0	0	0	0
Piggery	5	23	8	31	17	41	58	40	49	89
Poultry farming	6	23	12	35	12	18	30	35	30	65
Others	3	10	0	10	28	53	81	38	53	91
Income generation activities										
Vermi-composting	5	10	13	23	58	40	98	68	53	121
Production of bio-agents, bio0pesticides,	4	0	0	0	12	22	34	12	22	34
Mushroom cultivation	14	15	20	35	69	142	211	84	162	246
Seed production	4	10	10	20	10	10	20	20	20	40
Tailoring, stitching, embroidery, dying etc.	1	0	0	0	0	20	20	0	20	20
Other	3	0	0	0	38	32	70	38	32	70
Total	**117**	**195**	**130**	**325**	**445**	**660**	**1105**	**688**	**826**	**1514**

5 Extension Activities

During reporting year, the KVKs in the region were involved in a number of extension programmes on different activities. Along with traditional media of technology dissemination, the KVKs used the recent technological innovations like ICTs to reach among the unreached. A vast stretch of the region being extreme remote to access technology is a huge challenge. In this context, the efforts by the KVKs during 2022 to disseminate improved technologies and practices by exploring more extension approaches suitable for North eastern region are praiseworthy. The KVKs of ATARI, Umiam carried out 32269 of extension programmes/activities reaching over 202927 farmers and other targeted beneficiaries including men and women from general and SC/ST category of farmers including extension personnel in the region. The extension activities conducted by the KVKs of the institute has been categorized into five major groups, namely field trips and visits, group activities, mass outreach programmes , camps and campaigns and publications. The highest number (13398) of activities was conducted under the category of Mass outreach programme, while the highest number (73339) of beneficiaries had been served through different mass outreach programmes of KVKs. Detail information on the extension activities including number of beneficiaries is given in Table 5.1.

Table 5.1: Extension activities conducted by KVKs during 2022

Category	Extension Activity	No. of activities	Participants											
			General			SC/ST			Extension Officials			Grand Total		
			-1			-2			-3			(1+2)		
			M	F	T	M	F	T	M	F	T	M	F	T
Field Trips and Visits	Diagnostic visits	2293	372	195	567	3752	3443	7195	44	23	67	4124	3638	7762
	Scientists visit to farmers field	3115	728	446	1174	5182	5085	10267	18	14	32	5910	5531	11441
	Exposure visits	56	326	424	750	576	605	1181	53	42	95	902	1029	1931
	Farmers Visit to KVK	5395	1881	1368	3249	5100	4664	9764	24	28	52	6981	6032	13013
	Field Visit	62	0	0	0	159	147	306	0	0	0	159	147	306
	Total	**10921**	**3307**	**2433**	**5740**	**14769**	**13944**	**28713**	**139**	**107**	**246**	**18076**	**16377**	**34453**
Group activities	Farmers Scientist Interaction	185	560	276	836	2814	2759	5573	20	9	29	3374	3035	6409
	Group Discussion	731	510	445	955	6096	4750	10846	25	20	45	6606	5195	11801
	KisanGosthi	56	99	112	211	718	1044	1762	6	5	11	817	1156	1973
	Mahila Mandal Conveners' meetings	9	36	0	36	10	50	60	0	0	0	46	50	96
	SHG formation	77	339	149	488	417	305	722	59	21	80	756	454	1210
	Method Demonstrations	616	518	504	1022	3568	4132	7700	38	28	66	4086	4636	8722
	Farm Science Club Conveners meet	11	62	27	89	163	86	249	0	0	0	225	113	338
	Lecture Delivered as resource person	352	591	471	1062	4365	4930	9295	30	16	46	4956	5401	10357
	Ex-trainees Sammelen	2	0	0	0	20	60	80	0	0	0	20	60	80
	Farmers Meeting	14	0	0	0	122	201	323	4	4	8	122	201	323
	Total	**2053**	**2715**	**1984**	**4699**	**18293**	**18317**	**36610**	**182**	**103**	**285**	**21008**	**20301**	**41309**

Mass outreach programmes	Advisory Services	12373	2180	497	2677	10037	6483	16520	66	43	109	12217	6980	19197
	Kisan Mela	35	568	529	1097	2539	2699	5238	61	40	101	3107	3228	6335
	Exhibition	85	681	795	1476	11791	8177	19968	176	133	309	12472	8972	21444
	Farmers Seminar/ workshop	52	1335	98	1433	449	363	812	0	0	0	1784	461	2245
	Field Day	146	661	515	1176	1649	1855	3504	35	24	59	2310	2370	4680
	PRA	29	40	31	71	217	210	427	0	0	0	257	241	498
	Celebration of important days	187	865	749	1614	3785	4271	8056	61	44	105	4650	5020	9670
	TV Talks	20	0	0	0	500	500	1000	0	0	0	500	500	1000
	Radio talks	33	0	0	0	650	650	1300	0	0	0	650	650	1300
	Film shows	221	529	265	794	2386	3390	5776	24	17	41	2915	3655	6570
	Newspaper coverage	217	0	0	0	215	185	400	0	0	0	215	185	400
	Total	**13398**	**6859**	**3479**	**10338**	**34218**	**28783**	**63001**	**423**	**301**	**724**	**41077**	**32262**	**73339**
Camps and Campaigns	Animal Health Camp	32	173	74	247	1146	696	1842	0	2	2	1319	770	2089
	Plant Health Camp	20	540	275	815	410	283	693	2	1	3	998	624	1622
	Awareness Camp	214	994	473	1467	2132	2774	4906	15	15	30	3126	3247	6373
	Soil testing Campaigns	180	62	77	139	254	191	445	2	2	4	316	268	584
	Soil health camp	8	18	17	35	115	117	232	1	1	2	133	134	267
	Vaccination camp	2	0	0	0	18	6	24	0	0	0	18	6	24
	Water Testing	70	0	0	0	42	28	70	0	2	2	42	28	70
	Total	**526**	**1787**	**916**	**2703**	**4117**	**4095**	**8212**	**20**	**23**	**43**	**5952**	**5077**	**11029**

Publications	Training/ practical manual	63	200	50	250	1183	742	1925	15	5	20	1383	792	2175
	Extension literature	72	550	130	680	3510	1756	5266	15	8	23	4060	1886	5946
	Research Papers	10	0	0	0	150	150	300	0	0	0	150	150	300
	Popular articles	16	0	0	0	0	0	0	0	0	0	0	0	0
	Electronic media (CD/DVD)	10	65	20	85	52	23	75	0	0	0	117	43	160
	Leaflets/folders	100	225	163	388	2479	2514	4993	0	0	0	2704	2677	5381
	News letter	7	0	0	0	300	185	485	0	0	0	300	185	485
	Technical Report/ article	10	0	0	0	150	150	300	0	0	0	150	150	300
	Technical bulletins	7	0	0	0	204	180	384	0	0	0	204	180	384
	Others	5076	2335	1538	3873	12572	11221	23793	107	72	179	14907	12759	27666
	Total	**5371**	**3375**	**1901**	**5276**	**20600**	**16921**	**37521**	**137**	**85**	**222**	**23975**	**18822**	**42797**
	Grand Total	**32269**	**18043**	**10713**	**28756**	**91997**	**82060**	**174057**	**901**	**619**	**1520**	**110088**	**92839**	**202927**

Pre Rabi campaign at farmers field by KVK Lunglei

6 Agricultural Inputs (Seeds and Planting Material) Production

Production of Seeds, Planting materials, Bio-products and Livestock & Fingerlings

Timely availability of quality agricultural inputs such as seeds, planting materials, livestock breeds and bio-products are essential to attain potential yield. Hence, KVKs are actively involved in production of technological inputs. Production of quality seeds and planting materials and their supply to the farmers were among the important activities undertaken by the KVKs in the Zone. During the reporting period, KVKs of the institute produced *18103.03* q of quality seeds, 1731721 nos. of planting materials, 1447.41 q of bio-products and 1192680.5 nos. of livestock and fingerlings which included 1166440 fish fingerlings. A total of 10208.41 q cereals seeds with highest in the state of Mizoram (5794.35 quintals), Oilseeds (1202.35 q), Pulses (638.51 q), 4115.87 q seeds of Vegetables, 553.01 q seeds of Spices ,10 q seeds of flower crops, and 1374.87 q such as tuber crops, fruits etc. were produced by the KVKs in the zone. Planting materials of fruits (103297), plantation crops (7986), vegetables

(1553776), flower crops (21879), spices (27983), forest species (16800) were produced for supply and distribution to farmers. The KVKs of the zone also produced a total of 1447.41 q of bio-products including 1440.08 q of bio-fertilizers, 0.33 q of bio-pesticides. Among the livestock products produced by the KVKs during the reporting period were 26240.5 livestock strains and 11.66 lakh fingerlings were produced. The state wise details of agricultural inputs production are provided in Table 6.1.

Table 6.1: State-wise details of seeds and planting materials production by KVKs during 2022

Major Group/Class	State					Total (Qtls)
A. Seed Materials	Manipur	Meghalaya	Mizoram	Nagaland	Tripura	
Cereals	3063.07	52.61	5794.35	92.88	1205.50	10208.41
Oilseeds	46.98	30.00	418.40	416.57	290.40	1202.35
Pulses	48	54.00	257.80	26.40	252.31	638.51
Vegetables	30	0.01	56.05	3.42	4026.38	4115.87
Spices	125	14.00	405	9	0.01	553.01
Flower crops		0.00			10	10

Tuber crops		2.63	1000	366		1368.63
Fruits					0.10	0.10
OTHERS (Specify)	0	4.50			1.64	6.14
Total	**3313.05**	**157.76**	**7931.60**	**914.27**	**5786.3**	**18103.03**
B. Planting Materials (Nos.)						
Vegetables	329297	139930	785300	149510	149739	1553776
Spices	7000	45	0	20700	238	27983
Fruits	9829	9050	64360	8072	11986	103297
Forest Spp	13200		1100	2500		16800
Flowers	0	1500	1000	16003	3376	21879
Ornamental Plants						0
Plantation Crops			2,800	5150	36	7986
Fodder Crops						0
Others						0
Total	**359326**	**150525**	**854560**	**201935**	**165375**	**1731721**
C. Bio products						
Bio fertilizers	1129.86	116	158.62	15.6	20	1440.08
Bio agents		0				0
Bio pesticides			0.33			0.33
Others	7					7
Total	**1136.86**	**116**	**158.95**	**15.6**	**20**	**1447.41**
D. Livestock &Fingerlings (Nos.)						
Livestock Strains	1874.5	4942	6608	833	11983	26240.5
Fingerlings	521880	0	4000	0	640560	1166440
Total	**523755**	**4942**	**10608**	**833**	**652543**	**1192680.5**

7 Research and development projects for human resource development

A. Farmers Centric and Skill Oriented Programmes

7.1. National Innovations in Climate Resilient Agriculture (NICRA)

During the year 2022-23, the number of KVKs under NICRA was 15 in the five states of ICAR-ATARI, Zone-VII, Umiam. The interventions conducted by the KVKs in the adopted NICRA villages focused mainly on the identified farming system typologies (FSTs) and how to mitigate climate related problems in the particular location. The FSTs were identified based on the climatic constraints faced by the district so that mitigation techniques could be applicable to all the farming villages in the district.The climate resilient interventions were undertaken based on the identified Farming System Typologies and the activities were further divided into Natural Resources management, Crop Production, Livestock and Fisheries interventions, Capacity Building activities and Extension activities. The details of the interventions are as follows:

Natural Resource Management – Under this, climate resilient in-situ practices such as mulching, ridge and furrow cultivation method, zero tillage, integrated farming system, crop diversification through raised bed in fallow land, and ex-situ cultivation practices like protected cultivation of crops, farm pond and jalkund, along with soil and water management techniques like growing of cover crops, organic nutrient incorporation, low cost vermicomposting, early sowing to escape moisture stress and slurry method of Phosphorus management in paddy were demonstrated in the adopted NICRA villages. A total of 55 demonstrations were conducted, covering an area of 105.09 ha and benefitting 420 farmers during 2022-23. The table below depicts the resilient practices made during the year 2022-23.

Crop Production – The climate resilient technologies pertaining to crop production that were practiced during 2022-23 were cultivation of improved crop varieties that could withstand certain climatic stresses, sequential cropping system, intercropping techniques, mushroom cultivation, community nursery during unfavourable conditions, paddy-cum-fish culture, maize based cropping system, system of rice intensification (SRI), seed production and safe storage. A total of 42 demonstrations were conducted, covering an area of 135.24 ha under crop production activities and benefitting 384 farmers during 2022-23.

Polymulching on Cole crops: KVK, Tuensang

French bean cv. NRC French: KVK, Sepahijala

Groundnut maize intercropping: KVK, Ukhrul

Water harvesting structure "Jalkund": KVK Phek

Livestock and Fisheries – Activities that were conducted under livestock and fisheries intervention by the KVKs in the NICRA villages were animal health camps cum vaccination drives, rearing of improved breeds of livestock having stress tolerance, improved feeding methods, improved scientific housing for livestock, composite fish farming instead of mono culture of fish and integrated farming systems with livestock and fisheries. A total of 33 demonstrations were conducted, 693 number of animals were distributed and 149 units under different management practices were covered, thus benefitting 298 farmers under livestock and fisheries intervention.

Deworming and mineral supplementation: KVK, West Garo Hills

Capacity Building Programmes – Capacity building programmes conducted by the KVKs in the NICRA adopted villages aims at establishing and strengthening the farmer groups. Programmes such as plant protection techniques, updated farming technologies, food preservation and safe storage, integrated nutrient management, scientific management of raising livestock etc., were conducted during 2022-23. A total of 145 capacity building programmes were conducted, benefitting 3605 individuals.

Training on scientific maize cultivation

Training on production technology of winter crops

Extension activities – Extension activities conducted by KVKs in NICRA adopted villages contribute to the overall development and well-being of rural communities by equipping them with the knowledgeand tools needed to thrive in a changing climate. Extension activities such as field visits, diagnostic visits, awareness programmes, institutional visits etc., were conducted during 2022-23. A total of 257 programmes were conducted and beneficiaries covered under extension activities during 2022-23 was 3248.

7.2 Farmer FIRST Programme (FPP)

The Farmer FIRST project, conceptualized and executed by ICAR, aims to engage active farmers in identifying and prioritizing research problems, as well as conducting experiments in their own fields using available resources. This approach centers on the Farmer's Farm, Innovations, Resources, Science, and Technology, often referred to as "FIRST." In the Indian context, Farmer FIRST embodies the notions of "enriching knowledge" and "integrating technology." Enriching knowledge highlights the importance of mutual learning between the research system and farmers, taking into account the existing farm environment, perceptions, and interactions with surrounding sub-systems. Technology integration emphasizes the need for scientific research outputs to be adapted and customized to fit the conditions on farmers' fields for successful adoption and acceptance. The Farmer FIRST program aims to strengthen the interaction between farmers and scientists for technology development and application, emphasizing innovation, technology, feedback, involvement of multiple stakeholders, diverse realities, various methodological approaches, and interventions related to vulnerability and livelihoods.

Currently, two projects are in progress, one by the Central Agricultural University in Imphal and the other by ICAR RC for NEH Region in Umiam. These projects have been implemented in two villages under CAU, Maopungdong village in Senapati district and Sangshak Khullen Village in Ukhrul District and ten villages in the Ri Bhoi district under ICAR RC for NEH Region, including Borgang, Sarikhusi Lalumpam, Purangang, Umtham, Borkhatsari, Nalapara, Nangagang, Mawphrew, and Mawtnum.

Module-wise achievements under FFP during 2022-23 presented in table7.2.1

1. **Crop based Module-** CAU Imphal initiated scientific Sweet Corn (Golden Cob F1) cultivation in Manipur's Ukhrul and Senapati districts, while ICAR RC in Umiam led the initiative for double cropping in fallow rice fields. These collaborative efforts aimed at enhancing agricultural productivity and generating increased income and job prospects for local farmers. This

joint endeavor resulted in the successful execution of 5 demonstrations, benefiting a total of 180 beneficiaries from the local farming communities.

2. **Horticulture based module-** To boost potato cultivation, the Kurfi Joyti variety was introduced in the adopted villages, with a cultivation area of 0.25 hectares in Maopungdong and an additional 0.25 hectares in Shangshak Khullen, Ukhrul district. In addition to potatoes, fruit crops like lemon and pineapple were also introduced as alternative income sources. These efforts led to the successful execution of four demonstrations, benefiting a total of 47 farmers through these interventions.

3. **Livestock based module-** Through the interventions 20 Yorkshire breed piglets and 1590 improved breed poultry was distributed to 91 farmers, aiming to boost income generation through pig farming and poultry production.

4. **Enterprise based module-** As part of Enterprise based module CGI sheets were distributed to set up a mushroom spawn production unit in the adopted village. Moreover, mushroom spawn were distributed to boost farmers' income. In addition, trial at a poultry hatchery was conducted using 200 fertile eggs, utilizing an automatic egg incubator situated at the custom hiring centre in the adopted village. Under this enterprise-based module, 7 demonstrations were organized benefited a total of 18 beneficiaries.

5. **NRM Based module**- In the NRM Based module, 5 demonstrations were conducted, benefiting 34 farmers. Jalkunds a cost-effective hilltop micro rainwater harvesting structures were constructed for rainwater collection and storage. These structures serve various purposes during dry seasons, including essential irrigation during critical crop growth stages, washing produce like ginger and turmeric, supporting animal husbandry and livestock, and meeting domestic water needs. Furthermore, azolla, a floating fern recognized for its value as a bio-fertilizer in wetland paddy fields, was introduced and recommended for use as fish feed due to its nutritional richness and cost effectiveness. To promote vermi-composting, verm-compost beds were distributed.

6. **Fishery Based Module:** Under Fishery Based module 3 Demos were conducted benefitted 30 beneficiaries. FFP Centre at ICAR RC Umiam distributed 1500 fingerlings of Rohu, Gania, and Guchi breeds to 10 farmers in the Marngar Cluster, promoting fishery as an alternative income source. Meanwhile 4500 fingerlings of Rohu, Mirgal, Grass carp, and Silver carp were distributed to 20 farmers by CAU Imphal. A fishery training program was also conducted with the aim of encouraging farmers to adopt fishery as an alternate source of livelihood for doubling their income.

7. **IFS Based Module -**3 demonstrations were conducted with the participation of 3 beneficiaries to showcase the development of Integrated Farming Systems in the project sites. Integrated farming systems offer the opportunity to increase economic yield per unit area and time through the intensification of crop and allied enterprises. The Integrated Farming System was established at the adopted villages with the aim of enhancing the annual income of local farmers.

8. **Farm Mechanization** -The beneficiaries received a set of farm mechanization tools and equipment, including Tulu pumps designed for irrigation to eliminate the manual water transport effort in hilly

areas, Knapsack sprayers equipped with precision spray gun for precise application of chemicals, insecticides, and pesticides on individual plants. In addition farmers also received 2 dewatering pumps with accompanying pipes, 2 grass cutters, 20 knapsack sprayers, and various essential farm implements such as 20 garden hoes, 20 shovels, 20 hand cultivators, and 20 sickles which will benefit around 514 farmers through custom hiring centres.

9. **Extension activities**: Under extension activities A total no. of 17 trainings/ demonstration/ programmes had been conducted during the year with 973 total numbers of participants.

Table 7.1: Module wise achievements under FFP during 2022

Module Wise	CAU, Imphal		ICAR RC Complex, Umiam		Total	
	No. of Demos	No. of Beneficiaries	No. of Demos	No. of Beneficiaries	No. of Demos	No. of Beneficiaries
Crop Based Module	2	20	3	160	**5**	**180**
Horticulture Based Module	2	20	2	27	**4**	**47**
Livestock Based Module	2	40	3	51	**5**	**91**
Enterprise Based module	4	9	3	9	**7**	**18**
NRM Based module	2	20	3	14	**5**	**34**
Fishery Based Module	2	20	1	10	**3**	**30**
IFS Based Module	2	2	1	1	**3**	**3**
Extension Activities	7	575	10	398	**17**	**973**
Farm Mechanization	2	500	2	14	**4**	**514**

7.3 Attracting and Retaining Youth in Agriculture (ARYA)

Agriculture in India is facing significant challenges due to a declining interest among the youth in pursuing farming, leading them to migrate to urban areas in search of non-farming jobs. This trend poses a threat to food security, and it is crucial to incentivize young individuals to remain engaged in agriculture. The exodus of rural youth to cities continues to grow, and the presence of small land holdings presents a formidable challenge to ensure food security for the increasing population. The key solution to attract young people to agriculture is to transform farming into a profitable and appealing option in rural regions. Recognizing the vital role of rural youth in agricultural development, particularly in safeguarding the country's food security, the Indian Council of Agricultural Research (ICAR) has launched the "Attracting and Retaining Youth in Agriculture (ARYA)" program.

Project ARYA was launched in six Krishi Vigyan Kendras (KVKs) within the specified zone with the aim of improving the livelihoods of rural

youth. The primary objective of the program was to engage and empower young individuals to venture into various agriculture and allied service sector enterprises, given the common trend of educated rural youth migrating to urban areas in search of employment opportunities. However, with the successful implementation of Project ARYA in three specific KVKs, namely Wokha (Nagaland), Lunglei (Mizoram), and Senapati (Manipur), as well as Jaintia Hills (Meghalaya), Tuensang (Nagaland), and Dhalai (Tripura) under ICAR-ATARI, Umiam, the youth in the North-Eastern Region have increasingly embraced agriculture and allied activities as their primary source of income and a means of employment generation.

Scientific Goat Farming and input distribution, KVK Dhalai

Vermiwash production, KVK Lunglei

Salient features of ARYA

During 2022, the Krishi Vigyan Kendras (KVKs) of Umiam, including Senapati in Manipur, Lunglei in Mizoram, Wokha in Nagaland, Jaintia Hills in Meghalaya, Tuensang in Nagaland, and Dhalai in Tripura, conducted a variety of activities under the ARYA program (Table 7.3.1). These activities encompassed training and demonstrations in diverse agricultural sectors. Notable activities included mushroom production, poultry, piggery, fish production, large cardamom production, floriculture, beekeeping, vermicomposting, protected cultivation, and more. The KVKs collectively engaged with 154 units, providing training to 1,355 participants and conducting 101 demonstrations, involving 660 participants. These efforts contributed significantly to enhancing agricultural knowledge and practices in the region, promoting sustainable farming and livelihoods.

Table 7.2: Activities conducted under ARYA by KVKs of Umiam during 2022

Name of KVK	Name of enterprise/ Component	No. of unit	Training		Demonstration (No.)	
			No. of training	No. of Participants	No. of demonstration	No. of Participants
Senapati Manipur	Mushroom Production	4	1	20	3	60
	Poultry	2	0	0	2	30
	Piggery	2	0	0	3	30
	Fish Production	3	1	20	4	48
	Large Cardamom Production	1	1	20	2	30
	Floriculture	10	1	20	2	35
Lunglei Mizoram	Poultry	9	3	75	2	30
	Piggery	4	3	60	2	40
	Mushroom Cultivation	5	5	122	3	24
	Bee Keeping	8	6	90	2	35
	Vermi Composting	4	4	78	2	25
	Protected Cultivation	6	3	65	3	42
Wokha Nagaland	Piggery	2	2	50	3	30
	Poultry	4	2	40	4	25
	Mushroom	2	2	30	3	30
	Floriculture	4	2	25	2	25
Jaintia hills, Meghalaya	Mushroom Production	3	1	15	1	15
	Vermicompost unit	5	1	25	0	0
	Poultry Production	5	1	25	1	25
	Pig Breeding Unit	5	1	25	1	25
	Value Addition of Turmeric (Lakadong Variety)	1	1	25	0	0
Tuensang, Nagaland	Mushroom Cultivation	5	2	31	5	5
	Nursery Raising Of Vegetables	15	3	61	15	15
	Off-season Vegetable Production	5	3	60	5	5
Dhalai, Tripura	Piggery	10	4	106	8	8
	Goatery	10	3	95	10	10
	Mushroom	10	3	86	7	7
	Vermicompost	10	3	86	6	6
Total		**154**	**62**	**1355**	**101**	**660**

7.4 Cluster FLDs on Pulses under National Food Security Mission (NFSM) during 2022

Under ICAR-ATARI Zone-VII, there were 22 KVKs selected for implementation of Cluster Demonstration programme on Pulses. These KVKs organised farm and extension activities for farmers and extension workers to disseminate various technologies and conducted Cluster Front Line Demonstrations (CFLDs) to demonstrate the production potential of newly released technologies on farmer's fields at various locations in a given farming system.

Achievements during 2022

During the year 2022-23, CFLDs were conducted on Pulses in 5 North-Eastern Hill States of Manipur, Meghalaya, Nagaland, Mizoram and Tripura. The total area covered by Pulses (Kharif, Rabi & Summer Season 2022-23) was 767 ha through 1802 demonstrations. CFLDs were conducted in different Pulses crops like Blackgram (PU-31, Tripura Maskolai), Green gram (Virat), Rajma (Tripura Rajma), Lentil (var. HUL-57, IPL-220) and Field Pea (var. Aman, Prakash, HFP-715, VL Matar 47), French bean (Arun, Zorin), Chick pea (GNG-2207, Jawahar gram), Lathyrus (Biol 212) (Table 7.4.1).

State-wise productivity of Pulse crop for Kharif, Rabi and Summer season is shown in Table 7.4.2 Fieldpea was conducted in all the five states under the Zone where Nagaland showed the highest productivity of 13.30 q/ha followed by Manipur with an average yield of 12.67 q/ha. Varieties like Tripura Rajma and Local improved of Rajma pulse crop was grown in Tripura and Manipur. Tripura had the potential to produce a high output of 13.14 q/ha in comparison to Manipur (11.01 q/ha). Lentil var. HUL-57 & IPL-220 were demonstrated by KVKs of Manipur, Mizoram and Tripura with average yield of 7.88, 6.50 and 4.06 q/ha respectively. Manipur and Tripuraconducted CFLD on Blackgram var. PU-31 during Karif season which reported a yield of 8.08 and 12.12 q/ha respectively. During Rabi season Blackgram var. Tripura Maskoloi was conducted by KVKs of Tripura and Meghalaya and reported the yiled of 12.50 and 11.30 q/ha respectively. Lathyrus var. Biol 212 was grown in Manipur and reported the yield of 8.040q/ha. In Manipur and Tripura chickpea var. GNG-2207 and Jawahar gram was grown and recorded a yield of 11.35 and 11.40 q/ha respectively. Greengram var. Virat was implemented in Tripura state and reported a yield of 10.50 q/ha.

Table 7.3: State-wise Cluster Front Line Demonstration on Pulses under NFSM 2022

State	Area (ha)		Demo (Nos.)	
	Allocated	Covered	Allocated	Conducted
Manipur	430	360	1075	800
Tripura	220	169	550	412
Nagaland	130	110	325	270
Meghalaya	60	60	150	150
Mizoram	130	68	325	170
Total	**970**	**767**	**2425**	**1802**

Table 7.4: State-wise details of productivity of Pulses under NFSM during 2022

S. No.	State	Kharif Yield (q/ha)		Rabi Yield (q/ha)						Summer Yield (q/ha)		
		Blackgram (PU-31)	Rajmash (Local Improved)	Field pea (Aman, Prakash, HFP-715, VL Matar 47)	Lentil (HUL-57, IPL-220)	Chick pea (GNG-2207)	Rajmash (Tripura Rajma, Local Improved	French bean (Arun, Zorin)	Blackgram (Tripura Maskoloi)	Lathyrus (Biol 212)	Chick pea (Jawahar gram)	Green gram (Virat)
1	Manipur	8.03	11.01	12.67	7.88	11.35				8.04		
2	Tripura	12.12		9.70	4.06		13.14		12.50		11.40	10.50
3	Nagaland			13.30								
4	Meghalaya			12.54					11.30			
5	Mizoram			8.79	6.50			9.00				
Avg. yield (Zonal)		**10.08**	**11.01**	**11.40**	**6.15**	**11.35**	**13.14**		**11.90**	**80.4**	**11.40**	**10.50**

7.5 Cluster FLDs under National Food Security Mission (NFSM) during 2022

Under ICAR-ATARI Zone-VII, there were 23 KVKs selected for implementation of Cluster Demonstration programme. These KVKs organised farm and extension activities for farmers and extension workers to disseminate various technologies and conducted Cluster Front Line Demonstrations (CFLDs) to demonstrate the production potential of newly released technologies on farmer's fields at various locations in a given farming system.

Achievements during 2022

During the year 2022 a total of 1643 nos. of CFLDs were conducted on Oilseeds in 5 Northeastern States of Manipur, Meghalaya, Nagaland, Mizoram and Tripura spanning 681 hectares. In Oilseed crops, CFLDs were conducted in Soybean (DSb-19, JS-95-60, JS 335, Soya VL 79), Sesame (var. Chhibung) Groundnut (var. ICGS-76) and Rapeseed & Mustard (NRCHB-101, TS-67, TS 36 & TS 38).

Table 7.5: State-wise Cluster Front Line Demonstration on Oilseeds under NFSM & NMOOP 2022

State	Area (ha) Allocated	Area (ha) Covered	Demo (Allocated)	Demo (Conducted)
Manipur	260	256	650	577
Meghalaya	60	60	150	150
Mizoram	130	120	325	300
Nagaland	100	130	250	322
Tripura	120	115	300	294
Total	**670**	**681**	**1675**	**1643**

State-wise Productivity of Oilseed crops under NFSM during 2022-23, Soybean (DSb-19, JS-95-60, JS 335, Soya VL 79, RVS 2001-04) was demonstrated by the selected KVKs in the states of Manipur, Mizoram and Nagaland in which the highest average yield level of Soybean was recorded in Nagaland with an average yield of 16.48 q/ha followed by Mizoram (14.6 q/ha) and Manipur (12.42 q/ha).KVKs of Manipur Mizoram and Tripura reported the average Zonal yield of 15.9 q/ha in Groundnut (Var.Groundnut (ICGS-76) while the average zonal yield of 7.62 q/ha were recorded in demonstration of Sesame (Chhibung, Tripura Siphing). Rapeseed & Mustard (NRCHB-101, TS-67, TS 36 & TS 38) was demonstrated by all the five states under under the Zone with an average yield of 9.06 q/ha (Table 7.5.2).

Table7.6: State-wise Productivity of Oilseed crops under NFSM during 2022

Sl. No	State	Kharif (Qtl/ha)			Rabi (Qtl/ha)	Summer	
		Soybean (DSb-19, JS-95-60, JS 335, Soya VL 79, RVS 2001-04)	Groundnut (ICGS-76)	Sesame (Chhibung,)	Rapeseed & Mustard (NRCHB-101, TS-67, TS 38 & TS 36)	Sunflower	Sesame (Tripura Siphing)
1	Manipur	12.42	12.20	-	9.47	-	-
2	Meghalaya	-	-	-	9.59	-	-
3	Mizoram	14.6	15.5	7.9	7.3	11.5	-
4	Nagaland	16.48	-	-	8.52	-	-
5	Tripura	-	20		10.46	-	7.35

CFLD on Soybean

7.6 Nutri-sensitive Agricultural Research Innovation (NARI)

NARI, which stands for Nutrient Awareness and Refinement Initiative, aims to raise awareness about nutrient-sensitive agriculture. This initiative involves Subject Matter Specialists of different KVKs, reaching out to farm women and rural youth. The goal is to encourage them to cultivate nutrient-rich crops in household kitchen gardens. KVKs have undertaken various training, capacity-building, and awareness programs under NARI. These activities include promoting food fortification by incorporating cereal crops and vegetables, demonstrating the development of nutritional gardens in households, and teaching the preparation of organic manure, compost from kitchen waste, and biopesticides (Table 7.6.1).

NARI is a nutrition centric initiative initiated by ICAR (Indian Council of Agricultural Research) with the aim of improving the health and nutrition of rural communities. In line with this initiative, ICAR-ATARI Zone VII, through its 32 KVKs, has conducted a total of 66 demonstrations on nutritional gardens, showcased bio fortified crop varieties, and emphasized value addition. These efforts have benefitted 2760 farmers. Furthermore, 146 training programs have been conducted, benefiting 2,538 farmers, and 131 extension activities have reached out to 2,438 farmers during the year 2022-23.

Field Day cum exhibition nari programme

Table 7.6.1: Status of NARI during 2022

Sl. No	State	KVK	No. of Nutritional Village	Activities (OFT/FLD)		Training Activities		Extension Activities	
				No. of OFT / FLD	No. of Farmers benifitted	No, of Training	No. of Farmers benefitted	No. of Extension Activities	No. of Farmers Benefitted
1	Manipur	4	9	11	255	14	336	14	248
2	Meghalaya	7	7	16	733	59	832	33	650
3	Mizoram	6	2	15	564	28	515	38	491
4	Nagaland	10	7	12	617	30	568	29	502
5	Tripura	5	6	12	591	15	287	17	547
	Total	**32**	**31**	**66**	**2760**	**146**	**2538**	**131**	**2438**

7.7 Pulses Seed Hub project

KVK Thoubal in Manipur was identified as a Seed Hub KVK Centre under ICAR-ATARI, Umiam for the building of Seed Hubs to address the seed requirements of the farmers in order to increase pulse production in the Zone. The KVK centre produced 45 q blackgram (PU-31) covering a total area of 10 ha during the Kharif season 2022 and 100 q lentil (IPL-316), 30 Q Field Pea and 50 Q Chickpea in Rabi 2022-23 covering a total area of 24 hectares as depicted in table 7.7.1.

Fig: Demonstration on Natural Farming

Table 7.7.1: Creation of Seed Hubs for indigenous production of pulses in India 2022

Creation of Seed hubs (2022-23)					
Seed hub Centre	**Season (*rabi/ kharif*)**	**Crop**	**Variety**	**Area Sown (ha)**	**Production (q)**
KVK Thoubal, Manipur	**Kharif**	Blackgram	PU-31	10	45
	Sub total			**10**	**45**
	Rabi	Field pea	HFP-715	4	30
		Chickpea	GNG-2207	6	50
		Lentil	IPL-316	14	100
	Sub total			**24**	**180**
			Grand total	**34**	**225**

7.8 Outscaling of Natural Farming

Natural Farming is a chemical-free alias traditional farming method. It is considered as agroecology based diversified farming system which integrates crops, trees and livestock with functional biodiversity. In India, Natural farming is promoted as Bhartiya Prakritik Krishi Paddhati Programme (BPKP) under centrally sponsored scheme- Paramparagat Krishi Vikas Yojana (PKVY). BPKP is aimed at promoting traditional indigenous practices which reduces externally purchased inputs. It is largely based on on-farm biomass recycling with major stress on biomass mulching, use of on-farm cow dung-urine formulations; periodic soil aeration and exclusion of all synthetic chemical inputs. According to HLPE Report, natural farming will reduce dependency on purchased inputs and will help to ease smallholder farmers from credits burden.

Several studies have reported the effectiveness of natural farming- BPKP in terms of increase in production, sustainability, saving of water use, improvement in soil health and farmland ecosystem. It is considered as a cost- effective farming practices with scope for raising employment and rural development. NITI Aayog along with Ministry of Agriculture & Farmers welfare had convened several high-level discussions with global experts on Natural farming practices. It is roughly estimated that around 2.5

million farmers in India are already practicing regenerative agriculture. In the next 5 years, it is expected to reach 20 lakh hectares- in any form of organic farming, including natural farming, of which 12 lakh hectares are under BPKP.

Natural Farming at KVK level

At present there are 25 KVKs from the 5 states of ATARI, Zone-VII who are engaged in natural farming. A total of 202 awareness Programmes were conducted benefitting 7858 participants while 161 Training Pogrammes were conducted benefitting 4165 Participants. About 252 demonstrations were organized at farm and 1307 farmers were visited demonstrations and gained hands on experience on natural farming. The progress of the farming system in the zone is as per the table 7.8.1.

B. Special Programmes

7.9 Agri-drone Project

This project is being carried out under ATARI, Zone-VII, in six KVKs (Imphal East, Bishnupur, East Khasi Hills, Kohima, Khowai, and Aizawl), two ICAR institutes (ICAR Research Complex for NEH Region and ICAR-NRC on Mithun, Medziphema, Nagaland), and two under Agricultural University (Central Agricultural University, Imphal, Manipur and Nagaland University, Nagaland).The projects were approved for implementation in 2022–2023.

Details of Demonstrations under Agri-drone Project during 2022

A total of 160 demonstrations of pesticide spraying were conducted over a 184.3 hectare

Table 7.8.1: Sate wise activities conducted by KVKs under Natural farming during 2022

State	No. of demonstrations conducted	No of Participants	No. Trainings Programmes	No of Participants	No. of Awareness Programmes	No of Participants
Manipur	93	128	22	673	31	1037
Meghalaya	22	508	19	644	44	2504
Mizoram	59	157	32	1049	24	549
Nagaland	41	437	29	1046	40	1279
Tripura	37	77	59	753	63	2489
TOTAL	**252**	**1307**	**161**	**4165**	**202**	**7858**

Demonstration of Drones at farmer's field

area. 16 demonstrations under weedicides were carried out over a 21.6 hectare area. A total of 181 demonstrations were conducted under nutrient spray covering an area of 117.37 hectares. The crops covered under the project included lettuce, citrus fruits, dragon fruit, potatoes, peas, soybeans, rapeseed, mustard, and buck wheat.

Achievements under Agri- Drone for 2022

During 2022-23, total of 10 numbers of drones were procured, 12 pilots were trained and 280 numbers of demonstration was carried out covering an area of 323.3 ha.

Table 7.10.1: Achievements under Poshan Abhiyan during 2022

Name of State/UT	No. of KVKs organized the fair	No. of farmers participated	Saplings planted/ distributed (No.)	Vegetable Seed Packets distributed (No.)	No. of public representatives participated		
					Central Ministers/ MPs	State Ministers/ MLAs	Others
Manipur	9	819	1022	880	1	1	24
Meghalaya	7	546	1010	490	0	1	15
Mizoram	8	505	458	681	0	0	42
Nagaland	11	738	615	1261	0	0	94
Tripura	8	662	987	641	0	1	24
Total	**43**	**3270**	**4092**	**3953**	**1**	**3**	**199**

Poshan Abhiyan conducted by KVK Khowai. (Tripura)

Distribution of saplings at KVK Lunglei (Mizoram)

Poshan Abhiyan conducted by KVK Thoubal (Manipur)

Attending awareness programme at KVK Tamenglong (Manipur)

7.11 Jal Shakti Abhiyan (JSA)

Jal Shakti Ministry has launched Jal Shakti Abhiyan (JSA) which is a water Conservation Campaign in the country on 1st July, 2020 for creating awareness among all stakeholders including farmers on water conservation and rainwater harvesting for increasing the water use efficiency in various sub-sectors of agriculture including cultivation of field crops, horticultural crops, animal husbandry and other allied and subsidiary occupations.

During the year 2022, the KVKs under ICAR-ATARI, Umiam, organized 82 training programs with 3,783 participants, and 34 Kisan Melas were conducted with 6,376 attendees (Table 7.11.1).

Demonstration on IFS under TSP (KVK West Tripura)

Table 7.11.1: Achievement under Jal Shakti Abhiyan

State	Training	No. of participants	No. of KISAN Mela Conducted	No. of partcipants in Mela
Manipur	16	781	9	1371
Meghalaya	20	959	4	752
Mizoram	15	611	7	1975
Nagaland	18	731	9	1396
Tripura	13	701	5	882
Total	**82**	**3783**	**34**	**6376**

7.12 TSP (Tribal Sub Plan)

Under ATARI Zone VII, there are 27 TSP KVKs, that have been undertaking various technological interventions including trainings, demonstrations, extension activities, production of quality seeds and planting materials, input supply, advisory services, soil testing and SHCs distribution, post-harvest management etc. besides various special programmes for socio-economic development and sustainable livelihood security of tribal farmers since 2014-15. A total of 643 demonstrations/ trainings were conducted benefitting 1978 farmers, 209 women farmer trainings were conducted benefitting 5103

Critical inputs under TSP at Yanthamo village (KVK Wokha)

individual women farmers, 246 trainings for rural youth conducted, benefitting 4724 youths. 1324 numbers of participants were involved in extension activities. About 1110 Quintals of seed, 9.5 Lakh Planting materials, 1.08 Lakh livestock strains, 2.09 lakh fingerlings were produced during the financial year. A total of 5501 samples of soil, water, plant and manure were collected during the year.

7.12 District Agro-Met Unit (DAMU)

Under Zone-VII, the project is being implemented in 7 KVKs namely; Chandel, West Garo Hills, West Khasi Hills, Mokokchung, Mamit, Dhalai and Kiphire and 10 more KVKs under DAMU Phase II (i.e. KVK Thoubal, Churachandpur, East Khasi Hills, Jaintia Hills, Champhai, Lawngtlai, Tuensang, Zunheboto, North Tripura and South Tripura) have been sanctioned in the year 2019-20 for implementation but are yet to be functional.

Achievements under DAMU KVKs for 2022

During the year 2022-23, a total of 26 trainings were conducted under DAMU by the implemented KVKs. A total of 2983 advisories were given hence beneftting 34,482 farmers. The advisories were disseminated through mkisan & Kisan Sarathi portal, All India Radio, emails, Meghdoot Mobile App, Local Daily Newspapers and through social media like Facebook and Whatsapp group.

7.13 Rain Water Harvesting Structure

During 2022, all the KVKs of the Zone conducted several kinds of activities related to rain water harvesting and its management including training, demonstration, production of planting materials and other extension activities like field visits, farmers-scientist's interactions *etc*. for enhancing knowledge and skills of farmers on construction and use of rain water harvesting structures.Concerted efforts were put on awareness generation in rain water harvesting for timely utilization during lean season in fields.

Rain Water Harvesting unit by KVK-Thoubal

Awareness programme on Agro-advisory services at Kiphire

Rain Water Harvesting unit by KVK-West Garo Hills

During the period under report, as many as 73 training programmes and 66 demonstrations were conducted by all the KVKs which could help in production of 55321 numbers of planting materials. During the same period, a total of 1702 farmers visited the KVKs for the said purpose and 264 nos. of visits were made by the KVK scientists to the farmers' fields to guide efficient construction of the structures. (Table 13.1.)

7.14 Mera Gaon Mera Gaurav (MGMG)

An innovative initiative "Mera Gaon Mera Gaurav" has been planned to promote the direct interface of scientists with the farmers to hasten the lab to land process. The objective of this scheme is to provide farmers with required information, knowledge and advisories on regular basis by adopting villages. During 2022, 503 villages were covered under MGMG which benefited SC/ST 9310 and others 772 farmers. Various activities like training, demonstrations, awareness programmes, technology handouts, identifying problems at village levels were conducted and assisted by the KVKs to the farmer and farm women **(Table. 7.14.1)**

Table 7.13.1: Achievement of rain water harvesting structures during 2022

State	No. of Training Programme	No. of Demonstration	No. of Planting Materials Produced	Visit by Farmers	Visit by KVK Staff
Manipur	24	20	50061	203	119
Meghalaya	23	23	260	541	55
Mizoram	3	3	0	3	4
Nagaland	13	13	5000	160	39
Tripura	10	7	-	795	47
Grand Total	73	66	55321	1702	264

Table 7.14.1: Achievements under Mera Gaon Mera Gaurav (MGMG) during 2022

States	Villages (No.)	Participants		Visits (No.)	Participants		Demo (No.)	Participants		Farmers meeting (No.)	Participants	
		SC/ST	Others		SC/ST	Others		SC/ST	Others		SC/ST	Others
Manipur	44	204	510	52	129	429	38	66	102	42	160	333
Meghalaya	107	1812	0	90	1658	0	50	1180	0	43	1371	0
Mizoram	109	1780	12	291	1216	174	187	668	17	100	839	15
Nagaland	190	5036	0	135	1857	0	58	401	0	41	760	0
Tripura	53	478	250	34	295	174	38	215	89	26	433	214
Total	**503**	**9310**	**772**	**602**	**5155**	**777**	**371**	**2530**	**208**	**252**	**3563**	**562**

7.15.Integrated Farming System (IFS)

Integrated farming is a common practice among the people of North Eastern region particularly due to the terrain and because of the fact that most farmers in the region have small to marginal land holding capacity. The cultivation of agricultural and horticultural crops along with the rearing of livestock, mostly poultry and piggery is an age old practice followed by the farmers of the region but it is done in small scale only, for meeting the protein needs of the farming family. Several IFS models have been setup in the KVK farms mostly in agriculture cum horticulture cum livestock cum fisheries-based models and the components of which includes a combination of two or more of either field crops, different horticultural crops (vegetables, fruits, spices, floriculture), piggery, poultry, cattle, goatery, composite fish farming, cage culture of high value fish species and so on.

A total of 41 No. of IFS models were established by KVKs during the year 2022-23. While the No. of IFS at farmer's field during the

year 2022-23 were 248. The total no of Model during the year 2022-23 is 102. The total no of beneficiaries in the year 2022-23 were 263 numbers. The state-wise details of IFS units established by KVKs are given in the Table 7.15.1.

7.16. Soil, Water and Plant Analysis

Along with their mandated activities, the KVKs under Zone-VII during 2022 rendered special assistance to the farmers in terms of laboratory-based analysis of soil, water and plant samples in order to recommend balanced fertilizers in soil, water and plant health improvement. During the period, the KVKs analysed a total of 14756 samples comprising of soil samples (12889), water samples (1310) and plant samples (557). In the process, a total of 707 villages had been covered and as many as 18625 farmers were benefitted. The state-wise details of Soil, Water and Plant samples analysis are given in table 7.16.1 and table 7.16.2.

Table 7.15.1: State-wise IFS Models established during 2022

State	No. of IFS at KVK Campus	No. of IFS at Farmer' Field	No. of Model	No. of beneficiaries
Manipur	7	39	17	36
Meghalaya	4	40	27	40
Mizoram	8	23	11	33
Nagaland	11	28	32	36
Tripura	11	118	15	118
TOTAL	41	248	102	263

Table 7.16.1: State wise soil, water and plant samples analysis carried out by KVKs during 2022

State	Samples tested/ Analysed	Nos.	Farmer beneficiaries	Village covered
Manipur	Soil Sample	1500	2715	115
	Water Sample	485	433	63
	Plant Sample	18	14	8
Meghalaya	Soil Sample	354	693	51
	Water Sample	135	135	21
	Plant Sample	0	0	0
Mizoram	Soil Sample	1834	3138	61
	Water Sample	130	115	14
	Plant Sample	0	0	0
Nagaland	Soil Sample	903	2044	55
	Water Sample	14	8	0
	Plant Sample	0	0	0
Tripura	Soil Sample	8298	8298	212
	Water Sample	546	535	52
	Plant Sample	539	0	0
Total	Soil Sample	12889	16888	494
	Water Sample	1310	1226	150
	Plant Sample	557	14	8

Table 7.16.2: Status of soil, water and plant samples analyzed by the KVKs

Status of soil, water and plant samples analyzed by the KVKs of ATARI-Zone VII				
Sl. No	**Samples Tested/Analysed**	**No**	**Farmer Beneficiary**	**Village covered**
1	Soil Sample	12889	16888	494
2	Water Sample	1310	1226	150
3	Plant Sample	557	511	63
Total		**14756**	**18625**	**707**

7.17 Soil Health Cards (SHCs)

Under the scheme, the government plans to issue soil health cards to farmers which will carry crop wise recommendations of nutrients and fertilizers required for the individual farms to help farmers to improve productivity through judicious use of inputs. KVKs in the zone tested soil samples in various soil testing labs including Mridaparikshak and analysed the strength and weaknesses (micro-nutrients deficiency) of the soil and suggested measures to deal with it. The results and suggestion are displayed in the Soil Health Cards (SHCs). As many as 13762 numbers of Soil Health Cards (SHCs) were distributed to 16888 farmers on different occasions and farmers' programmes organised by KVKs in the zone **(Table 7.17.1).**

7.18. Kisan Mobile Advisory Services rendered by KVKs

During 2022, KVKs rendered Kisan Mobile Advisory Services in connection with transfer of technologies by providing information, advices, solutions and suggestions to various problems related to agriculture and allied activities as well as collection of feedback from the farmers for further assessment and refinement for generating location specific technologies. It is seen from Table 39. that as many as 43533 nos. of messages had been sent benefitting 296452no. of farmers in remote districts of the zone. The messages included crops (15782), livestock (8061), weather (7139) marketing (1688), awareness generation (5864) and other enterprises (4999) during 2022 **(Table 18.1).**

Table 7.17.1: State-wise details of Soil Health Cards (SHCs) distributed to the farmers during 2022

Sl. No	State	No. of SHCs Distributed	No. of Farmers' Benefitted
1	Manipur	2913	2715
2	Meghalaya	310	693
3	Mizoram	2462	3138
4	Nagaland	1949	2044
5	Tripura	6128	8298
Total		**13762**	**16888**

Table 18.1: Kisan Mobile Advisory Services (KMAS) rendered by KVKs during 2022

Mobile Advisory Services rendered by KVK during 2022														
Message type	Crop		Livestock		Weather		Marketing		Awareness		Other Ent.		Total	
	Message	Beneficiary	Message	Beneficiary	Message	Beneficiary	Message	Beneficiary	Message	Beneficiary	Message	Beneficiary	Message	Beneficiary
Text only	6212	50375	2992	45666	5389	57606	869	9501	1925	55914	2028	33049	19415	252111
Voice only	5541	9978	2465	7845	423	3797	444	649	1635	3977	1775	3484	12283	29730
Voice and Text both	4029	5013	2604	4130	1327	954	375	708	2304	2261	1196	1545	11835	14611
Total	**15782**	**65366**	**8061**	**57641**	**7139**	**62357**	**1688**	**10858**	**5864**	**62152**	**4999**	**38078**	**43533**	**296452**

Scientific Advisory Committee (SAC) Meetings

In the year 2022, the KVKs in the zone conducted a total of 42 SAC (Scientific Advisory Committee) meetings (Fig 6). These meetings served as a platform for the committee members to conduct a comprehensive review of the activities undertaken by the KVKs during the reporting period. Additionally, they discussed and finalized action plans for the upcoming year, specifically tailored to the needs of each district.

These meetings were attended by members representing various line departments, input agencies, mass media, farmer and farm women representatives, and financial institutions from the respective districts. Their participation in these meetings was instrumental in providing valuable insights and suggestions for the continued improvement and effective functioning of the KVKs in their respective districts.

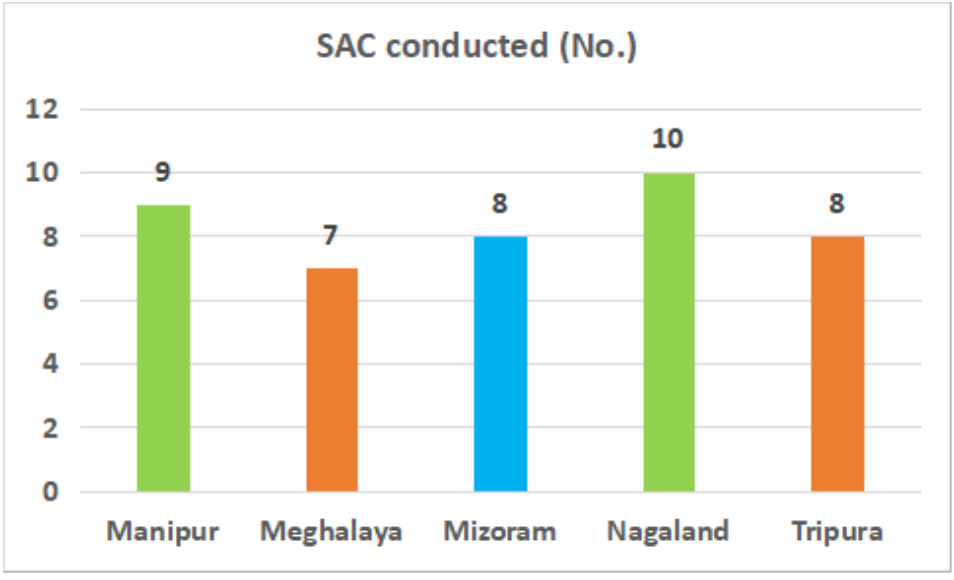

Fig 6: Scientific Advisory Committee (SAC) meetings conducted by KVKs of ATARI, Umiam during 2022

8 Agricultural Technology Information Centre (ATIC) and Technological Backstopping by DEEs

The Agricultural Technology Information Centre provides information on agriculture technologies in addition to providing other inputs like seeds, plant materials, etc. including advisory services through single window system. The ATIC is intended to providing formal management mechanism between the scientists and technology users

The ATIC at ICAR Research Complex for NEH Region, Barapani was sanctioned in 1999 by Indian Council of Agricultural Research. The rationale for establishment of ATIC were-

- To provide diagnostic services for soil and water testing, plant and livestock health
- To supply research products such as seeds and other planting materials, poultry strains, livestock breeds, fish seed, processed products etc. emerging from the institution for testing and adaptation by various clientele
- Providing information through published literature and communication materials as well as audio-visual aids
- Providing an opportunity to the institution/ SAU to generate some resource through the sale of their technologies.

Salient Achievements of ATIC, ICAR Research Complex for NEH Region, Umiam during 2022

- A total of 21 farmers visited the ATIC for technology information related to the production and management of various crops and livestock enterprises.
- A total of 45 copies of books and technical bulletins and 106 folders were sold which could generate revenue of Rs.11,810

Technology Backstopping by DEE

The responsibility of technology backstopping, capacity building, monitoring and review of activities of KVKs is vested with directorate of extension of state agricultural universities of the zone and also with ATARI. The Directorate of Extension Education and their officials coordinate and monitor the mandated activities of all the KVKs under their juridiction through Scientific Advisory Committee meetings, workshops, review meetings, field visits and organize HRD for KVK staff on frontier areas of technologies. Further they also provide technological products like improved seeds, planting materials, livestock, poultry breeds and fingerlings to various KVKs as per their farmer's requirements. Directorate of Extension Education of CAU Imphal and their officials are participated in 10 Scientific Advisory Committee Mettings. Similarly, they have attented 10 field days, 5 workshops, 10 technological weeks, 5 training programmes, 22 On Farm Trails and 30 Frontline Demonstrations organized by the KVKs of ATARI Zone VII. The detailed activities conducted by DEE is presented in table 8.1.

Table 8.1: Activities by Directorates of Extension Education

Sl No	Particulars	DEE
1	No of Visits by DEE to KVKs	12
2	No of visits of other scientists to KVKs	12
3	No of Review meetings held	09
4	Any other monitoring and review meeting held	10
5	HRD Programme conducted for knowledge empowerment and technology backstopping to the KVKs a) No of programme b) No of participants	07 185
6	Other Extension Activities conducted for knowledge empowerment and technology backstopping to the KVKs (SMS) a) No of programme b) No of participants	- -
7	Technology inventory developed(No)	-
8	Other publications, bulletins, CDs etc. brought out (No)	-
9	Extension bulletin (in various topics)	02
10	CD materials	02
11	Technical bulletins	02
12	Technology inventory	-
13	Leaflets	-
14	News letters	-
15	Farm magazine	03
16	Kishan diary	29
17	Books (including proceedings of workshops)	-
18	Training Manuals	-
19	Calendar	01
20	CAU Calendar	01
21	Table Calendar	01

9 Publications

Technical/ Extension Bulletin

A.K.Singha, Amrutha, T (2022). Climate Smart Practices and Technologies in NICRA Annual Report 2020-21. © 2022, ICAR- Agricultural Technology Application Research Institute, Umiam, 70.

Rajumoni Bordoloi, A.K. Singha, Amrutha T, Mesaya Rangsa Marak, Sarah Wahlang, Fenestella Dkhar, (2022). Success stories under the project Attracting and Retaining Youth in Agriculture (ARYA). ICAR-ATARI, Umiam, Meghalaya, 64.

Research Paper

Biam K P, Singh N U, Gowda C H R, Tripathi A K, Paul P, Amrutha T & Dkhar H (2022) Pulses Production In North East India: Trend And Decomposition Analysis. Indian Journal Of Hill Farming. Special Issue 35: 135-141 DOI: 10.56678/iahf-spl2022.16

Book chapters /technical Bulletins/ Manuals

Gowda C.H.R., Singh N.U., Paul P., Biam K.P., Devi M.B., Yumnam A., Roy A., Amrutha T. & Mishra V.K. 2022. Lakadong Turmeric-Export Competitiveness of a Golden Spice. Extension Bulletin PME publication no. ICARNEH-ML-EB-2022-82. ICAR Research Complex for NEH Region, Umiam – 793 103, Meghalaya, India

Amrutha T, Chikkathimme Gowda H R, A.K. Singha, Rajumoni Bordoloi, Indigenous and Traditional Foods of NEH Region: An Unexplored Arena for Agri-Business. kalyani Publisher, New Delhi, India, 6.

Gururaj Makarabbi, Ana Raj, Javneet Saxena, Chikkathimme Gowda H R, Amrutha T, (2022). Policy Strategies to Develop Agri-Business in Buffalo Meat Export1 in India. Kalyani Publisher, 8.

Publications by the KVKs

Table 9.1: Publications by the KVKs of ATARI Zone VII during 2022

Sl. No	No. of KVKs	Category of Publication	Numbers
1	5	Abstract	8
2	3	Book Chapters	4
3	5	Books Published	6
4	1	Booklet	2
5	6	CD/DVD/YT Videos	13
6	4	Conferences	6
7	9	Extension Folder	40
8	0	Lead Paper	0
9	13	Leaflets/Pamphlet/extension literature	94

10	18	Newspaper Coverage	111
11	9	Popular article	78
12	1	proceedings	2
13	9	Research paper	14
14	2	Seminar Paper	3
15	3	Technical Bulletin	10
16	8	Training Manual	68
17	1	Others	4
		Grand Total	**463**

10 Participation in Meetings/ Workshops/ Conference

- Attended meeting / presentation of new project proposals on strategic area "Social Sciences and Policy in Agriculture" under NASF before the Expert Committee on 6th April, 2022 through online mode.
- Attended as Acting Director physically Director's Conference at New Delhi on 13-4-2022.
- Attended Kisan Mela under Azadika Amrit Mohatsav at KVK Ribhoi on 26-4-2022.
- Attended meeting DFI success stories at College of Agril Engineering & Post Harvest Technology, CAU, Ranipool, Sikkim on 7-9 May, 2022 under the Chairmanship of Dr. A.K. Singh, DDG(AE).
- Attended online programme on Kisan Bhagidari, Prathmikta Hamari' campaign from 25th to 30th April, 2022 under 'Azadi Ka Amrit Mahotsav' organised by ICAR-VPKAS, Almora and its KVKs on 28.04.2022'.
- Attended National workshop on DFI under Chairmanship of DDG(AE) at College of AE &PHT, Ranipool, Sikkim during 7-9 May, 2022.
- Attended virtual meeting on National Conference under Chairmanship of DDG(AE), ICAR on 14-5-2022.
- Attended virtual meeting on Kisan Sarathi on 17-5-2022 to review its progress of registration of KVKs, experts and farmers.
- Attended brainstorming session on Pigeon pea organised DAC, Ministry of Agriculture & FW, Govt. of India on 18-5-2022.
- Attended one-day workshop on "Working out Strategy for Implementing Skill Based Training Program under STRY in NER during 2022-23" organised by MANAGE, Hyderabad on 26-5-2022 through online mode.
- Attended Annual Zonal Workshop of KVKs under Zone-V, Kolkata on 27-5-2022 in online mode.
- Attended National Conference of KVKs at YSPUH&F, Solan on 1-2 June, 2022.
- Attended virtual meeting on NEH program of IARI organised by IARI, New Delhi on 14-6-2022.
- Attended review meeting on progress of DFI success stories under Chairmanship of DDG on 8th June, 2022.
- Attended meeting on TSP project on sampling design and data collection on 9th June, 2022.
- Attended review meeting on progress of data collection on project on Aspirational project on 9th June, 2022.
- Organised and attended AZW of KVKs-2022 (Zone-VI & VII) at CAU, Imphal on 30th June-2nd July, 2022.
- Attended Foundation Stone Laying Ceremony of Administrative building of KVK Dimapur on 26-6-2022 by Hon'ble Union Minister of Agriculture & FW, GOI Shri Narendra Singh Tomar.
- Attended online review workshop of NICRA KVKs in Manipur on 9-7-2022.
- Attended National Level Workshop on Convergence Activities of Central Silk Board (CSB) and ICAR-KVKs on 12-13 the July, 2022 at CSB, Bangalore.
- Attended Foundation Stone Laying Ceremony for Administrative building and inauguration of Farmers Training Hostel of KVK West Garo Hills on 19-7-2022.
- Attended ICAR-APAARI Knowledge Management Workshop on 23rd July, 2022held at NASC, New Delhi through online mode under the Chairmanship of DG, ICAR.

- Attended as an External Member of Selection committee meeting for recruitment of 2 JRFs under DBT funded project "Establishment of model mushroom bio-resource complex for bio-entrepreneurship development of rural youth in aspirational district of Meghalaya" held on 23-7-2022 at CPGS, Barapani.
- Attended as Chairman of Student's Advisory Committee for Srikant Reddy, MSc(Agri), Agril. Extension, CPGS, CAU, Barapani on 30-7-2022.
- Attended online meeting on Operational issues, banking system and other related issues of DAMU project on 5-8-2022.
- Attended online lecture series on- "Science for the Society: Agricultural Imperatives" by- Dr. Trilochan Mohapatra, Ex-DG, ICAR on 12-8-2022.
- Attended online meeting on Drone technology application by KVKs under Chairmanship of Dr. A.K. Singh, DDG(AE) on 12-8-2022.
- Attended inaugural programme of MDP programme for Newly recruited Heads of KVKs (Champhai, Saiha and Sepahijala) under Zone-VII, Umiam on 16-8-2022.
- Attended Azadi ka Amrit Mohatsav 75th lecture by Shri Narendra Singh Tomar, Hon'ble Union Minister of Agriculture, Govt. of India on 16th August, 2022.
- Attended as Chief Guest of 3-day skill development training programme on "Skill Development Programme on Biomass Production of Bio-inputs for Officers, FPO members, Progressive Farmers" during 17-19 August, 2022 at CPGS, CAU, Barapani.
- Attended Divisional meeting online on 25-8-2022 under the Chairmanship of DDG(AE), ICAR.
- Attended Brainstorming session on Farm Mechanisation in NER on 9-9-2022 at ICAR RC for NEH region, Manipur Centre, Imphal in hybrid mode.
- Attended Brainstorming Session on Scaling up Innovative Agricultural Extension Models under the Convenership of Dr. Ashok K. Singh, DDG (Extn.), ICAR on September 12, 2022 online.
- Attended online meeting to review progress of activities conducted by FPO KVKs under Zone-VII on 15-9-2022 along with RD, RO, NCDC, Guwahati.
- Attended webinar on technical Workshop on Development of a Food Practice Compendium on Millet mainstreaming and a scale-up strategy Hosted by NITI Aayog on 16-9-2022.
- Attended e-meeting on review of RE- 22022-23, BE-2023-24, works under Capita and utilization status under the Chairmanship of DDG(AE) on 16-9-2022.
- Attended as Chief Guest in Poshan Abhiyan programme organised by KVK Ribhoi on 17-9-2022.
- Attended online meeting on Special Campaign 2.0 for disposal of Pending Matters on 26-9-2022 under the Chairmanship of DG, ICAR.
- Attended inaugural programme of inauguration of administrative building of KVK West Khasi Hills on 18-10-2022 along with the Chief guest of Hon'ble CM of Meghalaya.
- Attended lecture on "Revitalizing ICAR: Aspirations and Action Plan" on November 11, 2022 at 3:00 p.m. presented by DG, ICAR online.
- Attended lecture on Presentation by Dr. T.R. Sharma, DDG (CS) on activities and aspirations of ICAR on 14th November, 2022 at 10 .M. online.
- Attended lecture on Presentation by DDG (Agril Engg.) on activities and aspirations of ICAR on 17th November, 2022 at 4.30 A .M. online
- Attended inaugural programme of International Symposium on "Zoonotic

and Transboundary Diseases: Breaking the Chain through Multidisciplinary Approach" held at ICAR RC for NEH Region, Barapani on 1st December, 2022.

- Attended review meeting of Agri-drone technology under the chairmanship of Dr. Abhilaksh Likhi, Additional Secretary, Department of Agriculture & Farmers Welfare on 1st December, 2022 online.
- Attended lecture online by DDG(NRM) Dr. S.K. Chaudhury on Activities, Aspiration and Action Plan on 2-12-2022.
- Attended lecture online by DDG(Hort) Dr. A.K. Singh on Activities, Aspiration and Action Plan on 5-12-2022.
- Attended World Soil Day, 2022 programme organised by KVK Ribhoi on 5th December, 2022.
- Attended online opening ceremony of International Year of Millets-2023 held at FAO headquarters in Rome, Italy, on Tuesday, 06 December 2022.
- Attended SAC of KVK Saiha on 13-12-2022 through online mode.
- Attended SAC of KVK Lawngtlai on 13-12-2022 through online mode.
- Attended SAC of KVK Lunglei on 13-12-2022 through online mode.
- Attended inaugural ceremony of administrative building of KVK North Tripura on 15-12-2022 at Panisagar in presence of Hon'ble C.M. of Tripura.
- Attended SAC meeting of KVK Jaintia Hills on 16-12-2022 at Wahijar village.
- Attended 8th Extension Education Council of CAU, Imphal at CPGS, Barapani during 17-19 December, 2022.
- Attended SAC meeting of KVK Phek on 20-12-2022 through online mode.
- Attended International Conference on Reimagining Rainfed Agro-ecosystems: Challenges and Opportunities on 23-12-2022 through online mode organised by CRIDA, Hyderabad.
- Attended SAC meeting of KVK Khowai on 28-12-2022 through online mode.
- Attended lecture addressed by Dr. Rajib Basihl, DG, ICMR on 28-12-2022.
- Attended SAC meeting of KVK Thoubal on 29-12-2022 through online mode.
- Attended SAC meeting of KVK Sepahijala on 31-12-2022 through online mode.
- NARI Network Project meeting on 20/04/22
- DFI Review Workshop held at CAPHT Gangtok under CAU Imphal from 7-9th May 2022
- National Conference of KVKs held at YS Parmar University of Horticulture and Forestry Solan Himachal Pradesh (1-2 June 2022) .Coordinated KVKs under Zone VII for participating in events
- Launching ceremony of Mapping and Exchange of the Good Practices (MEGP) for Millets Mainstreaming in Asia & Africa in 122 held on 19/07/22 (online)
- Lecture on Azadi Ka Amrut Mahotsav Talk Series given by former DG ICAR Dr T Msahapatra on 12/08/22.
- National Workshop on Natural Farming held on 3rd Dec 22 at RVSKV University Gwalior.
- Orientaion cum Training on Natural Farming Practices held at Gurukul Kurukshetra ,5-6 Dec 2022.
- Attended Meeting on 05/01/23 in the Division of Agril.Extension ICAR New Delhi for various discisiion regarding Projects and Finacial matters of all ATARIs under the Chairmanship of DDG(AE)
- Attended National Conference on Promotion of KISAN Drones held at ICAR-New Delhi .
- Attended National workshop on Capacity Building Programme at CRIDA at ICAR-CRIDA Hyderabad
- Attended workshop on working out Strategy for Implementing Skill Based Training Programs under STRY in NER during 2022-23 under the Chairmanship of Director General, MANAGE through online mode.

11 Awards and recognitions received by KVKs and Farmers during 2022

KVKs and their dedicated staff members have received numerous awards and recognitions for their remarkable contributions in various fields, including agriculture, research, extension, and innovation. These honours span a wide range of categories and are conferred by prestigious professional societies, government bodies, and organizations, acknowledging their outstanding efforts and achievements in their respective domains. Their dedication and excellence continue to make a significant impact in the agricultural and rural development sectors. These achievements and awards are presented in Table 11.1.

Table 11.1: Awards and recognitions received by KVKs of ICAR-ATARI, Zone VII

Sl. No.	Name of Award/ recognition/ fellowship	Professional Society/ Govt./ ICAR/ Any other agency (pl. specify)	Value of award (Rs. In lakh)	Salient Contribution/ achievement
KVK Bishnupur, Manipur				
1	Best Extension Scientist Award, Dr. Sakhen Sorokhaibam (Agronomy), KVK, Bishnupur District, Manipur	Society of KrishiVigyan	Certificate	Outstanding contribution in the field of Agronomy
2	Woman Scientist Award	Research Education Solutions, Noida, UP.,Regd. under MSME, Govt. of India	Certificate	Outstanding contribution in the field of Horticultural extension activities
3	Best State Level Farmer Award	SAMETI, Govt. of Manipur	0.5	Outstanding contribution in the field of Horticulture
KVK Imphal East, Manipur				
4	Certificate of Excellence in Peer Reviewing in recognition of an outstanding contribution to the quality of the Journal (Dr. M.A. Salam, SMS (Fisheries)	International Knowledge Press, Journal of Global Agriculture and Ecology during 2022	-	
KVK Imphal West, Manipur				
5	Best Farmer Producer Organization Promoting Insititute (POPI)	NABARD	-	Promotion of FPOs in Manipur

6	Best Performer FPO Award of Manipur	State Level Credit Seminar organized by NABARD	-	Significantly contributed amongst the FPOs of Manipur
7	Best KVK Professional Award	The Indian Society for the Promotion of Agricultural Sciences	-	Performing in Extension & Research
8	Farmer Innovative award	North East KrishiKumbha 2023	-	Farmers Innovation in Fishery
9	2nd Best Stall award	State Agri Fair , Dept. of Agriculture	-	Technology Showcasing
KVK Senapati, Manipur				
10	Certificate of Appreciation (At District Skill mela)	DC, Senapati	-	Showcasing of agricultural technologies for income generation
11	Certificate of Appreciation (At District Skill mela	DC, Kangpokpi	-	Showcasing of agricultural technologies for income generation
KVK Thoubal, Manipur				
12	1st Best StallAward	SAMETI, Department of Agriculture Manipur	-	Demonstrated Improved Technology for transforming Agriculture
KVK Kohima, Manipur				
13	Best article award	Professional society	-	FSSAI Registration for Start- up Small Scale Agri Entrepreneurs
KVK Wokha, Manipur				
14	Innovative farmer North East Krishi Kumbha	ICAR RC NEH, Umiam	-	Round the year organic tomato cultivation under protected cultivation
KVK South Garo Hills, Meghalaya				
15	Dr. Tanya R Marak, SMS (Plant Protection) received Best poster presentation on the topic "ITK for management of Gundhi bug in Rice"& Young Scientist Award	Society for Conservation of Natural Resource (SCNR)	-	-
16	Shri Rike Chelchak A. Sangma, SMS (Agronomy) received Best extension personnel award	Society for Conservation of Natural Resource (SCNR)	-	
17	Dr. Athokpam Haribhushan, Senior Scientist & Head received Subhas Chandra Bose Excellence Award 2022	World Achiever Foundation, Kolkata	-	--

KVK East Garo Hills, Meghalaya				
18	Outstanding Achievement Award in June 2022 to Head KVK	Astha Foundation	-	Successful Implementation of KVK activities
19	Best Extension Scientist Award in Oct. 2022 to Head KVK	Society of KrishiVigyan (SKV)	-	Supervision and monitoring of KVK works
20	Excellence in Extension Scientist Award -2022 to SMS-Fisheries of KVK	By VigyanVarta An International E-Magazine for Science Enthusiasts (E-ISSN: 2582-9467) in Collaboration with Omm Shanti Narayan Foundation Trust-	-	For best fisheries extension activities carried out in KVK
21	Excellence in Extension Award to SMS-Agronomy of KVK	Society of Scientific Development in Agriculture & Technology, UP	-	Excellence in Extension in the field of Agronomy
22	Young Scientist Award SMS-Horticulture of KVK	Society of Scientific Development in Agriculture & Technology, UP	-	Excellence in Extension in the field of Agronomy
23	Young Scientist Award SMS-Agronomy of KVK	Society for conservation of natural resources, West Bengal	-	For the implementation of KVK activities
KVK Aizawl, Mizoram				
24	Startup Capital Grant 2022	Micro start-up Competition 2022, Govt. of Mizoram	7,50,000.00/-	Briquette Making Machine (Startup capital Grand)
25	Best Farmers Award of Aizawl District Horticulture Fair, 2022	Govt. of Mizoram	50,000.00/-	Best Horticulture Farmer.
KVK Champai, Mizoram				
26	Cleanliness Week Competition	Khawzawl District Sanitation Task Force	3,000/-	3rd Prize
KVK Kolasib, Mizoram				
27	2022 Best Extension Professional Award to Senior Scientist and Head- Dr. Michelle C. Lallawmkimi, KVK Kolasib	Society for Biotic and Environmental Research	-	Disseminating agricultural technologies among the farmers
KVK Lunglei, Mizoram				
28	Second prize on Office cleanliness competition, Hnahthial District	UD & PA, Department, Hnahthial District	Certificate	Promotion of cleanliness, hygiene and sanitation through awareness campaign among school children and farmers and social work in different public places

29	Single use plastic free office with effect from 19th October, 2022	District Level Task Force on elimination of single use plastic, Hnahthial District	Certificate	Promotion of single use plastic free in office and public places
KVK Dhalai, Mizoram				
30	International Fish Festival & Conference on "RASHI-2022"	CAU, Lembucherra, Tripura	0.03	Acquired 2nd Position in Poster Presentation
KVK Khowai, Tripura				
31	Felicitation "North East Converses" Outstanding contribution to development of Tripura by its sustained guidance to farmers	Income tax Department, Aayakar Bhawan, (Ministry of Finance, Govt of India) Mantribari Road Netaji Chowmuhani, Agartala, Tripura- 799 001	-	Overall performance
32	Certificate of Appreciation for successfully pinning a flag to mark AKAM	Ministry of Culture, Govt of India	-	-
33	Pratigya Praman Patra (Pledge Certificate) corruption free India for a developed nation	Central Vigilance Commission, Govt of India	-	-
34	Adarsh Vidya Saraswati Rashtriya Puraskar (National Award of Excellence 2022)	Glacier Journal Research Foundation- Global Management Council, Ahmedabad (Gujrat)	-	Dr. M.S. Sachan, Sr. Scientist & Head
35	Best Oral Presentation Award	Society for Biotic & Environmental Research (SBER), Tripura during 2nd Biotic Science Congress, 2022 and Int. Conf. on Recent Advances in Agril, Biological and Applied Sciences Research	-	Dr. M.S. Sachan, Sr. Scientist & Head
36	Best Oral Presentation Award		-	Mr. A. Chakraborty, SMS-PP
37	Young Scientist Award- 2022		-	Mr. Rajib Das, SMS- Agril. Extension
38	Best Extension Scientist Award	Society of Krishi Vigyan and KVK Ujjain under Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya, Gwalier M.P. during the 3rd National Conference on natural, organic and chemical farming in Indian Agriculture- Present Scenario & Way Forward on 17th to 19th October, 2022	-	Dr. M.S. Sachan, Sr. Scientist & Head
39	Young Scientist Award- 2022		-	Mr. Dipankar Dey, SMS-Soil Science

40	Poster Presentation Award- A Success Story	National Workshop on Identification of Insects-Pests, Invasion of crops & their Bio- Control in NE Region, organized by CAU & NBAIR & CoF, Lembuchera	-	Mr. A. Chakraborty, SMS-PP
41	Distinguished Scientist Award	ASTHA Foundation and Society for Scientific Development in Agriculture & Technology at Birsa Agricultural University, Kanke, Ranchi: Jharkhand during the VIIth International Conference in Hybrid Mode on " Global Research Initiatives for Sustainable Agriculture and Allied Sciences" (GRISAS-2022) on 21st to 23rd November, 2022	-	Dr. M.S. Sachan, SS & Head
42	Best Oral Paper Presentation Award		-	Dr. M.S. Sachan, SS & Head
43	Young Scientist Award		-	Mr. SC Biswas, SMS-Home Sci.
44	Excellence in Extension Award		-	Mr. Dipankar Dey, SMS-Soil Science
45	Thesis Award		-	Dr. Subhra Shil, SMS-Horticulture
46	Fellow Award		-	Dr. M.S. Sachan, SS & Head
KVK North Tripura, Tripura				
47	Kissan Shiramoni Samman	Bioscon 2022		
KVK Sepahijala, Tripura				
48	Technology showcasing	International Conference on RASHI, orgranized by COF, Lembucherra, and COFLAA	1st Prize	
49	Best oral presentation in International	International	Best oral presentation in International	
50	seminar	Seminar on Rural technology, innovation and IPR: The way ahead, Organized by University of science and technology, Meghalaya.	seminar	
KVK North Tripura, Tripura				
51	KVK South Tripura received "1st Best showcasing technology" in Fish Festival during the International conference, RASHI 2022.	College of Fisheries (CAU-I), Lembucherra	-	-
52	Best oral paper presentation award during the International conference, RASHI 2022	College of Fisheries (CAU-I), Lembucherra		

Awards and recognitions received by farmers of KVKs of ICAR-ATARI-Zone VII

In Tripura's Dhalai district, an impressive achievement was made with a poster presentation titled "A Success Story on IPM in Brinjal." This presentation earned the team the 2nd position and was hosted by ICAR-NBAIR-Bengaluru and Directorate of Extension Education, CAU, Manipur, in association with KVK-Sepahijala & MTTC-VTC, COF, Tripura. Moving to South Tripura, Sukanta Mallik clinched the 1st position in the "Fish Festival" category for indigenous ornamental fish during the International Conference RASHI 2022 held at the College of Fisheries (CAU-I) in Lembucherra. In the same event, Deepak Rudra Pal and Sujan Debnath jointly secured the 3rd position for their display in the "Indigenous Ornamental Fish Show". Nimal Debnath demonstrated exceptional skills in net weaving, claiming the 1st position in this category during the Fish Festival. Rekha Sen, Swadesh Das, and Dilip Debnath also left their mark at the International Conference RASHI 2022. Rekha Sen achieved the 3rd position in net weaving. Swadesh Das, too, secured the 3rd position in net weaving, receiving the same prize. Meanwhile, Dilip Debnath excelled in the "Fishing Gear" category, earning the 2nd position. These accomplishments reflect the dedication and expertise of individuals in Tripura, showcasing their prowess in various aspects of agriculture and fisheries, contributing to the growth and recognition of their region.

Table 11.2. Awards and recognitions received by farmers of KVKs of ICAR-ATARI-Zone VII

Sl. No	Name of Award/ recognition/ fellowship	Professional Society/ Govt./ ICAR/ Any other agency (pl. specify)	Value of award (Rs. In Rupees)	Salient Contribution/ achievement
KVK Dhalai, Tripura				
1	Poster Presentation entitle "A Success Story on IPM in Brinjal"	ICAR-NBAIR-Bangaluru and Directorate of Extension Education, CAU, Manipur in association with KVK-Sepahijala& MTTC-VTC,COF,Tripura	3000/-	Acquired 2nd Position in Poster Presentation
2	Sukanta Mallik 1st (For indigenous ornamental fish Show) in "Fish Festival" during International Conference, RASHI 2022 at College of Fisheries (CAU-I)	College of Fisheries (CAU-I), Lembucherra	3000/-	Nil
3	Deepak Rudra Pal and Sujan Debnath jointly 3rd (For Indigenous Ornamental Fish Show) in "Fish Festival" during International Conference, RASHI 2022 at College of Fisheries (CAU-I)	College of Fisheries (CAU-I), Lembucherra	1000/-	Nil

KVK South Tripura, Tripura				
4	NimalDebnath 1st (For Net weaving) in "Fish Festival" during International Conference, RASHI 2022 at College of Fisheries (CAU-I)	College of Fisheries (CAU-I), Lembucherra	3000/-	Nil
5	Rekha Sen Jointly 3rd (For Net Weaving) in "Fish Festival" during International Conference, RASHI 2022 at College of Fisheries (CAU-I)	College of Fisheries (CAU-I), Lembucherra	750/-	Nil
6	Swadesh Das, Jointly 3rd (For Net Weaving) in "Fish Festival" during International Conference, RASHI 2022 at College of Fisheries (CAU-I)	College of Fisheries (CAU-I), Lembucherra	750/-	Nil
7	DilipDebnath, Jointly 2nd (For Fishing Gear) in "Fish Festival" during International Conference, RASHI 2022 at College of Fisheries (CAU-I)	College of Fisheries (CAU-I), Lembucherra	1000/-	Nil

12 Success Stories

STATE: MANIPUR

1. Integrated Farming System: *An assured income system*

Introduction

"Sri Kshetrimayum Jiten Singh, a marginal farmer with 0.25 hectares of land, cultivated crops such as maize, cabbage, and brinjal. Despite his relentless efforts, he struggled to make substantial profits due to low yields resulting from a lack of knowledge and scientific techniques. His disappointment extended to his animal enterprises as well. Despite his determination, the results were unsatisfactory both in terms of yield and profit. Previously, he relied on traditional farming methods to grow vegetables. However, his fortunes changed when he came into contact with Krishi Vigyan Kendra Thoubal. Motivated by experts, he transitioned to scientific agricultural practices, seeking to improve his agricultural output and financial prospects."

KVK Intervention

Krishi Vigyan Kendra (KVK) experts played a pivotal role in transforming Shri Jiten's agricultural practices. They convinced him to adopt improved cultivation techniques, emphasizing timely sowing, balanced fertilizer usage, and the proper application of plant protection chemicals. Additionally, they provided guidance on scientific livestock rearing methods. Embracing these recommendations, Shri Jiten now employs scientific approaches in both crop cultivation and livestock management. Despite no changes in the cultivable area, the adoption of these advanced agronomic practices has significantly increased his crop yields and overall returns compared to his previous methods.

Furthermore, He actively participated in numerous training programs organized by KVK. The KVK scientists extended their support by conducting off-campus training sessions, On Farm Trials, and Front Line Demonstrations in his village. During these sessions, He received extensive training in the technological management of pests and diseases affecting various crops. Additionally, he gained valuable insights into the scientific management of livestock, including piggery, through specialized training programs held at prestigious institutions such as ICAR, Lamphel, and CAU, Imphal.

KEY result

Due to the intervention by KVK scientists, Shri Kshetrimayum Jiten observed a significant increase in net returns from his farming enterprises, earning a total profit of Rs 1, 52,900. With the guidance of KVK scientists, he adopted improved cultivation practices for pumpkin and bottle gourd, resulting in net profits of Rs 9,600 and Rs 12,500, respectively, with benefit-cost ratios of 2.78 and 3.27. Additionally, the implementation of advanced cultivation technology for King Chilli, coupled with effective pest and disease management, substantially reduced diseases such as leaf curl and anthracnose. This led to increased yields and a net profit of Rs 28,000, boasting an impressive benefit-cost ratio of 6.00.

Furthermore, the introduction of novel techniques in pig management, specifically the scientific management of piggery, transformed Shri Jiten's pig farming unit. This innovative approach resulted in a gross income of Rs. 1, 27,600 and a net income of Rs. 1, 02,800, with a remarkable benefit-cost ratio of 5.15. The combined efforts across these enterprises led to a total profit of Rs. 1, 52,900, showcasing the success of the integrated farming model facilitated by KVK scientists.

Sl. no	Enterprise/Crop	Production (q)	Costs of cultivation	Sales of produce	Net profit	B:C
1	Bottle gourd	4.5	5500	18000	12500	3.27
2	Pumpkin	5	5400	15000	9600	2.78
3	King Chilli	0.75	5000	30000	28000	6.00
4	Piggery	3.2 (4 pigs, 6 piglets)	24800	127600	102800	5.15
Total		**13.45**	**37700**	**190600**	**152900**	-

Impact

The successful implementation of the Integrated Farming System (IFS) unit by Shri Jiten has had a positive impact on the farmers in his village. His successful model has inspired other farmers in the village to adopt IFS as a reliable income assured system. Witnessing the prosperity and improved outcomes from his approach, other farmers have been encouraged to explore and implement integrated farming techniques, combining various agricultural activities like crop cultivation, animal husbandry, and agroforestry.

Furthermore, the judicious and efficient use of agricultural inputs within the IFS unit has resulted in significant cost reduction in farming practices. By optimizing the utilization of resources such as fertilizers, pesticides, water, and other inputs, the overall production costs have decreased. This reduction in costs, coupled with the integration of diverse farming components, has led to increased overall returns for the farmers. Essentially, the success of ShriJiten's IFS unit not only serves as an inspiration but also demonstrates the practical benefits of sustainable and integrated farming practices, making a positive impact on agricultural communities in the village.

Fig: King Chilli Field

Fig: Farmer at his successful bottle gourd field.

Fig: A booming Pumpkin field

Fig: Piggery unit, an integral part of IFS

STATE: MEGHALAYA

2. Improved variety of Toria forced tribal farmer to its increase area under CFLD-Oilseed

Introduction

Shri Khasran Sangma from Mukdangra village, traditionally cultivated paddy, local Toria varieties, and vegetables in a small area. Sangma's interest in adopting modern techniques grew after attending training programs and observing the increasing demand and prices of mustard oil. Consequently, he transitioned to cultivating the TS-36 variety of Toria, which marked the beginning of his participation in the CFLD Oilseeds program in 2022.

Intervention

Under the guidance of KVK, Sangma received training and seeds for Toria cultivation. He implemented the demonstrated technologies, such as the broadcasting method of sowing, seed treatment, specific plant spacing, and insect-pest management using Neem oil. Sangma's active involvement led to an expansion of his Toria cultivation area from 0.13 hectares in 2021 to 0.5 hectares in 2022. Despite challenges like high seed prices, costly fertilizers, and limited access to inputs, he persevered, implementing the learned practices with dedication.

Key Result

Sangma's intervention was the remarkable improvement in Toria cultivation. Adopting the improved variety (Variety TS-36) significantly enhanced his yield. The yield from the demonstration plot was 8.85 q/ha, outperforming the local variety, which yielded 6.0 q/ha. Additionally, Sangma's cost of cultivation reduced, amounting to Rs. 20600/-. This reduction, combined with the increase in yield, resulted in substantial economic gains. His gross return from the improved variety was Rs. 55100, leading to a net return of Rs. 34500 with a B: C ratio of 2.67.

Impact

The intervention had a multi-faceted impact. Economically, Sangma's income significantly increased due to higher yields and reduced cultivation costs. Socially, he became a recognized figure in his community, with neighbouring farmers seeking his guidance. Moreover, his proactive efforts to share knowledge by distributing seeds to neighbouring farmers in 2023 showcased the horizontal spread of the technology. Despite challenges, Sangma's success story highlighted the effectiveness of the CFLD Oilseeds program, proving that with the right interventions, dedication, and community involvement, even tribal farmers could adopt and benefit from modern agricultural practices.

STATE: MIZORAM

3. Enhancing Income through Intensive Rearing of quality Pig

Introduction:

Mr. JC. Remsangpuia, a graduate hailing from a farming family, initially pursued a career as a teacher at a private school for two years after graduation. However, his income proved insufficient to meet his family's needs. With a land area of 1.2 hectares, he turned his attention towards pig farming. Initially, he faced challenges as the local pigs he raised for breeding purposes did not show signs of heat even at the age of one year. Additionally, the low litter size of 4-5 piglets per sow, coupled with issues such as disease incidence, poor growth, and unspecified anorexia, hampered his efforts. Seeking assistance, he approached KVK (Krishi Vigyan Kendra) due to his lack of prior knowledge in pig farming. In early 2018, he attended a demonstration and training programme on Pig Farming and Breeding Management under the Attracting and Retaining Youth in Agriculture (ARYA) Project. Impressed by his enthusiasm, he was selected for the project, which provided support for constructing a pig shed, procuring quality piglets, and offering technical guidance. With the project's assistance, he started his own enterprise with two piglets for breeding purposes. By 2022, his pig farm had experienced progressive growth, necessitating a move from Rallangtlang to a larger farm at Lengte, Hnahthial, capable of accommodating 15 sow units.

Intervention of KVK

In this intervention, the following steps were taken to ensure the well-being and optimal growth of the Yorkshire pig breed:

- **Selection of Suitable Breed:** The Yorkshire breed was chosen for its fast growth rate, excellent mothering ability, large litter size, high-quality meat, and resistance to diseases. Quality pigs were obtained from CAU, Selesih, to initiate the breeding program.
- **Proper Housing and Rearing:** A semi-pucca pig shed was constructed on elevated, dry ground using concrete for hygiene and durability. The house had brick skirting and open upper portions to allow free air flow. Separate pens were maintained for gilt, sow, and boar in a backyard intensive system. The flooring was roughly cemented to prevent slipping and allow easy cleaning. Proper drainage and waste disposal pits were incorporated into the design.
- **Feeding System:** The pigs were fed a balanced diet consisting of concentrated feed mixed with locally available tuber crops such as sweet potato, tapioca, and vegetables, along with kitchen waste. This approach aimed to reduce the cost of concentrated feed while ensuring adequate nutrition for growth and overall well-being. Clean drinking water was provided consistently. A specific feeding schedule based on the age of the pigs was followed, ranging from 0.5 kg per pig for 0-2 months old to 4.0-5.0 kg for lactating sows.
- **Health Care Measures:** The pigs were vaccinated against Classical Swine Fever and Foot and Mouth Disease at appropriate ages. Deworming was carried out using Albendazole. Additionally, the pigs received supplements of vitamins and minerals through feed and water. Regular washing of the animals was done to reduce heat stress, especially during the summer. The pigsty was cleaned and disinfected with Phenol regularly to prevent infections. Sick animals were isolated, and if necessary, culled and disposed of properly to prevent disease outbreaks.

Impact

As a result of the intervention, Mr. J.C Remsangpui replaced the local non-descript breed with the superior Yorkshire breed, leading to a significant increase in piglet production. Through proper care and management, each sow was able to furrow twice a year, resulting in a continuous supply of piglets for sale. This success story inspired fellow farmers, friends, and relatives in the village, with more than twenty individuals adopting the new technology.

The adoption of Yorkshire breed and the implementation of intensive rearing practices, concentrated feed mixed with locally available crops, vaccination against diseases, and improved care and management led to substantial improvements in various aspects. The Yorkshire breed had a higher litter size (10-12 piglets), increased birth weight (0.8-1.4 kg), and higher weight at maturity (70-80 kg at 8 months) compared to the local breed. Additionally, the mortality rate decreased from 7% to 3%, and the age at maturity reduced from 8-10 months to 6-8 months.

This intervention not only significantly increased the productivity and profitability of pig farming for Mr. J.C Remsangpui but also served as a successful model for others in the community, leading to the widespread adoption of improved pig-rearing practices and the Yorkshire breed.

Before Intervention			
Initial Cost (Rs)	**Gross Return (Rs)**	**Net Return (Rs)**	**BC ratio**
44200.00	60000.00	15800.00	1.3

After Intervention			
Initial Cost (Rs)	Gross Return (Rs)	Net Return (Rs)	BC ratio
187500.00	640000.00	452500.00	3.4

STATE: NAGALAND

4. Popularization of Carrot variety Pusa Rudhira.

Introduction

Carrots are a popular vegetable crop known for their fast growth and high carotene content, serving as a precursor to vitamin A. They also contain significant amounts of Thiamine and Riboflavin. The flavour of carrots is primarily derived from sugar and volatile terpenoids. In the villages of Kohima District, Nagaland, the favourable year-round climate with an elevation above 1500 meters above sea level provides an ideal environment for growing carrots. Some villagers have been cultivating carrots for the past few years due to their own interest and the high market demand during the off-season. However, farmers face challenges such as poor produce size and low shelf life, leading to difficulties in fetching good prices in the market, even during the offseason."

KVK Intervention

KVK Kohima after considering the scope and potential of Carrot cultivation in Kohima district due to the favourable Agro-climatic condition for offseason production conducted Frontline Demonstration (FLD) by introducing the variety Pusa Rudhira along with their existing variety Kuroda Improved to assess and popularize the improved variety in the District during the year 2022-23. The FLD programmed was carried out in two villages namely Khonoma and Kigwema villages under Kohima district. Ten farmwomen were selected (five each) from the two selected villages. Therefore, for successful production of Carrot in the district, a well-planned strategy which includes soil micro-climate, bed preparation, choice of variety, manuring, seed treatment, marketing and all related technologies were analyzed for ensuring better quality and higher returns to the farmer.

The demonstration was conducted by introduction of new Carrot variety Pusa Rudhira. Training cum Hand-on-demonstration on ploughing of soil to a depth of 30-40 cm was worked to a very fine tilt hand bed preparation by raising bed to 1m wide and 20 cm high for better rooting during sowing of seeds were conducted. The farmers were also trained on the importance of incorporation of bio fertilizers, i.e., *Azospirillum* and *Phosphotika* at 25 kg each/ha at the time of land preparation along with organic matter in the soil for quality production. Application of5g/kg *Trichodermaviride* and 5g/kg *Pseudomonas Fluorescens* was also done during seed treatment to control various fungal and bacterial diseases during offseason production. All the recommended cultural practices were followed along with regular monitoring and data collection at different growth stages and yield parameters were recorded till the completion of the demonstration.

Fig: FLD being carried out at Kigwema Village & Khonoma Village and Harvesting of Carrot being carried out in the farmers' field

Results

During the demonstration period, the recorded data indicated the highest yield of 13 tons per hectare (t/ha), the lowest yield of 8 t/ha, and an average yield of 11.5 t/ha compared to the local check's yield of 10 t/ha. The percentage increase in yield, calculated as the change in average yield over the local variety, was 115%. Both varieties performed well across all locations; however, Pusa Rudhira exhibited superior performance, especially in the Kohima district, where it showed maximum values in all yield attributing traits.

Impact

The sale of carrots at a wholesale price ranging from Rs. 50 to Rs. 80 per kilogram resulted in a gross return of Rs. 5,75,000 and a net profit of Rs. 5,15,000 for a 1-hectare area (approximately estimated). On average, every farm family with a minimum landholding of 1 acre harvested 40 quintals in one season, yielding better quality produce. The adoption of organic production, driven by increased consumer demand and the absence of pesticide residue, led to carrots with higher amounts of secondary metabolites, vitamins, and various mineral nutrients. Thanks to the intervention by KVK Kohima, the eagerness to embrace improved technology-based cultivation practices influenced many farmers to shift away from age-old farming methods. This impact signifies a significant transformation in the agricultural practices of the region.

Table 1: Performance in terms of various yield parameters over local check and % increase in yield of Carrot

Demonstration Yield (q/Ha)			Yield of local Check (q/ha)	% increase/ change in avg. yield over local
H	L	A		
130	80	115	100	13.04

Table 2: Technology Output

Crop/Variety	Gross Cost (Rs/ha)	Gross Return(Rs/ha)	Net Return (Rs/ ha)	B:C Ratio (GR/ GC)
Carrot Var. Pusa Rudhira	60,000	5,75,000	5,15,000	1:9

Fig: Harvested carrot in the farmers' field Length of the carrot 16 cm/6.2 inch and Follow up training programmes and method demonstrations

STATE: TRIPURA

5. IPM Modules against Tomato Fruit borer

Introduction

Tomato (Lycopersicum esculentum L.) holds a prominent position as the world's largest cultivated vegetable crop, particularly in India. With an annual production totalling 107 million metric tons, fresh market tomatoes contribute significantly, accounting for 72% of this production. However, the susceptibility of tomato plants to various insects and pathogens varies based on pest species, crop stage, growing season, and location. Consequently, farmers often resort to extensive pesticide applications, driven by the need to maintain high fruit quality and meet market demands. This reliance on conventional pest control methods not only imposes economic burdens due to the high investment but also poses environmental challenges, given the adverse effects of pesticides.

In response to these challenges, integrated pest management (IPM) has emerged as a sustainable alternative to traditional pest control practices. In the IPM approach, a phytophagous organism is deemed a pest only when it surpasses an economic threshold, allowing for a more nuanced and targeted response. The primary objectives of IPM include preserving and enhancing natural mortality factors of pests while integrating a variety of pest management control measures in a compatible manner. The selection of these practices is guided by technical, economic, ecological, and social parameters.

It explores the transformative potential of IPM in mitigating production losses and safeguarding natural enemies. By delving into the experiences of farmers like Rahul Das, residing in the verdant fields of RC Ghat, Chebri, Khowai, Tripura, this story illuminates the tangible benefits of adopting IPM strategies. Rahul Das, with a decade of farming experience, epitomizes the proactive shift towards sustainable agriculture, embracing IPM as a beacon of hope amidst the challenges faced by tomato cultivators. Through his journey and those of other farmers, this success story aims to showcase the positive impact of IPM, not merely as a method but as a holistic approach fostering harmony between agricultural practices and the environment.

Interventions of KVK

To reduce the pesticidal load in the environment and align with sustainability goals, farmers can adopt specific Integrated Pest Management (IPM) modules. Farmers require eco-friendly and effective pest management strategies to minimize losses and produce high-quality vegetables, enabling them to secure better prices in the market. Keeping this objective in mind, KVK, Khowai, assessed and demonstrated these technologies during the year 2020-21 under the NCIPM, New Delhi NEH project. The aim was to evaluate the efficacy of these methods in Tripura's unique agricultural conditions. In addition, the project organized training sessions and field demonstrations.

A total of 15 farmers from R.C. Ghat, Batapora, Krishnapur, Nayanpur, and Ganki village actively participated in the trials. The IPM modules were implemented as follows: First, a spray consisting of a mixture of lambdacyhalothrin 5EC at 0.8ml/L (0.04%) and Dithane Z-78 (zineb) at 2.5g/L (0.25%) was applied ten days after the appearance of moths in the traps (approximately 30 days after transplanting). The second spray was administered 15 days after the first one and included a mixture of Helicide (Ha NPV) 100 LE at 0.5ml/L, Indofil M-45 (mancozeb) at 2.5g/L (0.25%), Gur (0.05%), and Tween 80 (0.05%). The third spray occurred 15 days after the second application and consisted of a mixture of lambda-cyhalothrin 5EC at 0.8ml/L (0.04%) and moximate

(cymoxanil + mancozeb) at 0.25%. Additionally, pheromone traps were installed at a rate of 10 traps per hectare to enhance pest management efforts.

Key results

The comparative effectiveness of modules against fruit infestation caused by the tomato fruit borer was studied in 2020. Table 1 indicates that the IPM module significantly reduced fruit infestation levels to a substantial degree, demonstrating superior control. The results presented in Table 1 show that the lower pest incidence in the IPM module led to a higher fruit yield (138 q/ha) and the highest net return compared to the non-IPM module.

Table 1. Impact of IPM and non IPM modules

Modules	Fruit Damage %	Yield (q/ ha)	Net return (Rs)	B:C Ratio
IPM	9.85	138	111345	1: 3.58
Non IPM	42.65	40.5	22456	1: 1.22

Impact

The implementation of Integrated Pest Management (IPM) techniques in farmers' fields yielded positive outcomes, significantly enhancing their satisfaction and financial gains. For the first time, many farmers' experienced substantial profits, embracing new technologies like pheromone traps to combat borers. The IPM practices, introduced through the demonstration programme, not only reduced production costs but also markedly decreased pest infestations and increased fruit yields.

	Before IPM	After IPM
No. of Sprays	3-4 spray/fortnight	1 spray/20 days
Labor Requirement	Increased	Decreased
Farmer's profit margins	Less	High
Production level	Decreased	Increased
Average net return	22456	111345
Pest damage level	42.65	9.85

13 Status of Budget

During the financial year 2022-23, an amount of Rs. 9595.06 lakh was utilized against the allotted budget of Rs. 9595.10 lakh. Head-wise details of budget and expenditure are furnished in Table 46

Table 1: Allocation & Expenditure for F.Y 2022-23 Under ICAR-ATARI, Zone-VII,Umiam

(Rs. in lakhs)

Head	RE 2022-23				Expenditure			
	ATARI	KVKs	Support to DEEs	Total	ATARI	KVKs	Support to DEEs	Total
A) Recurring								
Pay & Allowance	157.00000	6935.10000	0.00000	**7092.10000**	156.99245	6935.10000	0.00000	**7092.09245**
Contingency	60.00000	741.60000	7.90000	**809.50000**	60.00000	741.60000	7.90000	**809.50000**
HRD	4.98000	31.00000	3.50000	**39.48000**	4.98000	31.00000	3.50000	**39.48000**
TA	10.02000	122.00000	3.00000	**135.02000**	10.02000	122.00000	3.00000	**135.02000**
TOTAL	**232.00000**	**7829.70000**	**14.40000**	**8076.10000**	**231.99245**	**7829.70000**	**14.40000**	**8076.09245**
B) Non Recurring Head								
Works	39.26000	595.00000	0.00000	**634.26000**	39.26000	595.00000	0.00000	**634.26000**
Furniture, IT & Equipment	21.84000	727.45000	9.00000	**758.29000**	21.80534	727.45000	9.00000	**758.25534**
Library	3.00000	6.45000	0.00000	**9.45000**	3.01000	6.45000	0.00000	**9.46000**
Vehicle	0.00000	117.00000	0.00000	**117.00000**	0.00000	117.00000	0.00000	**117.00000**
TOTAL	**64.10000**	**1445.90000**	**9.00000**	**1519.00000**	**64.07534**	**1445.90000**	**9.00000**	**1518.97534**
GRAND TOTAL (A+B)	**296.10000**	**9275.60000**	**23.40000**	**9595.10000**	**296.06779**	**9275.60000**	**23.40000**	**9595.06779**

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