भाकृअनुप
ICAR

Frontline Extension for Disadvantaged Area and Farmers of Rajasthan and Haryana

J.P. Mishra and B.L. Jangid

भाकृअनुप-कृषि प्रौद्योगिकी अनुप्रयोग अनुसंधान संस्थान, क्षेत्र-II
ICAR-Agricultural Technology Application Research Institute, Zone-II
(आई.एस.ओ. 9001-2015 प्रमाणित संस्थान)
(ISO 9001-2015 Certified Institute)
जोधपुर - 342 005 (राजस्थान)
Jodhpur-342 005, Rajasthan, India

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ICAR

Frontline Extension for Disadvantaged Area and Farmers of Rajasthan and Haryana

KVKs 1974-2024
कृषि विज्ञान केन्द्र
Krishi Vigyan Kendra
Serving Farmers

ICAR-Agricultural Technology Application Research Institute, Zone-II

भाकृअनुप–कृषि प्रौद्योगिकी अनुप्रयोग अनुसंधान संस्थान, क्षेत्र–II

(ISO 9001-2015)

Jodhpur-342 005, Rajasthan, India

जोधपुर 342 005, राजस्थान, भारत

हर कदम, हर डगर
किसानों का हमसफर
भारतीय कृषि अनुसंधान परिषद

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Frontline Extension for Disadvantaged Area and Farmers of Rajasthan and Haryana

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FOREWORD

Under the visionary leadership of *Bharat Ratna* (Late) Prof. M. S. Swaminathan, Indian Council of Agricultural Research took a pathbreaking policy decision in 1974 for structural change in Research-Education-Extension system through establishment of frontline extension institutions-KVKs (Krishi Vigyan Kendra). These extension institutions at districts pushed dissemination and deployment of green revolution technologies and helped millions of farmers in adopting knowledge and technology intensive farming for income augmentation and livelihood support. This model of research-extension integration acknowledged globally and adopted by many developing countries. The journey of KVK development which started with the establishment of first KVK in 1974 in Puducherry has reached to 731 in 2024.

The KVKs have been sailing through a complex and diverse agro-climatic and socio-economic situations and contributed enormously for the growth of agriculture and allied sector throughout in the past five decades of their existence. During their inception and formative stage, they helped in consolidation and deepening of the reach of green revolution technologies under the overarching policy direction of achieving higher foodgrains production. During consolidation phase, they contributed in enhancing oilseeds production which later included pulses. Post-economic liberalization, the KVKs popularised improved varieties of basmati rice, pulses, oilseeds, vegetables and several other commodities along with their good agricultural practices for export promotion and import substitution. They acted pro-actively for last mile delivery of improved technologies and farm advisories, much ahead to mass extension system. The mandate of KVKs evolved over time from vocational training to technology assessment and demonstration for its application and capacity development. Presently, KVKs are single window for knowledge resource for technologies and advisories. The extension system is evolving itself moving away from input and production centric technology transfer to market-led, income augmenting and job creating vocational trainings.

The publication "Frontline extension for disadvantaged area and farmers of Rajasthan and Haryana" on the occasion of "Golden Jubilee of KVKs" is very befitting. I compliment the authors for their meticulous presentation and synthesis and hope that it will provide valuable insights to all the stakeholders of agricultural research & development.

Dated the 19th March, 2024
New Delhi

(Himanshu Pathak)

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FOREWORD

Agriculture is the foundation of livelihood, civilization, culture and heritage of India. India is the world's second most populous country and seventh largest country with 328 million ha geographical area. About half of Indians derive their livelihood directly from agriculture including livestock, fisheries and allied sectors. The sector engages almost half of the workforce in gainful employment and accounts for about 18-20 per cent in India's GDP. The agriculture and allied sectors saw impressive growth post-independence. Raising the foodgrain production was our priority since independence which increased 50.82 in 1950-51 to 315.72 million tons in 2021-22. The production of horticultural crops, commercial crops, milk, meat, egg and fish also increased many folds. The food grains production increased over 6 times and horticultural crops by 11 times. The production of fish increased by over 18 times, milk by 11 times and eggs by 53 times since 1950-51 to 2020-21. Agricultural extension particularly frontline extension has been contributing significantly throughout in this journey of all-round development of Indian Agriculture. Starting from Community Development Program in 1952 to cluster Frontline demonstrations in 2016-17, the movement has been very rewarding. The establishment and strengthening of ICAR-KVK system since 1974 proved to be a vibrant career of technologies as well knowledge and skill to millions of farmers and other stakeholders. Working for disadvantaged people and areas is one of the core activities of KVKs through technology demonstrations in climatically vulnerable regions and communities as well as disadvantaged people under tribal and scheduled caste dominated districts.

The KVKs have been able to disseminate improved technologies for the development of millions of farmers in the disadvantaged areas. They helped in promotion of knowledge and skill intensive new technology like variety, quality seed, fertilizer product, production technology, plant protection measures, machineries and post-harvest management, value addition and nutrition, etc amongst SC and ST farmers. This publication "Frontline extension for disadvantaged area and farmers of Rajasthan and Haryana" attempted to synthesise the activities and achievements of KVKs under ATARI, Jodhpur in the underprivileged regions of Rajasthan and Haryana. My compliments to the authors for their hard work for bringing out this document on the occasion of "Golden Jubilee of KVKs". I strongly believe the document shall be very useful for the stakeholders of agricultural research & development.

Dated the 19th March, 2024
New Delhi

(Udham Singh Gautam)
DDG Extension (ICAR)
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PREFACE

Immediately after independence, the Community Development Program was initiated in 1952 followed by National Extension Service Blocks in 1953. Intensive Agricultural District Program in 1961 and Intensive Agricultural Area Program, 1964 were important initiatives before the introduction of Mexican dwarf wheat varieties in India in 1964. Several initiatives were taken to strengthen the extension services and activities alongside Green Revolution movement. The notable was National Demonstrations (1965), Farmers Training Centres (1966), Small and Marginal Farmers Development Agencies (1971). In 1973, ICAR appointed a Mehta Committee under the Chairmanship of Dr Mohan Singh Mehta which recommended for the establishment vocational training centres in agriculture at districts. The first KVK was established in 1974 in Puducherry following the recommendations of Mehta Committee. Today there are 731 KVKs in the country. They are under SAUs, CAUs, ICAR Institutes, Deemed Universities (DUs), State Governments, Public Sector Undertaking (PSU), Non-Government Organizations (NGOs) and Other Educational Institutions (OEI). The KVKs under ICAR have evolved over the time. The KVKs are an effective institutional links between agricultural research and extension system. They conduct on-farm testing to identify the location specificity of agricultural technologies under diverse farming situations, establish production potential of improved technologies through frontline demonstrations, enhance capacity through knowledge and skills development of farmers and extension personnel. KVK are envisioned as a knowledge and resource centre of agricultural technologies.

For the mainstreaming of disadvantaged geographies and areas, the Government of India has initiated a dedicated funding instrument for the implementation of programmes in order to development of disadvantaged area and welfare of socially underprivileged groups scheduled tribes (STs) and scheduled castes (SCs). A dedicated funding ranging from 4.3% to 17.5% every year is provided for the development of scheduled tribe areas under Development Action Plan for Scheduled Tribes (DAPST) and for scheduled caste areas. Similarly, for the development of scheduled castes the Scheduled Caste Sub Plan (SCSP), now known as Development Action Plan for Scheduled Castes (DAPSC) is implemented with minimum 8.3% earmarked under the schemes of Central Ministries for such projects. KVKs have been working for the welfare of underprivileged population in disadvantaged areas through DAPST and DAPSC Total 24 KVKs of Rajasthan are involved in the implementation of DAPST and 15 KVKs (9 of Rajasthan and 6 of Haryana) for DAPSC. Under these programme, on-farm testing, FLDs, natural farming, quality seed and planting material, livestock strains and fingerlings and individual and community assets are created for the benefit of tribal and SC farmers. The projects related to agriculture, health, education, employment generation, skill development, irrigation, roads, housing, electrification, etc. are undertaken in DAPST. Both individual and community level benefits are integrated through capital and general streams of outlays of the schemes.

In this document, attempt have been made to highlight the key activities of ICAR-ATARI with special focus to DAPST and DAPSC. We hope that this document will be useful for the researchers, extension workers and policy planners. Our sincere thanks and gratitude to Secretary, DARE & DG, ICAR and Deputy Director General (Agricultural Extension) and Assistant Director Generals and Senior Officers at Agricultural Extension Division, ICAR Hq for their support and encouragement in preparation of this document. We solicit your valuable suggestions to help us improving our efforts in future.

J.P. Mishra
B.L. Jangid

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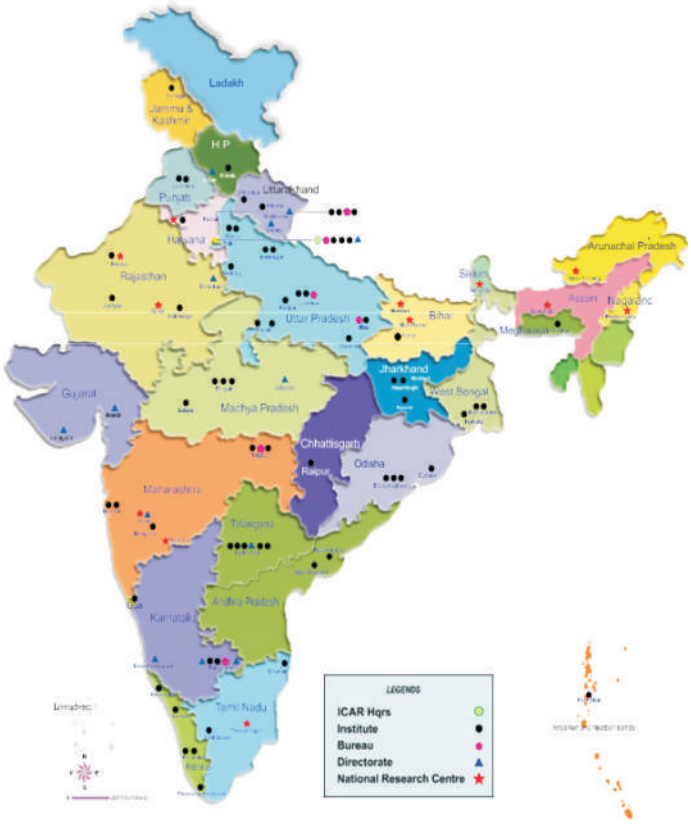
Agricultural Research and Extension System in India

Indian Council of Agricultural Research (ICAR) is an autonomous organisation under Department of Agricultural Research & Education (DARE), Ministry of Agriculture and Farmers Welfare, Government of India. The Council has 8 Subject Matter Divisions (SMDs) and independent units dealing with technical, administrative, finance and policy matters. Agricultural Extension Division is one of the 8 SMDs dealing with assessment and demonstration of technology/products through a network of 11 ATARIs and 731 Krishi Vigyan Kendras (KVKs). This division is headed by Deputy Director General (AE) who is supported by 2 Assistant Director Generals (ADGs) and 11 Directors of ATARIs. In India, two streams of agricultural extension are in practice. These are frontline extension and field or mass extension. The frontline extension is knowledge and skill intensive and selective extension service often performed for creating 'pull' effect for a new technology like variety, quality seed, fertilizer product, production technology, plant protection measures, machineries and post-harvest management, value addition and nutrition, etc. The field extension works for upscaling often blended with some 'push' factor in the form of incentives. The ultimate purpose of both the stream is to help a producer reaping a better harvest in quantity and quality. The frontline and mass extension in agriculture have been operationalised by different agencies and organisations. The ICAR-KVKs and Institutes and State Agricultural



ICAR Footprints in India

Universities (SAUs) conduct frontline extension and Department of Agriculture and Farmers Welfare through State Department of Agriculture conduct field extension. The line ministries of rural development, fisheries and animal husbandry & dairying, food processing industries, earth sciences and research organizations/departments like CSIR, DBT, DST also join ICAR-KVK and SAUs for promotion of their technologies under frontline extension. Many trade promoting commodity boards like those for spices, coffee, tea, plantation crops, etc under Ministries of Commerce and Agriculture & Farmers Welfare conduct trade specific extension services for good agricultural practices (GAPs) and good management practices (GMPs). Agricultural inputs and machineries manufacturers through the dealer network also conduct input specific extension services. The thrust areas of ICAR-Agricultural Extension include:

a) assessment and demonstration of technology/ products;

b) training of practising farmers, farm women, extension personnel and vocational training for rural youth;

c) single window delivery system for technology products, diagnostic services and information through, agricultural technology information centres (ATICs);

d) development of gender-specific technologies, and creating awareness of improved agricultural technologies among the farmers;

e) technology application, assembling and feedback; and

f) institution building and partnership.

ICAR-Agricultural Technology Application Research Institutes (ATARIs)

ICAR-Agricultural Technology Application Research Institutes (ATARIs) are functioning under DDG (AE), ICAR to coordinate and monitor the KVKs along with conducting research on technology application. There are 11 ATARIs catering to the needs

of KVKs grouped under 11 Zones. ICAR-Agricultural Technology Application Research Institute (ATARI) at Jodhpur looks after the Zone-II i.e. the KVKs of Rajasthan, Haryana and Delhi. These ATARIs were formerly known as Zonal Project Directorates (ZPDs) which were elevated into technology research institutions on 1st July, 2015. Under ICAR-ATARI-Zone-II, 7 Agricultural Technology Information Centres (ATICs) function as single window for delivery system. The mandate, functions and thrust areas of ICAR-Agricultural Technology Application Research Institute (ATARI) are as under:

Mandate

a) To coordinate and monitor technology application and frontline extension programs; and

b) To strengthen agricultural extension research and knowledge management.

Functions

- Planning, implementation, monitoring and reviewing of KVK activities;
- Identify, prioritize and implement technology integration and dissemination activities;
- To coordinate with SAUs, ICAR institutes, line departments and NGOs in the zone for implementation of KVK mandates and activities;
- To facilitate financial and infrastructural support to KVKs for effective functioning.

Thrust Areas

- Sustainable farming system-location-specific technology assessment, refinement and demonstrations.
- Resource conservation- soil-water conservation, watershed management and mechanization.
- Development of crop and enterprise diversification and alternate land use system.

ICAR-ATARI-Zone-II: At A Glance

Geographical Area	38.8 m ha
Net sown area	21.67 m ha
Gross sown area	34.14 m ha
Net Irrigated area	12.42 m ha
Gross Irrigated area	18.33 m ha
Cropping Intensity	158%
Rainfed Area	9.25 m ha (43%)
Foodgrain Production	37.38 (11.8%)
Pulses	4.16 (15.1%)
Oilseeds	9.79 (26.0%)
Cotton	3.80 (12.2%)
Seed Spices	6.58 lakh tons (32%)
Milk	44.9 m tons (20%)
Wool	16.37 lakh kg (44%)
GVA (2021-22) at CP	Rs 281889.86 Cr (20%)

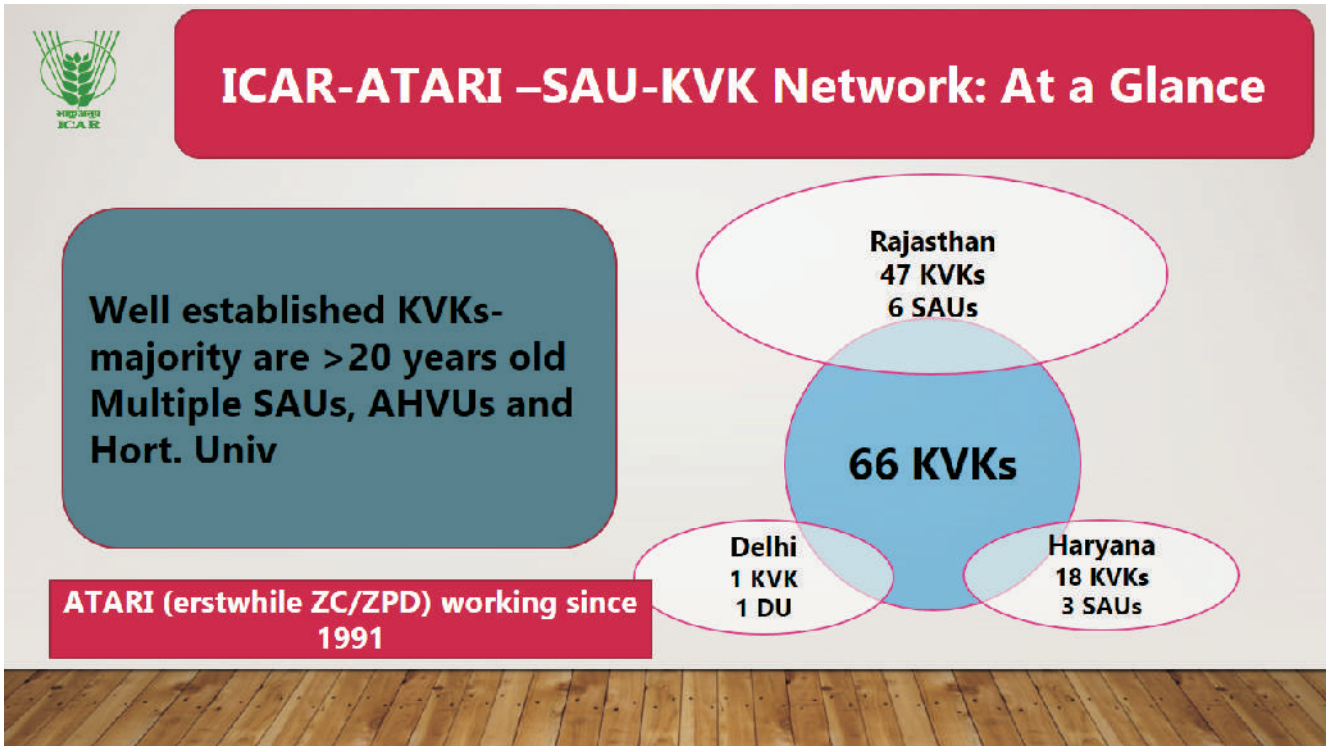
Contribution and Share of Zone-II in Key Indicators of Agriculture

- Popularization of IPM, INM and IWM interventions and programmes
- Promoting rural entrepreneurship in field and horticultural crops, livestock, poultry, fishery-production, processing, value addition and marketing
- Income generating activities and reduction of drudgery for farmwomen and youth empowerment.
- Alternate livelihood support systems for marginal, landless and farmwomen to minimise rural outmigration.

ICAR-ATARI Zone-II caters to the need of Rajasthan, Haryana and Delhi with about 12 of net sown area of the country and 13% gross cropped area. This zone accounts about 43% of the total rainfed cropped area and baston of some of the most valuable commodities such as arid fruits like ber, bel and pomegranate, seed spices. It contributes about 15.1% of pulses and 26% of oilseeds 20% of milk, 32% of seed spices and 44% of wool production of India. The region contributes about 20% of the gross value added in agriculture during 2021-22 at constant prices (Figure 1).

Krishi Vigyan Kendras (KVKs)

Krishi Vigyan Kendras (KVKs) are working since 1974 with first KVK established in Puducherry in 1974 after ICAR's appointed Mohan Singh Mehta Committee gave its recommendation to establish district level vocational training centres in agriculture recommendations. The KVKs are functioning under the administrative control of ICAR institutes, State Agricultural Universities (SAUs), State Department of Agriculture, Non-Governmental Organisations (NGOs) and other institutes. The mandates of the KVK are assessment of technology and demonstration for its application and capacity development. Under Zone-II, 66 KVKs are functioning under SAUs, ICAR Institutes and NGOs, etc. A strong networking is in place with SAUs, KVKs, ATARI and ICAR Institutes for seamless technical backstopping to all the stakeholders in the region.



The KVKs are mandated with following 5 core activities:

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

ii. Frontline demonstrations to establish production potential of technologies on the farmers' fields.

iii. Capacity development of farmers and extension personnel to update their knowledge and skill on modern agricultural technologies.

iv. Work as knowledge and resource centre of agricultural technologies for supporting initiatives of public, private and voluntary sector in improving the agricultural economy of the district.

v. Provide farm advisories using ICT and other media means of varied subjects of interest to farmers.

Besides these core activities, the KVKs also carry out several auxiliary activities including campaigns and public service activities according to needs and requirements of the Government and national priority.

Close linkage with SAUs

DEEs are Focal Point

Sl. No.	SAUs	Technological backstopping for KVKs (no.)			
		SAU	ICAR	NGO	Others
Rajasthan					
1	SKRAU, Bikaner	7	0	1	1
2	MPUA&T, Udaipur	8	2	1	0
3	A U, Jodhpur	6	2	1	0
4	AU, Kota	6	0	0	0
5	SKNAU, Jobner	7	1	1	1
6	RAJUVAS, Bikaner	1	0	1	0
Haryana					
	CCSHAU, Hisar	14	2 (DU)	2	0
Total		49	7	7	3

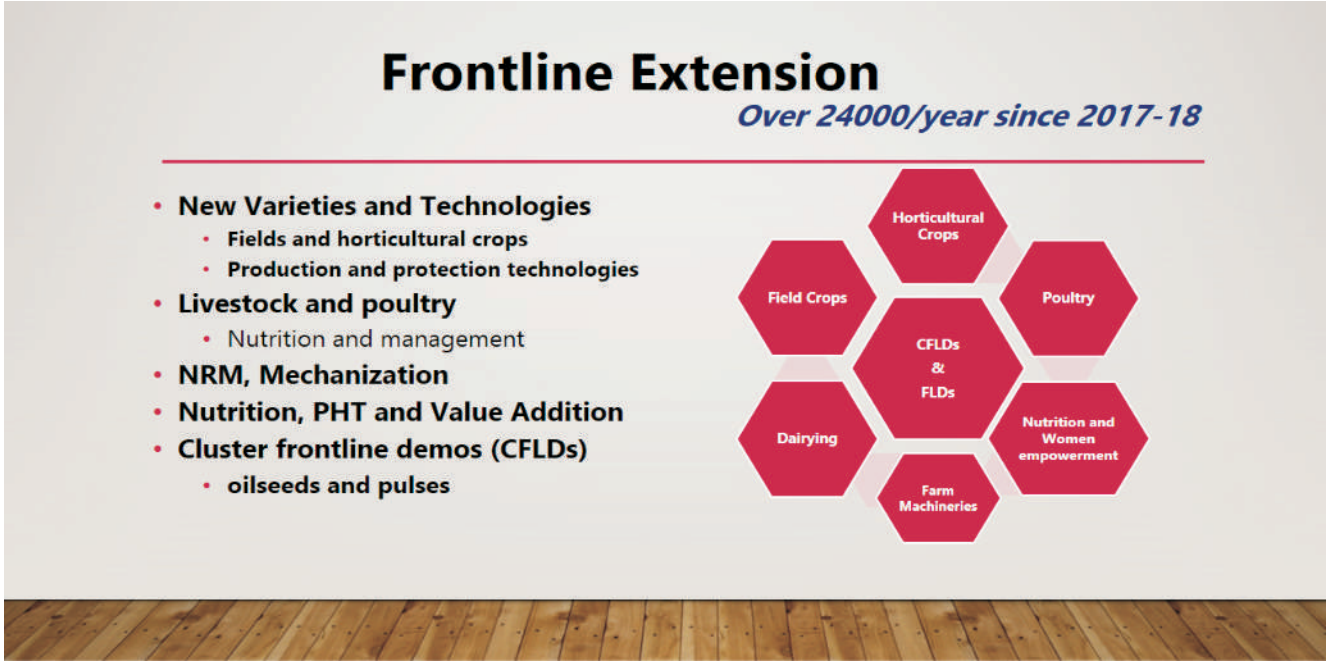
Distribution of KVKs under SAUs, ICAR Institutes and NGOs / Others in Zone-II

Role and Activities of ATARIs

The ATARIs coordinate, implement and monitor the following major activities through ICAR-ATARI-SAUs-KVKs network:

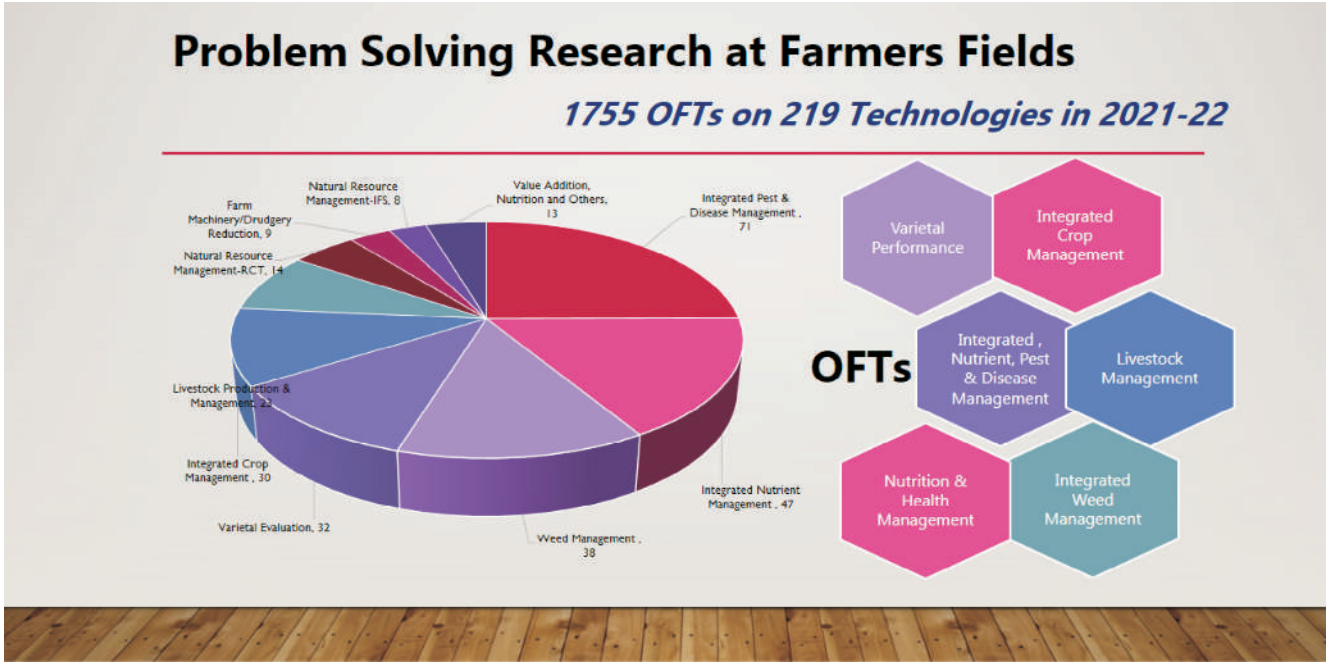
1. Frontline Extension

ICAR-ATARIs have the core of core actions of planning, implementation and monitoring of FLDs at farmers' fields on crops, livestock, farm machineries, nutrition, value addition and post-harvest management, etc. Since 2015-16, cluster frontline demonstrations (CFLDs) on pulses and oilseeds aligning to the national priority of enhancing oilseeds and pulses production are also implemented. On an average 24000 FLDs are conducted annually since 2017-18 in zone-II of which about 80% are on pulses and oilseeds aligned with national priority for import substitutions and making India self-reliance in pulses and edible oils.



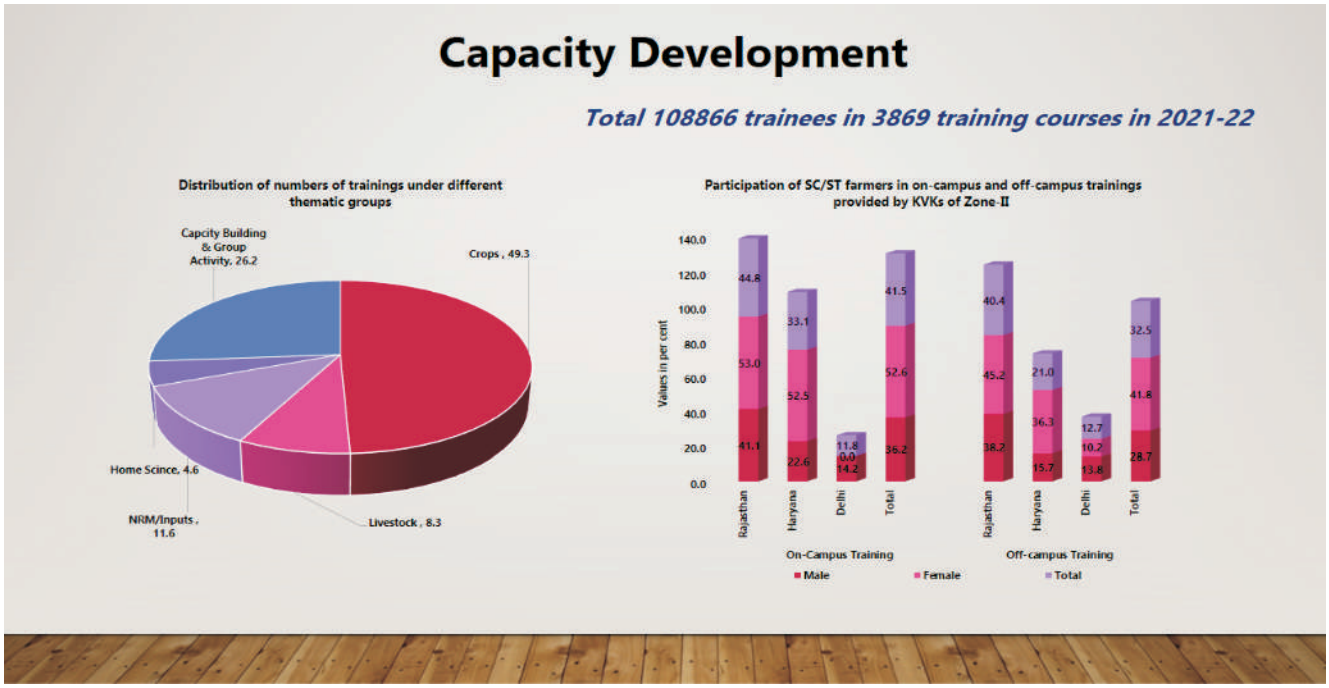
2. Problem Solving Research

Problem solving research popularly called as on-farm trials (OFT) is core of the core activity of ATARI. The on-farm trials (OFTs) of technologies on integrated crop management, integrated pest management, integrated weed management, improved and high yielding varieties/hybrids, livestock management, farm machineries, nutritional and health aspects of farm families etc are also organised under diverse micro-situations with the objective of solving the key problems of farmers in a particular area.



3. Capacity Development

Planning and implementation of training of farmers and extension personnel, rural youths through KVKs for capacity building and entrepreneurship development is also a core activity of ATARIs. Special focus is given for training of rural women and SC/ST farmers and farm women for training in key areas in order to empower them and mainstreaming disadvantaged groups and areas. Besides, ICAR-ATARI and Directorates of Extension Education (DEEs) in SAUs jointly conduct capacity development of subject matter specialists of KVKs. The KVKs are also encouraged to work as incubators. Recently, Kota and Barmer-I KVKs under ICAR-ATARI, Jodhpur have been provided financial assistance for establishing the Incubation Centres on Food Processing.

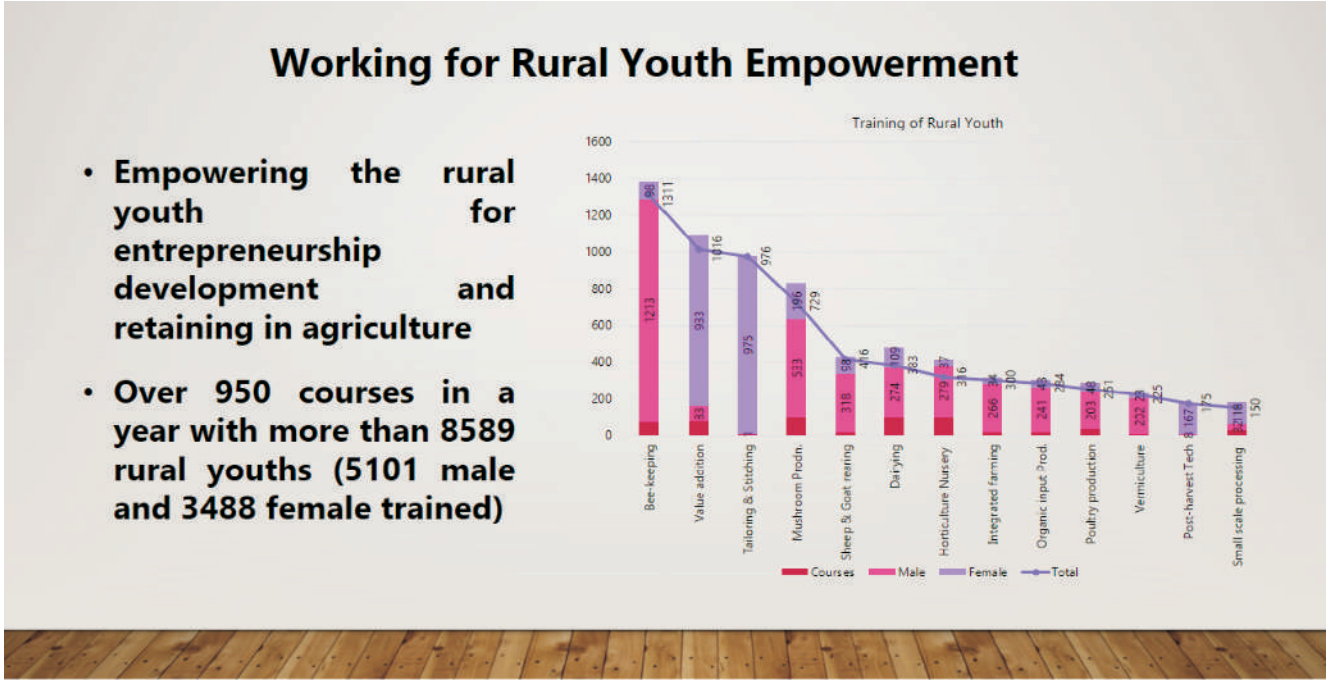


4. Information and Extension Services

ICAR-ATARI and KVK network provides training and advisory services to farmers, extension personnel, input dealers, local traders, and public leadership. Other extension activities viz. electronic media, newspaper coverage, radio talks, television talks, popular articles, animal health camps were performed by ATARI-KVKs. The *Gramin Krishi Mausam Sewa* (GKMS) has been implemented for providing agro-advisory services to farmers. Over 1.5 lakh agro-advisories are provided annually.

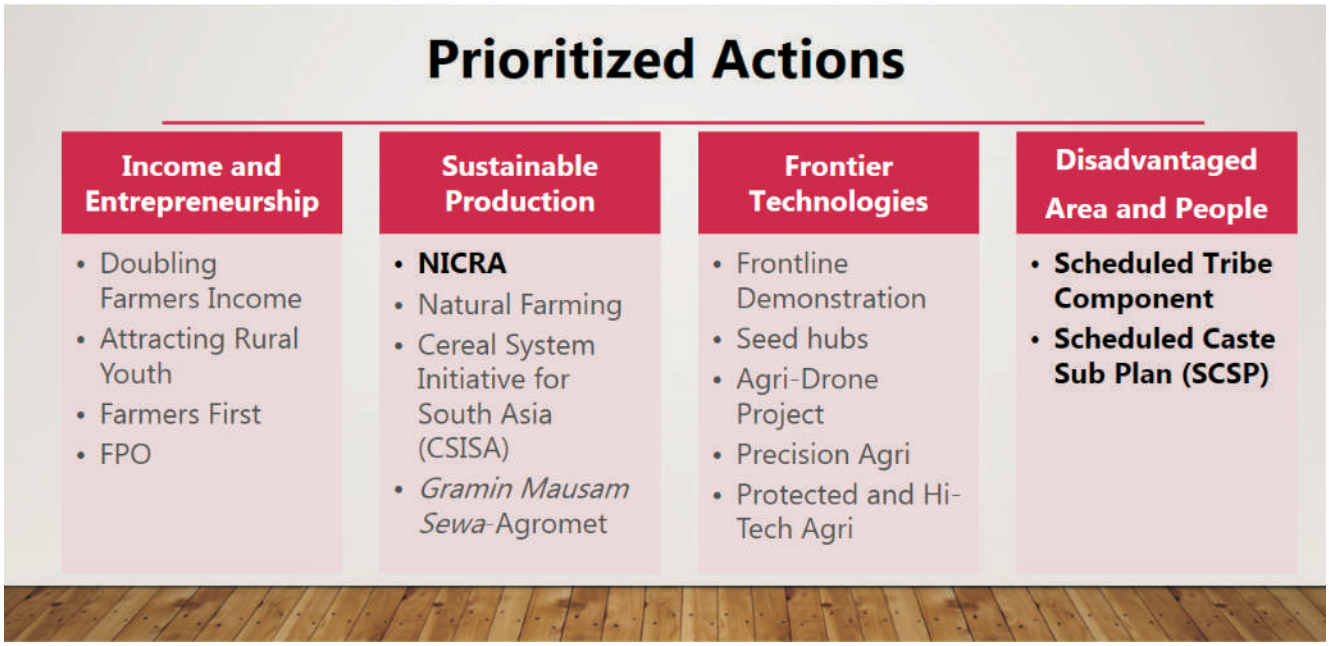
5. Entrepreneurship and Group Activities

ICAR-ATARI coordinates with ICAR Institutes/SAUs for the implementation of farmer first programme (FFP) for enriching knowledge and integrating technology. Entrepreneur's meetings and distribution of critical inputs like seed and planting materials are made. The Council is implementing a major initiative on Attracting and Retaining Youth in Agriculture (ARYA) to empower rural youth take up self-employment in agriculture and related enterprises. *Mera Gaon Mera Gaurav* has been implemented under ICAR-SAUs system for creating awareness among farmers through direct interface of farmers with scientists. ATARIs are also working with FPOs and women SHGs through KVKs for capacity development and technical backstopping for product diversification. These FPOs are working on millets, roses, onion, mustard, cumin, pomegranate, kinnow, etc. More than 8580 rural youths were trained annually.



6. Prioritized Action - Climate Resilience

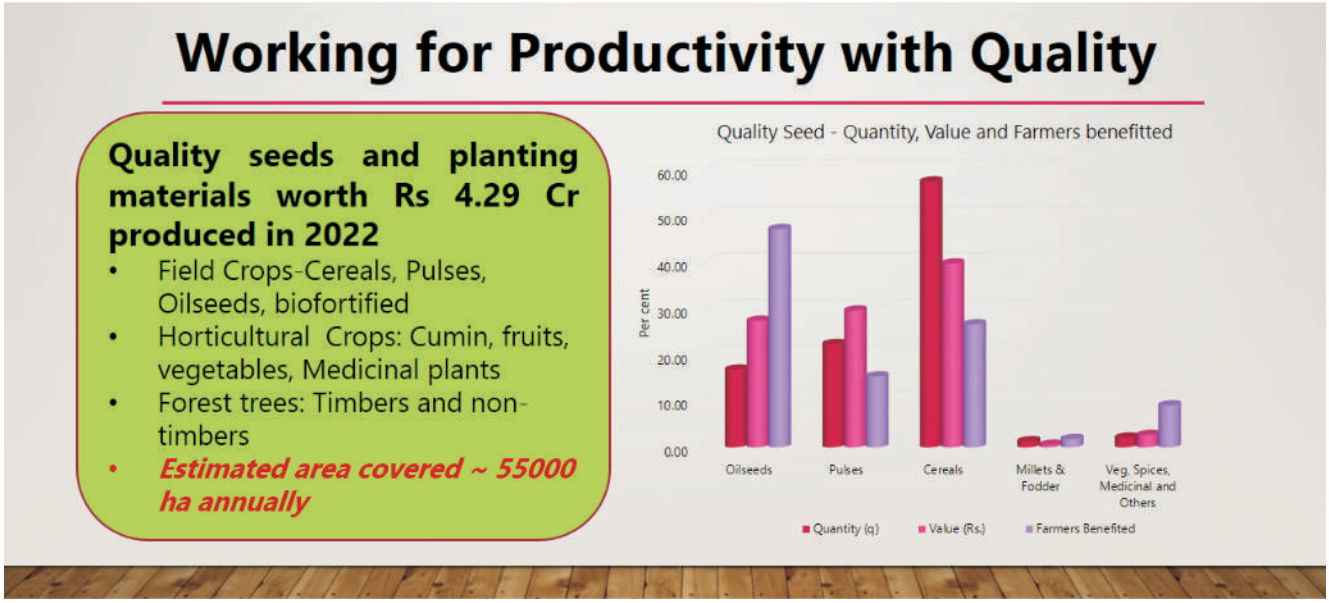
ICAR-ATARI is implementing National Initiative on Climate Resilient Agriculture (NICRA) for technology demonstration through KVKs. The climate resilient technologies and climate resilient modules are demonstrated in climatically vulnerable villages in 151 KVKs across the country including 18 KVKs under Zone-II. The crop residue management in NCR is a priority environment concern for which 60 KVKs under ATARIs Zone-I, II and III in Punjab,



Haryana, Delhi and UP are conducting Information, Education and Communication (IEC) activities for in-situ management of rice residue and reduce its burning. Our efforts reduced the burning incidences by 52% in 2020 over 2016.

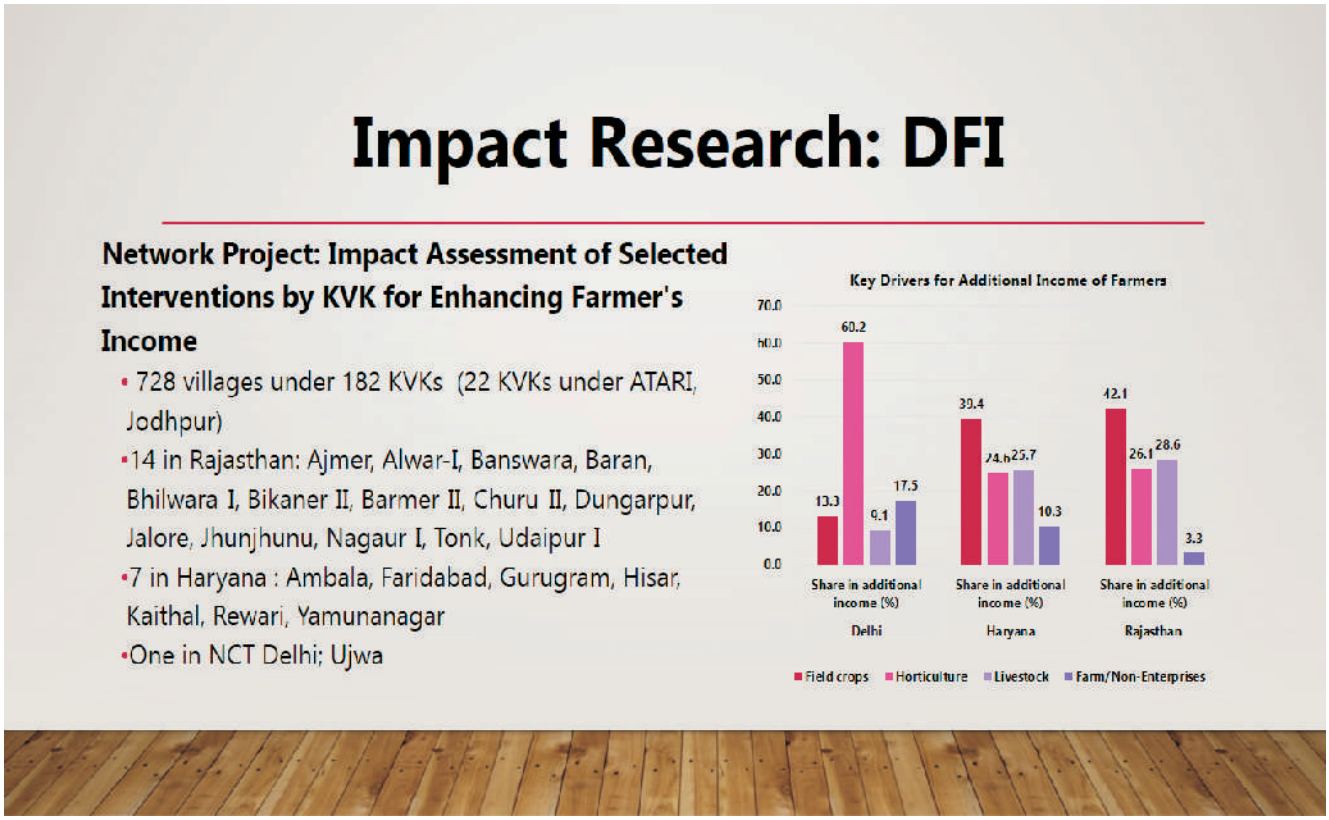
7. Supply of Critical Inputs

To augment quality seeds and planting materials, ICAR-ATARIs have been facilitating KVKs to produce and provide quality seeds and planting materials to farmers. The livestock strains and fish fingerlings are also produced and provided to farmers. Over 55000 ha of crops, fruits, vegetables are planted with KVKs produced seeds in the Zone-II. The cereals, pulses and edible oilseeds seed productions is given priority.



8. Farmer's Income

ICAR-ATARI Jodhpur has been leading a network project "New Extension Methodology and Approach-DFI" in coordination of all ATARIs of the country and nine ICAR Institutes to measure the impact of KVKs interventions on augmenting the farmer's income. Total 14560 farmers household income have been studied, 20 each from 728 villages (364 DFI and 364 non-DFI). The income of farmers increased over 2.4 to 2.8 times in 2020-21 over 2016-17 due to KVK interventions in DFI villages. In another study of 75000 successful cases of DFI farmers in India, 7016 farmers case in Rajasthan, Haryana and Delhi established 2.7 times increase in income due to crops, horticulture, livestock interventions by KVKs.

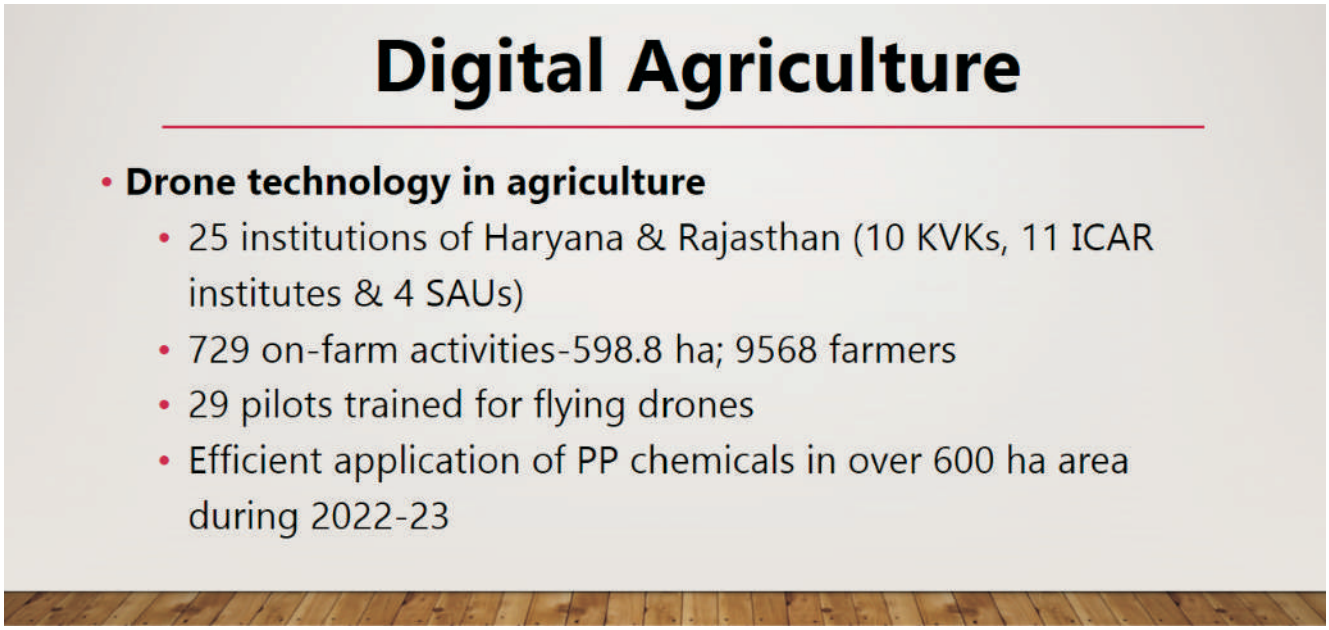


9. Natural Farming

Government of India has launched a scheme for the out scaling of natural farming in the country through 425 KVKs. Of the 425 KVKs, 38 KVKs in Rajasthan (19), Haryana (18), Delhi (1) are under ICAR-ATARI, Zone-II, Jodhpur. The interventions included awareness programmes, training, demonstrations, etc. The natural farming practices for wheat, moth, pearl millet, mustard, chickpea, green gram, barley, cumin, turmeric, ashwagandha, aonla, citrus, tomato, brinjal, okra, chili, sweet potato, tomato, cucurbits, onion, carrot, radish etc. are being demonstrated.

10. Precision Farming

ICAR has implemented agri-drone project through SAUs, KVKs and ICAR Institutions. Under ICAR-ATARI Zone II, Jodhpur, 32 drones were assigned to 25 institutions in Rajasthan and Haryana. Total 729 field demonstrations covering 598.8 ha area conducted during 2021-22. *Kisan Sarathi* (System of Agri-information Resources Auto-transmission and Technology Hub Interface), a joint initiative of ICAR & Digital India Corporation, MeitY, Govt. of India is implemented. In Zone-II, 65 KVKs are registered on Kisan Sarathi portal with over 4.63 lakh farmers registered by KVKs on *Kisan Sarathi* Portal.

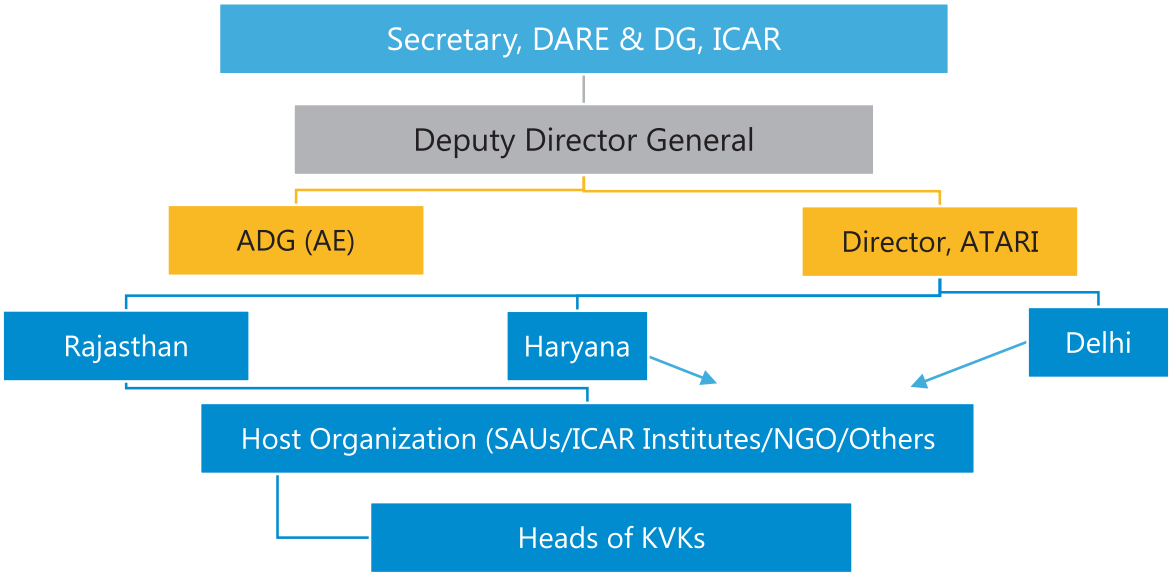


11. Collaboration and Convergence

ICAR-ATARI has been closely working with Department of Agriculture & Farmers Welfare, Ministry of Fisheries, Animal Husbandry & Dairying, Ministry of Rural Development, Ministry of Jalshakti, NITI Aayog, Ministry of Food Processing Industries, Ministry of Micro, Small & Medium Enterprises, Ministry of Earth Science, Ministry of Petroleum, Ministry of Women & Child Development, National Institute of Agricultural Extension Management, International Crop Research Institute for Semi-Arid Tropics, Indian Farmers Fertilizers Cooperatives, Central Institute Freshwater Aquaculture, All India Radio, National Cooperative Development Corporation. This has helped KVKs to align themselves with the national priorities.

Governance Mechanism

The research governance (administrative and financial) and management is in place through a well-structured governance structure under Secretary, DARE & DG, ICAR and DDG (Agril. Extension), ICAR (Figure-1). At ATARI level, for the management, Institute Management Committee under the Chairmanship of Director, ICAR-ATARI is in place. The Research Advisory Committee under the Chairmanship of an Eminent Expert is in place to guide on research priorities in agricultural extension. For the selection of sites of new KVKs, the Site Selection Committee are constituted having representation of ICAR, SAU, State Department of Agriculture and experts.



Governance Structure of ICAR-ATARI-II, Jodhpur

Human Resources at ATARI and KVKs of Zone-II

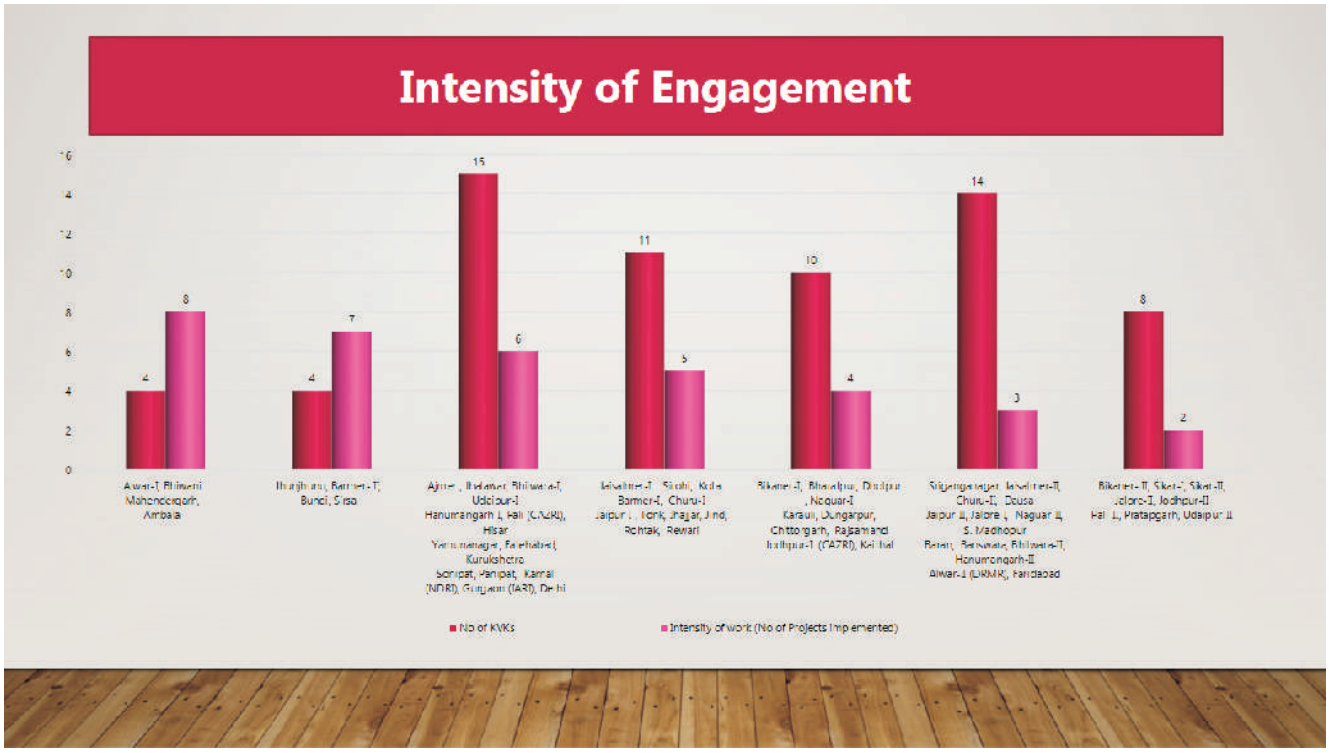
ATARI is headed by Director supported by scientists (6), technical (2), administrative and supporting staff (9). Each KVK is headed by Sr Scientist & Head and supported by SMSs (6), Technical Assistants (3), Administrative and supporting staff (4). The Total human resources sanctions under ATARI Zone-II are 1074 which include 18 positions in ATARI and 1056 positions in KVKs (Table 1).

Table 1: Summary of manpower sanctioned and in position

Institute/Post	Sanctioned (S)	Filled (F)	Vacant (V)	Total
ATARI Jodhpur Hq				
Director	1	1	0	1
Scientist	6	5	1	6
Technical	2	2	0	2
Administrative/Finance	8	5	3	4
Supporting	1	0	1	1
Total	18	13	5	14

	Rajasthan			Haryana			Delhi			Total		
	S	F	V	S	F	V	S	F	V	S	F	V
Senior Scientist & Head	47	29	18	18	11	7	1	1	0	66	41	25
Subject Matter Specialist	282	151	131	108	84	23	6	6	0	396	241	154
Programme Assistant	141	45	96	54	30	24	3	3	0	198	78	120
Administrative	94	26	68	36	21	15	2	2	0	132	49	83
Auxiliary	94	35	59	36	23	13	2	2	0	132	60	72
Supporting	94	50	44	36	11	25	2	1	1	132	62	70
Total	**752**	**336**	**416**	**288**	**180**	**107**	**16**	**15**	**1**	**1056**	**531**	**524**

Depending upon human resources, the KVKs are engaged in frontline extension with varying degree of intensity. Over 50% of KVKs are engaged briskly in a number of projects with score of 5 or more. However, 32 KVKs are engaged in less numbers of projects which is under review for intensification.



Working for Disadvantaged and Challenged Areas

ICAR-ATARIs have been working for the welfare of underprivileged population in disadvantaged areas through Tribal Sub-Plan (TSP) and Scheduled Cast Sub Plan(SCSP) Schemes. Total 24 KVKs of Rajasthan are involved in the implementation of TSP and 15 KVKs (9 of Rajasthan and 6 of Haryana) for SCSP. On-farm testing, FLDs, natural farming, quality seed and planting material, livestock strains and fingerlings and individual and community assets are created for the benefit of tribal and SC farmers. For the mainstreaming of disadvantaged geographies and areas the Government of India has initiated a dedicated funding instrument for the implementation of programmes in order to development of disadvantaged area and welfare of socially underprivileged groups scheduled tribes (STs) and scheduled castes (SCs). A dedicated funding under the various schemes of 42 Central Government Ministries including Ministry of Tribal Affairs ranging from 4.3% to 17.5 every year is provided for the development of scheduled tribe areas under Tribal Sub Plan (TSP) now renamed as Development Action Plan for Scheduled Tribes (DAPST). The projects related to agriculture, health, education, employment generation, skill development, irrigation, roads, housing, electrification, etc. are undertaken in DAPST. Both individual and community level benefits are integrated through capital and general streams of outlays of the schemes. As per GOI records, cumulatively Rs.1,17,943.73 crore earmarked (BE) in 2023-24). Similarly, for the development of scheduled castes the Scheduled Caste Sub Plan (SCSP), now known as Development Action Plan for Scheduled Castes (DAPSC) is implemented with minimum 8.3% earmarked under the schemes of Central Ministries for such projects. An allocation of Rs 142342.36 crore (BE) was made for DAPSC during 2022-23. The Indian Council of Agricultural Research has been a frontrunner in implementing the proviso of these schemes for direct benefits to individuals and communities through asset creation and farming inputs. DARE allocates 4.3% of its total funding for DAPST and 8.3% for DAPSC. ICAR- Agricultural Technology Application Research Institute-II headquartered at Jodhpur has been coordinating with 66 KVKs in Rajasthan, Haryana and Delhi for mainstreaming agricultural activities through KVKs for welfare and upliftment and livelihood support to scheduled tribes and scheduled caste farmers. The individual benefits in the form of farming inputs, plant protection equipment, storage bins, livelihood and income generating components such as goatary, poultry, vegetable/fruits cultivation and community based activities like community ponds, processing units and IIPR Dal Mills etc are implemented for the benefit of the farmers.

Coverage under DAPST and DAPSC in Rajasthan and Haryana

DAPST and DAPSC are implemented in 39 districts of Rajasthan and Haryana where large population are concentrated in the districts. In the districts only those blocks and villages are selected for implementation of the schemes where these groups are concentrated. The DAPST activities are implemented in tribal populated districts of Jalore, Sirohi, S. Madhopur, Karauli, Kota, Bundi, Jhalawar, Baran, Banswara, Bhilwara, Dungarpur, Chittorgarh, Rajsamand, Pratapgarh, Udaipur, Bhilwara, Udaipur, Jaipur, Tonk, Alwar, Pali in Rajasthan. The DAPSC districts include Ajmer, Barmer, Bikaner, Churu, Hanumangarh, Jodhpur, Nagaur, Sikar and Sriganganagar in Rajasthan and Ambala, Kurukshetra, Mahendragarh, Panipat, Rewari and Yamunanagar in Haryana.

The Scheduled Caste Sub Plan (SCSP) since its inception in 1979 aiming at economic development through beneficiary oriented programmes for income augmentation and asset creation, infrastructure development like drinking water supply, link roads, house-sites, housing etc, education and social development through establishment of primary schools, health centers, vocational centers, community halls, women work place etc. The Sub Plan envisages flow of outlays and benefits from all the sectors in the Annual Plans proportionate to the population of scheduled caste in a given district.

On-farm testing and FLDs at SC/ST farmers' fields

The farmers of these disadvantaged groups experience various farming related stresses. To resolve these experienced problems as recorded in the participatory rural appraisals (PRA), ATARIs plans the on-farm testing of the improved and recommended technologies elsewhere and they are tested at farmers' fields by KVKs. The OFTs establish the benefits of the technologies under the micro-farming situations existing in a village of clusters of villages The farmers get encouraged to adopt such practices and technologies as they were involved in the 'learning by doing' mode of participatory extension under OFTs. The OFTs established yield and income advantage to SC/ST farmers. Besides, proven technologies are also showcased under Frontline Demonstrations to popularise the high yielding varieties and other technologies. In the year 2022, 27 OFTs at 275 ST farmers' fields and 14 OFTs at 110 SC farmers' fields were conducted for proving solutions against the most serious farming problems in the tribal districts of Rajasthan and both the States for SC farmers (Table 2). For popularization of new HYVs of field crops such as pearl millet, black gram, wheat, mustard and their package of practices, 2815 and 5308 frontline demonstrations were conducted at 3446 and 6491 tribal farmers' fields, respectively. The yield advantages ranging from 15-56% were recorded with these FLDs. The farmer's feedback has been very encouraging and majority of the farmers continued with the new varieties second year as well.

Table 2: Popularization of improved technologies amongst SC/ST farmers of Rajasthan and Haryana

Particulars		Popularization of Improved Technologies			
		On Farm Trials (No.)		Demonstrations-FLDs and others (No)	
		ST*	SC#	SC	ST
Programmes (No)	Targets	26	14	1985	5165
	Achievements	27	14	2815	5308
Beneficiaries (No)	Targets	236	110	3100	6567
	Achievements	275	110	3446	6491
Total		**275**	**110**	**3446**	**6491**

* ST population data is related to Rajasthan # SC data is from both Rajasthan and Haryana

Capacity Development of SC/ST Farmers

On-campus and off-campus Trainings by KVKs: Regular Trainings Capacity development of tribal and SC farmers is part of social inclusion being attempted by the agricultural extension system. Apart from DAPST and DAPSC, the regular programmes of trainings and skill development involve the trainees from these classes. Both on-campus and off-campus trainings are provided for capacity building of the farmers. During the year 2022/23, total 3869 training courses organised in Rajasthan, Haryana and Delhi with the participation of 39545 ST/ST farmers, farm women, rural youth and extension personnel. (Table 3). It is noteworthy that the numbers of ST/SC trainees were more than 44% in Rajasthan and Haryana. More importantly the women farmers outnumbered male

farmers. While 36.2% of total male trainees were from ST/SC group, 52.6% were the women SC/ST farmers of the total female trainees in on-campus trainings. This signifies the interest and awareness about agricultural technological development amongst women SC/ST farmers. The numbers in off-campus training was 5-6% less than the on-campus trainings but the trend was similar.

Table 3: Training and Capacity development of SC/ST farmers of Rajasthan and Haryana

	No. of courses	SC/ST Farmers (Number)			Share of SC/ST farmers (%) of total participants/trainees		
		Male	Female	Total	Male	Female	Total
On-Campus Trainings							
Rajasthan	1121	9534	5567	15101	41.1	53.0	44.8
Har & Delhi	436	1798	2187	3985	36.8	52.5	44.9
Total	**1557**	**11332**	**7754**	**19086**	**36.2**	**52.6**	**41.5**
Off Campus Training							
Rajasthan	1313	9856	5374	15230	38.2	45.2	40.4
Har & Delhi	999	2929	2300	5229	29.5	46.5	33.7
Total	**2312**	**12785**	**7674**	**20459**	**28.7**	**41.8**	**32.5**
Grand Total	**3869**	**24117**	**15428**	**39545**	**31.8**	**46.6**	**36.3**

Overall, SC/ST farmer's participation was 41.5% in on-campus trainings and 36.3% in off-campus trainings. The numbers and share of underprivileged farmers were much higher in Rajasthan as compared to Haryana and Delhi. Much encouraging was the participation of female farmers amongst SC/ST farmers. Of the total female farmers participated in the trainings, the SC/ST female farmers constituted 52.6% in on-campus and 41.8% in off-campus trainings (Figure 1). The number of female SC/ST farmers was over two times higher than male farmers of the same caste group in Haryana under both

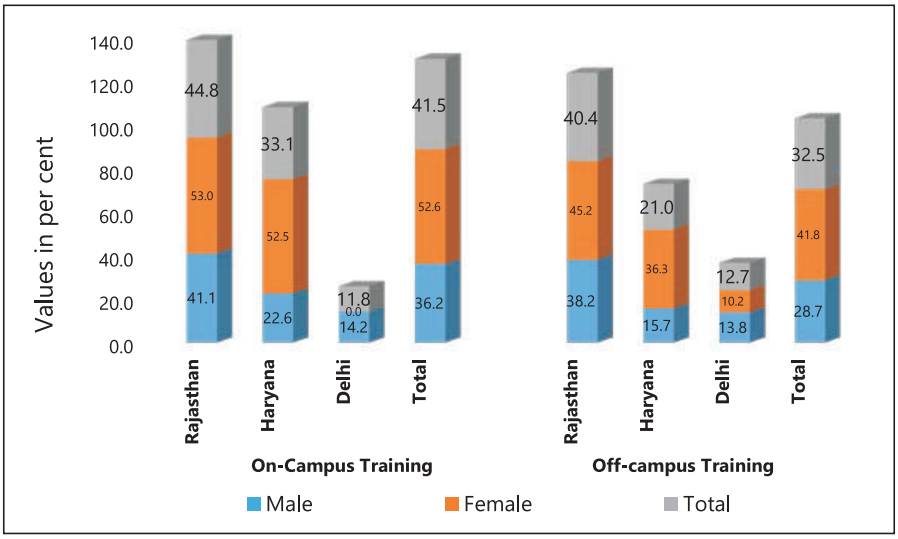


Figure 1. Participation of SC/ST farmers in on-campus and off-campus trainings provided by KVKs of Zone-II

the categories of the trainings given by KVKs. This signifies the role of KVKs in gender mainstreaming and social empowerment aspects which is a policy initiative of the Government of India and States in agriculture and allied sectors.

Trainings under DAPST and DAPSC: Under DAPST and DAPSC, 240 and 101 training programmes were conducted to develop the capacity of the tribal and SC farmers to adopt and practice improved agricultural practices. The total farmers participated in these training programme were 7033 ST and 2901 SC farmers. Besides, extension activities such as awareness camps, exposure visits etc. of ST and SC farmers are also conducted by ATARI-KVKs. In 2022/23 233 and 38 such extension activities were conducted in Rajasthan and Haryana under DAPST and DAPSC with the participation of 13713 and 1431 farmers, respectively (Table 4).

Table 4: Training and Capacity development of SC/ST farmers under DAPST and DAPSC programme

Category		Capacity Development and Awareness			
		Trainings (No.)		Camps/ Campaigns/ exposure visits (No.)	
		ST	SC	ST	SC
Programmes (No)	Targets	221	89	207	42
	Achievements	240	101	233	38
Beneficiaries (no)	Targets	6417	2365	11084	1297
	Achievements	7033	2901	13713	1431

Support of Quality Inputs

The DAPST and DAPSC projects implemented by KVKs in Rajasthan and Haryana provides for quality seed and planting materials for the benefit of the tribal and SC farmers. During 2022, the KVKs produced 2313.8 quintal quality seeds of improved varieties and provided to 2248 ST farmers. In addition, 1044419 numbers of planting material of horticultural crops were produced and made available to 16617 ST farmers and 32505 Livestock strains and fingerlings were provided to 1429 tribal farmers. Similarly, 230.65 quintal quality seeds of improved varieties of field crops were provided to 1289 SC farmers. Besides, 79368 planting material of horticultural crops were produced and made available to 906 SC farmers and 45095 livestock strains and fingerlings to 193 SC farmers (Table 5).

Table 5: Quality seed, planting materials, livestock strains and fingerlings provided to SC/ST farmers under DAPST and DAPSC programme

Category		Quality Input support to Tribal Farmers					
Activity		Seeds (qtls)		Livestock strains/ fingerlings (No.)		Planting material (No.)	
		ST	SC	ST	SC	ST	SC
Programmes (No)	Targets	2394.3	143.02	27168	41625	951424	69850
	Achievements	2313.8	230.65	32505	45095	1044419	79368
Beneficiaries/ Participants (No)	Targets	2132	1246	1275	193	11184	860
	Achievements	2248	1289	1429	193	16617	906

Analytical Services and Facilitation

Under DAPST and DAPSC programme, the soil and plant sample analysis of farmers and entrepreneurship development are targeted activities. The soil and plant samples drawn by the farmers fields of these categories are analysed in the laboratories of KVKs and the report is provided to farmers for their judicious use. Besides, the youths of these groups are identified skill development and trained to establish various enterprises such as honey bee keeping, goatary, dairying, nursery establishment, processing of food products, etc. During the year 2022/23, total 2306 ST and 1466 SC farmers were provided with soil and water samples analysis reports. The entrepreneurship was also promoted at 850 ST and 28 SC farmers (Table 6).

Table 6: Soil and water sample analysis and agripr-entrepreneurship development of SC/ST farmers under DAPST and DAPSC programme

Category		Services/ facilitation			
Activity		soil and water sample analysis (No.)		Promotion of agri-entrepreneurship (No.)	
		ST	SC	ST	SC
Programmes (No)	Targets	2470	1685	221	25
	Achievements	2300	1651	196	26
Beneficiaries/ Participants (No)	Targets	2264	1570	785	37
	Achievements	2306	1466	850	28

Natural Farming under DAPST and DAPSC

As the tribal regions are organic by default, a special focus has been given to popularise and out scale natural farming in these districts of Rajasthan. The KVKs organized 603 demonstrations, 63 training and 103 awareness campaigns involving 988, 1847 and 7244 tribal farmers, respectively especially on natural farming (Table 7).

Table 7: Demonstrations, Training and Awareness Programs on Natural Farming amongst SC/ST Farmers of Rajasthan and Haryana

Category		Natural Farming					
Activity		Demonstration (No.)		Trainings (No.)		Awareness Programs (No.)	
		ST	SC	ST	SC	ST	SC
Programmes (No)	Targets	570	28	61	30	77	36
	Achievements	603	28	63	29	103	42
Beneficiaries/ Participants (No)	Targets	638	44	1745	815	3776	1275
	Achievements	988	44	1847	841	7244	1542

Creation of Assets under DAPST

DAPST is designed to create permanent assets individually or for the community in the tribal dominated areas for the long lasting benefits to the group. The financial support of Rs 104 lakh was provided for creating permanent assets for direct benefit of tribal farmers and communities during 2022-23. The achievements of permanent assets created by KVK's at individual farmer's field or at community level through STC funding in Rajasthan has been very encouraging for diversified agricultural activities. The mechanization got the maximum priority for enhancing the resource use efficiency and

reducing the drudgery of the tribal farmers. Close to 50% KVKs created farm machinery assets for efficient application of applied inputs such as knapsack sprayers; conservation agriculture like rotavator; and small farm tools such as brush cutter, chaff cleaner, Kisan torch, Kudali, sickles, secateurs etc. In order to promote diversified agricultural practices and processing for value addition, 45.8% KVKs created goat rearing and breeding buck units and 29.2% created storage bins. The poultry units and mini dal mill & oil extractor units were established by 20.8% KVKs. For improving the breeds of buffalo, buffalo breeding bulls were provided by 12.5% KVKs. The vermi-compost and Azolla demonstration units were established by 12.5% KVKs.

Diversified Farming

The horizontal and vertical diversification in agriculture for enhanced livelihood and employment opportunities of the tribal families was sharply focused under STC. Small ruminant and avian activities attracted maximum investment with 30.7% of the total funding under STC invested in these activities followed by 17.4% in farm machineries and efficient application tools, 16.5 and 14.3% for storage structures and pulses processing, respectively and 10% in poultry related activities.

Employment and Income augmenting Actions

The additional employment and income to tribal farm families on sustainable basis was given thrust in the form of group activity involving 20 members of the tribal farmers. For promotion of processing of pulses and oilseeds, 4 mini dal mills and one oil extractor units were established at community level. KVKs also implemented direct benefit activities as well. These included back yard poultry for egg production by tribal farm women in 22 districts. Goat rearing has also been set up as gainful employment generating activity on sustainable basis. Tribal farmers were facilitated with GI sheet storage bins of 2-5 quintal capacities to enable them to store at least 10-15 percent produce of demonstrations as seeds.

Distribution of Trainings across thematic groups

Amongst the different thematic areas of trainings by KVKs, the largest share of 49.3% numbers of trainings was accounted by crop based activities (Figure 2) represented by 46.7% farmer trainees. The NRM & Input preparations, livestock & fisheries and

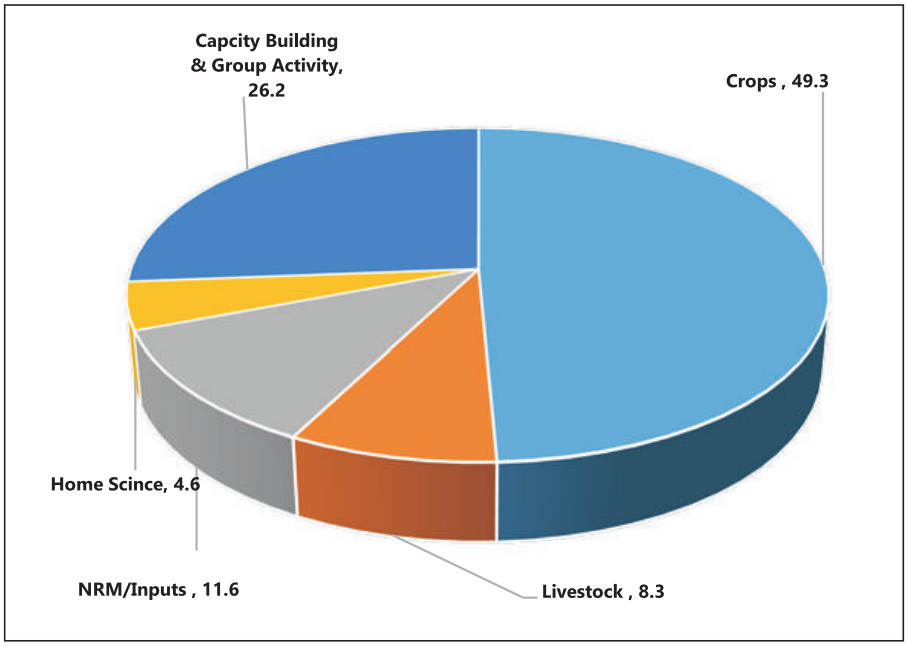


Figure 2 : Distribution of numbers of trainings under different thematic groups

nutrition, dietary management etc under home science shared 10.3, 11.0 and 11.8% of trainees, respectively. Encouragingly, the capacity building and group activities shared over 1/5th of the numbers of trainees and over 1/4th the total numbers of training programs (Table 8). The female farmers outnumbered male farmers in home science and group activity thematic areas (Table 9 & 10).

Table 8: Statewise distribution of SC/ST Farmers for Capacity Development under different Thematic Area

Thematic area	SC/ST Farmers trained in Zone-II				Rajasthan				Haryana & Delhi			
	Courses	Male	Female	Total	Courses	Male	Female	Total	Courses	Male	Female	Total
Crop Production	348	3483	1074	4557	271	3183	1021	4204	77	300	53	353
Plant Protection	155	1214	365	1579	112	1008	318	1326	43	206	47	253
Horticulture	171	1866	901	2767	147	1794	755	2549	24	72	146	218
Soil Health and Fertility Management	68	467	158	625	57	408	158	566	11	59	0	59
Production of Inputs at site	22	191	24	215	15	148	23	171	7	43	1	44
Agril. Engineering	14	212	113	325	12	204	113	317	2	8	0	8
Agro-forestry	15	122	22	144	10	76	22	98	5	46	0	46
Livestock Production and Management	146	1230	930	2160	117	1098	835	1933	29	132	95	227
Fisheries	9	131	32	163	6	120	32	152	3	11	0	11
Home Science & Women empowerment	161	140	1878	2018	117	124	1302	1426	44	16	576	592
Group Dynamics	63	454	194	648	47	370	174	544	16	84	20	104
Rural Youth	240	1218	1464	2682	116	612	333	945	124	606	1131	1737
Extension Personnel	145	604	599	1203	94	389	481	870	51	215	118	333
Total	**1557**	**11332**	**7754**	**19086**	**1121**	**9534**	**5567**	**15101**	**436**	**1798**	**2187**	**3985**

Table 9: Number of Training Courses for SC/ST farmers

Thematic area	Zone II	Rajasthan	Haryana & Delhi	Distribution of training courses (%)	
	Courses	Courses	Courses	Rajasthan	Haryana and Delhi
Crop Production	348	271	77	77.9%	22.1%
Plant Protection	155	112	43	72.3%	27.7%
Horticulture	171	147	24	86.0%	14.0%
Soil Health and Fertility	68	57	11	83.8%	16.2%
Production of Inputs at site	22	15	7	68.2%	31.8%
Agril. Engineering	14	12	2	85.7%	14.3%
Agro-forestry	15	10	5	66.7%	33.3%
Livestock Production and	146	117	29	80.1%	19.9%
Fisheries	9	6	3	66.7%	33.3%
Home Science & Women	161	117	44	72.7%	27.3%
Group Dynamics	63	47	16	74.6%	25.4%
Rural Youth	240	116	124	48.3%	51.7%
Extension Personnel	145	94	51	64.8%	35.2%
Total	**1557**	**1121**	**436**	**72.0%**	**28.0%**

Table 10: Distribution of total SC/ST participants in Training Courses

Thematic area	Zone II	Rajasthan	Haryana & Delhi	Distribution of training courses (%)	
	Participants	Participants	Participants	Rajasthan	Haryana and Delhi
Crop Production	4557	4204	353	92.25%	7.75%
Plant Protection	1579	1326	253	83.98%	16.02%
Horticulture	2767	2549	218	92.12%	7.88%
Soil Health and Fertility Management	625	566	59	90.56%	9.44%
Production of Inputs at site	215	171	44	79.53%	20.47%
Agril. Engineering	325	317	8	97.54%	2.46%
Agro-forestry	144	98	46	68.06%	31.94%
Livestock Production and Management	2160	1933	227	89.49%	10.51%
Fisheries	163	152	11	93.25%	6.75%
Home Science & Women empowerment	2018	1426	592	70.66%	29.34%
Group Dynamics	648	544	104	83.95%	16.05%
Rural Youth	2682	945	1737	35.23%	64.77%
Extension Personnel	1203	870	333	72.32%	27.68%
Total	19086	15101	3985	79.12%	20.88%

Frontline Extension in Climatically Vulnerable Districts

National Innovation for Climate Resilient Agriculture (NICRA) is implemented in 18 KVKs including 13 of Rajasthan (Alwar-I, Barmer-I, Bharatpur, Bhilwara-I,Bikaner-I, Churu-I, Hanumangarh-I, Jaisalmer-I, Jhunjhunu, Jodhpur-I, Nagaur-I, Pali-I, Sirohi) and 5 of Haryana (Bhiwani, Fatehabad, Hisar, Mahendergarh, Sirsa). These KVKs are involved in carrying out different activities under Technology Demonstration Component of NICRA comprised of various modules. Altogether 26309 partner farmers (NRM-1903, crop production-3049, livestock and fodder production-1674, institutional interventions including custom hiring -2483, capacity building-5424 extension activities-17766) were involved.

NRM Module: Water-positive interventions were implemented which included *in-situ* water conservation, rainwater harvesting and recycling, renovation of old check dams, farm ponds and community ponds, resource conservation technology (RCTs), efficient water application tools: MI systems, hydrogel -Soil & Nutrient Management, soil amendment/soil test based nutrient application, green manuring, crop residue-based compost, crop residue management/ incorporation at 1903 farmers' fields covering 1354.1 ha cropped area. All these interventions cumulatively led to water economy by 21-38%. N-economy of 21-27% and yield enhancement of 11-31% which resulted into income augmentation of farmers by 18-36%.

Field Demonstration on Resource Conservation Technology

Crop Production Modules: Short duration varieties of cluster bean, pearl millet, cowpea, chickpea, basmati rice resulted 18.0 to 30.5% increase in crop yields. The demonstrations on drought tolerant varieties of barley, mungbean, pearl millet, moth bean, raya, chickpea, cumin, and cotton over 425.5 ha area resulted 17.7 to 40.9 % increase in crop yields. Moisture Stress management in wheat involving HD-3086 and Karan Vandna over 10 ha area resulted an increase of 15-20% increase in grain yield. For the terminal heat management 110 demonstrations were conducted on 44 ha area. The planting dates advancement of mustard (Giriraj) and wheat (Raj-4238, DBW-187, WH-1124) recorded an increase of 15-20 increase in productivity of these crops. The location specific 71 interventions on inter-cropping at 32.4 ha area with green gram (MH-421) + pearl millet (RHB-173) in 3:1 ratio and maize (DHM-121) + black gram (PU-01) in 2: 2 ratio recorded 15.3 and 34.5% high yields over local check. Integrated Pest and Disease Management in Cumin (GC-4), Isabgol (RI-1), Cotton (RHC-926, Guar HG-2-20) over 52.0 ha resulted 14.9 to 36 % increase in yield. The crop diversification demonstrations resulted 19.4 to 23.3 % increase in productivity of farmers under stressed conditions.

Varietal demonstrations of Mustard

Pomegranate in water stressed western Rajasthan bringing prosperity to farmers

Livestock and Fodder Production: The livestock interventions carried out through 1674 demonstrations covering 3078 different categories of livestock of 810 farmers. Breed improvement porgramme through 100 interventions using Murrah buffalo bull, Tharparkar bull, Jamnapari and Sirohi bucks was initiated in NICRA villages, which involved 643 animals. To mitigate mineral deficiency in 879 animals belonging to 515 livestock owners recorded 19.4 percent increase in milk production. The deworming in 285 animals recorded 12.7 to 20% increase in milk production. Further 924 animals were treated in animal health camps organized in the NICRA villages through 22 demonstrations; a significant improvement was recorded in milk production of animals ranging from 15.5 to 22.25%.

Institutional Interventions: Custom hiring for timely operations, community fodder production, compost-pit and silage making, total 46 community seed and fodder bank involving 99 farmers, kitchen gardens and establishment of bio-gas units etc. NICRA KVKs under Custom Hiring Centres facilitated 1206 farmers in different agricultural operations covering an area of 1225.9 ha and earned a revenue of Rs 75000/ in a year.

Capacity Building Activities: Total 178 courses were conducted in which 5424 partner farmers including 1423 farm women participated. The trainings were given on crop diversification and management, agricultural farm implements and machineries, NRM, feed, fodder and livestock management, pest and disease management, resource conservation technology, rodent and weed control, nursery raising, vermi-compost, value addition, alternate energy source, human nutrition and child care and drudgery reduction through farm implements for women etc.

Way Forward

'*Amrit Kal*' of India's independence shall witness two major landmarks in Agricultural Research, Extension and Education System. ICAR-KVK system celebrating its 50th year in 2024 and ICAR celebrating its centenary year in 2029. Indian Agriculture is being reimagined, so should be the extension system. Under disadvantaged and challenged ecologies, the programme delivery to the targeted clientele is rather difficult for which public policies, investments, incentives for the public goods are essentially required. The immediate past witnessed many innovations in participatory extension which need to be continued with vigour and strengthened. The private agents as extension support and rural youths for entrepreneurship should be our priority. As we are focussing on agri-food system and agriculture for nutrition, linking small holders and family farmers at all points of value chain and local food systems will have far-reaching impacts. The frontline extension needs to have strong blending of production technologies, value addition and nutrition interventions.

The priority areas are climate resilient agriculture and climate smart farming with involvement of farming community at the grass root level, more so in the disadvantaged areas for underprivileged farmers. This will help inclusive development of the society and farming and mainstreaming those who need it the most. Focus on one district one product for export opportunities,

aspirational districts /blocks, resource use efficiency, hi-tech and precision agriculture, reducing chemical usage in agriculture, popularization of green energy and carbon credit literacy are some of the major drives that have to be taken forward in near future. Processing and value addition are essential to add to the farmer's income in stressed regions. The deeper penetration of hand-held ICT devices–mobile by KVKs in tribal and remote places will help ICT led smart farmers and farming. The capacity building of community-based organizations and farmers' groups in tribal and SC dominated areas and climatically vulnerable districts for acquiring knowledge and its transfer is essential. The linkages with agri-startups, private players need to be promoted through 'push' and 'pull' mechanism. The strengthening of KVKs for efficient delivery of services and technologies will be a long-lasting impactful intervention to empower those classes of the society and geographies which need them the most. This will require structural and cyclical reforms in KVKs and frontline extension system.

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