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PREFACE

The Zonal Project Directorate Zone VIII, Bangalore is one among the eight Directorates under Division of Agricultural Extension, ICAR, New Delhi established for coordinating and monitoring activities of 77 Krishi Vigyan Kendras (KVKs) with the technical support of Directorates of Extension of State Agricultural Universities in four states viz., Karnataka (28), Kerala (14), Tamil Nadu (30) and Goa (2) and two Union Territories viz., Puducherry (2) and Lakshadweep (1) and 10 Agricultural Technology Information Centres (ATICs) in three states.

Indian Council of Agricultural Research upgraded the Zonal Coordinating Unit as Zonal Project Directorate w.e.f March 2009. This is the first Annual Report of this Directorate. Comprising information about the Zonal Project Directorate and KVKs, achievements of KVKs covering technology assessment & refinement, frontline demonstrations, trainings, extension programmes, production of technology products, soil water and plant analysis, rain water harvesting with micro-irrigation, innovative technology delivery and awards and recognition accomplished during the year. Further, achievements of Agricultural Technology Information Centres (ATICs) and technological backstopping by Directorates of Extension are also briefed. At the end it includes the details on Human Resource development, Publications, workshops/meetings/conferences, personnel and transfers/promotions of the Zonal Project Directorate, Zone VIII.

I express my sincere thanks and regards to Dr.Mangala Rai, the then Secretary DARE and Director General ICAR, Dr.S.Ayyappan, Secretary DARE and Director General, ICAR, Dr.K.D.Kokate, Deputy Director General (Agrl.Extn.), Dr.A.K.Mehta and Dr.V.Venkatasubramanian, Assistant Directors General (Extension), Shri A.C.Ghosh, Director (GA/AE), Division of Agricultural Extension, ICAR, Vice-Chancellors, Directors of Extension of State Agricultural Universities, Directors of ICAR Institutes, Directors of Agriculture, and NGO Chairmen in Zone VIII for active support and encouragement received while implementing mandated activities effectively during 2009-10. I further wish to express my sincere thanks to all the Programme Coordinators and all staff of KVKs in Zone VIII, officials in ATIC, the farming community and line department officials and all my colleagues in the Zonal Project Directorate, Zone VIII for their active support and co-operation rendered during the reporting period.

I hope this report would be of immense use to the National Agricultural Research and Extension System in general and Krishi Vigyan Kendras in particular.

Bangalore
September 2010


(S.PRABHU KUMAR)
ZONAL PROJECT DIRECTOR



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कार्यकारी सारांश

क्षेत्रीय परियोजना निदेशालय, क्षेत्र-8, बंगलूर दक्षिण कर्नाटक के लिए कृषि विज्ञान विश्वविद्यालय, बंगलूर, उत्तरी कर्नाटक एवं गोवा के लिए कृषि विज्ञान विश्वविद्यालय, धारवाड और रायचूर, कर्नाटक के लिए कर्नाटक पशु चिकित्सा एवं मछली पालन विश्वविद्यालय, केरल एवं लक्षद्वीप के लिए केरल कृषि विश्वविद्यालय, तमिलनाडू और पुदुच्चेरी के लिए तमिलनाडू कृषि विश्वविद्यालय, तमिलनाडू एवं पुदुच्चेरी के लिए तमिलनाडू पशु चिकित्सा एवं मछली पालन विश्वविद्यालय के अंतर्गत 6 विस्तार निदेशालयों के तकनीकी सहयोग से चार राज्यों, जैसे, कर्नाटक, केरल, तमिलनाडू, और गोवा तथा दो संघ राज्य क्षेत्रों, जैसे पुदुच्चेरी और लक्षद्वीप में स्थित 77 कृषि विज्ञान केन्द्रों और 10 कृषि प्रौद्योगिकी सूचना केन्द्रों की गतिविधियों का समन्वयन और अनुवीक्षण करता है। वर्ष 2009-10 के दौरान इस क्षेत्र की मुख्य उपलब्धियाँ निम्नलिखित हैं :

- फसल प्रणालियाँ, रोग-नियंत्रण, कड़ी मजदूरी में कमी, खेती के यंत्र, समेकित फसल प्रबंधन, समेकित रोग प्रबंधन, समेकित पोषण प्रबंधन, समेकित कीट प्रबंधन, साधन संरक्षण प्रौद्योगिकी, बीज उत्पादन, भण्डारण तकनीक, किस्मवार मूल्यांकन और खरपतवार नियंत्रण आदि विभिन्न विषयों के अंतर्गत 2591 प्रक्षेत्र परीक्षणों के माध्यम से कुल 350 प्रौद्योगिकियों का मूल्यांकन किया गया तथा कृषि कार्यों के अधीन 294 प्रक्षेत्र परीक्षणों के माध्यम से 29 प्रौद्योगिकियों का नवीकरण किया गया। पशु-पालन एवं मछली उत्पादन में 712 प्रक्षेत्र परीक्षणों के माध्यम से 42 प्रौद्योगिकियों का मूल्यांकन किया गया। इनके अतिरिक्त अन्य उद्यमों में 91 प्रक्षेत्र परीक्षणों के माध्यम से 10 प्रौद्योगिकियों का मूल्यांकन किया गया। सफलतापूर्वक मूल्यांकन की गई और प्रदर्शन कराने के लिए ली गई प्रौद्योगिकियों में मूँगफली में जड़-सड़न का नियंत्रण, धान में यंत्रीकृत प्रतिरोपण, केरल के गैर-परंपरागत क्षेत्रों में पत्तागोभी और फूलगोभी की खेती, प्याज के कीटों का नियंत्रण, कपास एवं सूरजमुखी में चूर्णी कीट का नियंत्रण, सुपारी के छोटे पेड़वाले बागानों में चना एवं भिण्डी की अंतरवर्ती फसल क्रिया, मक्के के साथ सोयाबीन और

फ्रेंचबीन की अंतरवर्ती फसल क्रिया, सूरजमुखी के साथ तुअर की अंतरवर्ती फसल क्रिया, बंगाली चना और सूरजमुखी की कटाई में लगनेवाली कड़ मजदूरी को कम करने की तकनीक, मूँगफली में खरपतवार नियंत्रण, उन्नत शफरी आंगुलिक मछलियों के उत्पादन के लिए सक्षम भण्डारण व सिंचाई टैंक, गायों में पोस्ट पार्टम एनेस्ट्रम बीमारी का नियंत्रण आदि शामिल हैं।

- क्षेत्र 8 के कृषि विज्ञान केन्द्रों ने 3908.88 हेक्टेयर में 9836 अग्रिम पंक्ति प्रदर्शन चलाए। इनमें से 5198, 3880, 538, 94, 126 और 10 अग्रिम पंक्ति प्रदर्शन 2251.12, 1439.16, 148.81, 32.70, 27 और 6 हेक्टेयर में क्रमशः कर्नाटक, तमिलनाडू, केरल, पुदुच्चेरी, गोवा और लक्षद्वीप में हैं। इसके अतिरिक्त प्रक्षेत्र उपकरणों पर 941, पशु-पालन पर 1486, मछली-पालन में 91 और अन्य उद्यमों में 237 अग्रिम पंक्ति प्रदर्शन चलाए। धान, मूँगफली, उड़द, तुअर, टमाटर के अधिक पैदावार वाली एवं संकर किस्मों, धान में यंत्रीकरण, चावल को बढ़ाने की प्रणाली, बैंगन के प्ररोह एवं फल छेदक, करेले की फल-मक्खी का नियंत्रण, कली-सड़न जैसी बीमारियों का नियंत्रण आदि को लोकप्रिय बनाने का कार्य किया गया। इसके अतिरिक्त उत्पादकता और लाभ बढ़ाने के लिए किसानों के खेत में कपास उत्पादन तकनीकी और खेती के उपकरणों पर कई अग्रिम पंक्ति प्रदर्शन भी चलाए।
- कुल 12240 प्रशिक्षण कार्यक्रम आयोजित किए गए जिनके माध्यम से किसानों, कृषक महिलाओं, ग्रामीण युवकों, विस्तार कार्यकर्ताओं सहित 427513 लोगों को कृषि के विभिन्न पहलुओं और संबद्ध विषयों पर प्रशिक्षित किया गया।
- 86488 विस्तार कार्यक्रम आयोजित किए गए जिनमें 59.49 किसानों और 1.91 विस्तार कार्यकर्ताओं को फायदा हुआ जिन्होंने आधुनिक कृषि प्रौद्योगिकियों के बारे में ज्ञान प्राप्त किए। इनके अतिरिक्त 23951 जनसंचार माध्यम कार्यक्रम भी आयोजित किए गए।



- कृषि विज्ञान केन्द्रों ने 6178.58 किं. बीज, 221.32 लाख रोपण सामग्रियाँ, 99180 पशु, कुक्कुड़ और मछलियों तथा 2163 किं. जैविक-उत्पादों का उत्पादन किया गया तथा किसानों को वितरित किया गया।
- क्षेत्रीय परियोजना निदेशाल और विस्तार निदेशालय द्वारा आयोजित मानव संसाधन विकास कार्यक्रमों के माध्यम से कृषि विज्ञान केन्द्रों के 668 कर्मचारियों ने प्रशिक्षण प्राप्त किया। इसके अतिरिक्त कृषि विज्ञान केन्द्रों के 182 कर्मचारियों को विस्तार निदेशालय द्वारा कृषि एवं इससे संबंधित क्षेत्रों के अद्यतन विषयों पर आयोजित कार्यशालाओं/सेमिनारों के माध्यम से लाभ मिला।
- क्षेत्र 8 के 10 कृषि प्रौद्योगिकी सूचना केन्द्रों के द्वारा 399.19 लाख रुपए की आमदनी प्राप्त हुई।
- इस क्षेत्र में 52 मशदा एवं जल-परीक्षण प्रयोगशालाएँ हैं और इन प्रयोगशालाओं में मशदा के 16788 नमूने, जल के 5544 नमूने, पौध सामग्रियों के 205 नमूने, खादों के 34 नमूने और चूने जैसे अन्य 331 नमूने का विश्लेषण किया गया तथा इससे 8080 गाँवों के 17045 किसानों को फायदा हुआ तथा रु. 12.37 लाख की आय भी प्राप्त हुई।
- प्रौद्योगिकियों के तेज़ प्रचार-प्रसार हेतु कृषक मोबाई सलाह सेवाएँ कर्नाटक, केरल और तमिलनाडू में अपनाई गई तथा कृषि प्रौद्योगिकियों और अन्य कृषि सलाह संबंधी 6765 एस एम एस सेवाएँ अपनाई गई जिससे 34844 किसान लाभान्वित हुए।
- कृषि विज्ञान केन्द्रों में विभिन्न प्रदर्शनों की वैज्ञानिक विशेषताओं को दर्शाने एवं किसानों, शोधकर्ताओं, विस्तार कार्यकर्ताओं और विकास विभागों के बीच तकनीकी सहयोग प्रदान करने के उद्देश्य से 48 कृषि विज्ञान केन्द्रों में प्रौद्योगिकी सप्ताह मनाया गया जिसमें 80777 किसानों भाग लिया।
- विभिन्न विषयों में से एक है प्राकृतिक संसाधन का प्रबंधन, जिस पर इस क्षेत्र में ज्यादा जोर दिया जा रहा है। 95 प्रशिक्षण कार्यक्रमों और 41 प्रदर्शनों के माध्यम से वर्षा-जल-प्रबंधन प्रौद्योगिकियों को बढ़ावा दिया जा रहा है।
- क्षेत्र 8 के दो कृषि विज्ञान केन्द्रों, जैसे तमिलनाडू के ईरोड के कृषि विज्ञान केन्द्र और उत्तर गोवा के कृषि विज्ञान केन्द्र, को वर्ष 2008 के दौरान भारतीय कृषि अनुसंधान परिषद के सर्वश्रेष्ठ कृषि विज्ञान केन्द्र का पुरस्कार प्राप्त हुआ है। इसके अतिरिक्त कर्नाटक के हासन जिले के कृषि विज्ञान केन्द्र को भारतीय खाद संघ के वर्ष 2009-10 का सर्वश्रेष्ठ संस्थान का राष्ट्रीय पुरस्कार प्राप्त हुआ है।

Executive Summary

The Zonal Project Directorate, Zone VIII, Bangalore coordinating and monitoring the activities of 77 Krishi Vigyan Kendras (KVKs) and 10 Agricultural Technology Information Centres (ATICs) located in 4 States viz., Karnataka, Kerala, Tamil Nadu and Goa and 2 Union Territories viz. Puducherry and Lakshadweep with technical backstopping of 6 Directorates of Extension under University of Agricultural Sciences Bangalore for Southern Karnataka, University of Agricultural Sciences Dharwad and Raichur for Northern Karnataka and Goa, Karnataka Veterinary Animal and Fisheries Sciences University for Karnataka, Kerala Agricultural University for Kerala and Lakshadweep, Tamil Nadu Agricultural University for Tamil Nadu and Puducherry, Tamil Nadu Veterinary and Animal Sciences University for Tamil Nadu and Puducherry. The major achievements under this Zone during 2009-10 are as follows:

- A total of 350 technologies were assessed through conducting 2591 On Farm Trials conducted on various thematic areas such as cropping systems, disease management, drudgery reduction, farm machineries, Integrated Crop Management, Integrated Disease Management, Integrated Nutrient Management, Integrated Pest Management Nutrient management, Resource Conservation Technologies, Seed production, Storage techniques, Varietal evaluation and Weed management and 29 technologies refined through conducted 294 On Farm Trials under crop husbandry. In case of livestock and fishery production, 42 technologies were assessed through 712 On Farm Trials. In addition, 10 technologies were assessed through 91 On Farm Trials in other enterprises. The technologies which were successfully assessed and taken for demonstrations include management of root rot in groundnut, mechanized transplantation in paddy, cultivation of cabbage and cauliflower in non traditional areas of Kerala, management of onion

thrips, management of mealy bug in cotton and sunflower, intercropping of pigeon pea and okra (bhendi) in young arecanut gardens, intercropping of soybean and French bean in maize, intercropping of redgram in sunflower, drudgery reduction in harvesting of bengal gram and sunflower, weed management in groundnut, potential of storage cum irrigation tanks for production of advanced carp fingerlings, management of post partum anestrus in cows etc.

- A total of 9836 frontline demonstrations were conducted by KVKs in Zone VIII in an area of 3908.88 ha. Out of which 5198, 3880, 538, 94, 126 and 10 FLDs were conducted in 2251.12, 1439.16, 148.81, 32.70 27 and 6 ha in Karnataka, Tamil Nadu, Kerala, Puducherry, Goa and Lakshadweep, respectively. In addition, 941 FLDs on farm implements, 1486 demonstrations in livestock, 91 in fisheries and 237 in other enterprises were conducted. Popularization of high yielding varieties and hybrids in paddy, groundnut, blackgram, redgram, tomato, mechanization in paddy, Systems of Rice Intensification (SRI), management of pests like shoot and fruit borer in brinjal, fruit fly in bitter gourd, diseases like bud rot in coconut were undertaken. In addition, FLDs on cotton production technology, farm implements were also undertaken of cotton crop in the States of Karnataka and Tamil Nadu for improving productivity and profitability in farmer's fields.
- A total of 12240 trainings were organized and trained 427513 personnel comprising of farmers, farm women, rural youth, extension personnel on various aspects of agriculture and allied sectors.
- A total of 86488 extension programmes were organized wherein 59.49 lakh farmers and 1.91 lakh extension personnel were exposed and acquainted with modern agricultural technologies. In addition, 23951 mass media programmes were also undertaken.



- A total of 6178.58 q seeds, 21.32 lakh planting materials, 99180 number livestock, poultry & fisheries strains and 2163 q bio-products were produced by KVKs and supplied to the farmers.
- A total of 668 staff of KVKs were trained through HRD programmes organized by Zonal Project Directorate and Directorates of Extension. Further, 182 KVK staff were exposed to recent advances in agriculture and allied sectors through workshops/seminars conducted by the Directorates of Extension.
- A total of Rs. 399.19 lakh generated as revenue by 10 Agricultural Technology Information Centres (ATICs) in Zone VIII.
- Soil and Water Testing Laboratories are established in 52 KVKs in the Zone and a total of 16788 samples of soil, 5544 samples of water, 205 samples of plant material, 34 samples of manure and 331 other samples like lime etc. were analyzed generating a revenue of Rs.12.37 lakh and benefiting 17045 farmers from 8080 villages
- For quicker technology dissemination, Kisan Mobile Advisory Service is provided in three states viz., Karnataka, Kerala and Tamil Nadu and 6765 SMS related to agricultural technologies and other farm advisory services were sent 34844 registered farmers.
- Technology week was observed by 48 KVKs with an aim of exposing the scientific features of various demonstrations in the KVK as well as to provide a platform for technical coordination between farmers, researchers, extension agencies and development departments, in which 80777 farmers have participated.
- As a part of Natural Resource Management rain water harvesting technologies were promoted through 95 training programmes and 41 demonstrations.
- Two KVKs of Zone VIII viz., KVK Erode in Tamil Nadu and KVK North Goa bagged the ICAR's Best KVK Award during 2008. In addition, KVK Hassan in Karnataka received the Best Institution award at National level from the Fertilizer Association of India (FAI) for 2009-10.

1. About Zonal Project Directorate

The Zonal Project Directorate has upgraded from the earlier Zonal Coordinating Unit VIII which was established in September 1979 at Tamil Nadu Agricultural University, Coimbatore to monitor the activities of Lab to Land Programme. The ZCU was transferred to Bangalore in September 1981 and from 1986, the additional responsibility to monitor all the ICAR Projects under the Division of Agricultural Extension located in this zone comprising Karnataka, Kerala, Tamil Nadu, Goa, Puducherry and Lakshadweep was assigned.

At present, the Zonal Project Directorate monitors activities of 77 KVKs and 10 Agricultural Technology Information Centres (ATICs) located in four states namely Karnataka, Kerala, Tamil Nadu and Goa and two Union Territories namely Puducherry and Lakshadweep.



A view of Zonal Project Directorate-Zone VIII, Hebbal, Bangalore

1.1 Mandate

Formulate, implement, monitor and evaluate Krishi Vigyan Kendras and Agricultural Technology Information Centres.

- ❖ To formulate, implement, monitor and evaluate the activities of Krishi Vigyan Kendra and other projects of the Division of Agricultural Extension of ICAR.
- ❖ To coordinate the works relating to these projects with various agencies such as State Agricultural Universities (SAUs), ICAR institutes, Voluntary

Agencies, Directorate of Agriculture and Animal Husbandry of the States, and other Development Departments.

- ❖ Formulation of network research projects of technology assessment and refinement in the Zone.
- ❖ Coordinating the process of content development and preparation of district specific technology module.
- ❖ To serve as feedback mechanism from the projects to research and extension systems.
- ❖ To implement the Front Line Demonstrations on oilseeds, pulses and cotton etc. assigned by ICAR.
- ❖ To perform other activities needed for implementation of assigned programmes.

1.2 Staff

Total sanctioned staff strength of Zonal Project Directorate, Zone VIII, Bangalore is 13 as detailed below:

Category	Sanctioned	Filled
Zonal Project Director (RMP)	01	01
Scientific	04	04
Technical	02	02
Administrative	05	05

1.3 Research Projects

1.3.1 Development of expert system for agriculture and animal husbandry

The Expert System Project was sanctioned by the ICAR as network project under Directorate of Research for Women in Agriculture, Bhubaneswar and Zonal Project Directorate, Zone VIII, Bangalore as lead centre. The Directorate of Extension Education, Tamil Nadu Agricultural University, Coimbatore and Directorate of Extension, Tamil Nadu Veterinary and Animal Sciences University, Chennai are the implementing centres.



Objectives

- i. To identify location specific knowledge needs of the farming community for content generation and digitization.
- ii. To develop expert system in respective languages on the crops and animal enterprises.
- iii. To test the validity and reliability of the expert systems at different locations both on men and women farmers before finalizing multilingual customized mode.

Process of Development of Expert System

- Data generation and content digitization for paddy, ragi, sugarcane, coconut and precision farming technology for banana.
- Expert System development for the above crops
- Content development of expert system in multilingual namely Tamil, Kannada and Malayalam with the assistance of resource centres.
- Expert System shell development for Animal Husbandry Components
- Testing validity and reliability of the expert system.

Salient achievements

Content Development on Paddy

The following information have been collected with respect to paddy.

- Soil and Climate related to Tamil Nadu, Kerala and Karnataka.
- Season and varieties for Tamil Nadu, Kerala and Karnataka.
- Nursery preparation practices for Tamil Nadu, Kerala and Karnataka
- Main field preparation practices of rice for Tamil Nadu, Kerala and Karnataka.
- Irrigation Management for Tamil Nadu, Kerala and Karnataka.
- Weed management for Tamil Nadu, Kerala and Karnataka.

- Nutrient Management for Tamil Nadu, Kerala and Karnataka.
- Crop Protection Practices (Pest management, Disease management, Physiological disorder).
- Harvesting and post harvesting technologies
- Management of storage pest
- System of rice cultivation - Cultivation practices
- Prepared frequently asked questions for rice pest and SRI cultivation practices.

Scouting of visuals on Paddy

- Nursery and main field preparation photos and videos are collected.
- Photos and videos are collected for transplanting and fertilizer application in main field.
- Weeding operation - Hand weeding and use of Cono weeder photos and videos are collected.
- Pest and diseases photos and videos are collected.
- Harvest and post harvest related photos are collected.

Content Development on Coconut

The following contents were collected and finalized in coconut.

- Planting Season and Climate related to Tamil Nadu, Kerala and Karnataka
- Coconut Varieties for Tamil Nadu, Kerala and Karnataka.
- Nursery Management related to mother palm selection and nursery preparation.
- Cultivation practices of coconut for Tamil Nadu, Kerala and Karnataka.
- Irrigation Management for Tamil Nadu, Kerala and Karnataka.
- Nutrient Management for Tamil Nadu, Kerala and Karnataka.
- Fertilizer calculator and cost of fertilizer (Tamil Nadu) was prepared.

- Crop protection practices of coconut were prepared (pest management, disease management, physiological disorder and special problems management).
- Harvesting technologies were prepared.
- Coconut processing details was collected (related to coconut products)
- Listed out farm implements for coconut
- Marketing committee (Tamil Nadu, Kerala and Karnataka), coconut growers association coconut nurseries in States, Schemes on coconut, further links, statistic details were prepared.
- Prepared cost of cultivation for one acre of coconut garden.
- Prepared Frequently Asked Questions were prepared.

Scouting of visuals on Coconut

- Important variety photos were taken.
- In mother palm selection, photos were taken and separated the photos related to content (selection of seed garden, selection of mother palm, selection of seed nuts and storage of seed nuts)
- In nursery management, photos were taken and separated (nursery structure, nursery bed preparation, ideal seed nut, nursery spacing, planting seed nuts, management of nursery, poly bag seedlings, selection of seedlings, seed nuts treatment and seedling harvesting).
- In cultivation practices, planting of seedlings, spacing, weed management, intercropping system, multi cropping system, green manuring photos were taken.
- In crop protection practices, the following photos were taken and separated related to symptoms rhinoceros beetle, red palm weevil, eriophyid mites, black headed caterpillar, coconut skipper, coreid bug, bag warm, termite, scale insect, mealy bug and rat damage.

- Bud rot, basal stem rot, root (wilt), leaf blight, stem bleeding, leaf rot and button shedding
- Boron deficiency, calcium deficiency, iron deficiency, potassium deficiency, magnesium deficiency, nitrogen deficiency
- Tree climber, harvester, coconut dehusker coir making machine photos and videos were completed.

1.3.2. Economic analysis of System of Rice Intensification (SRI) in Trichy district in Tamil Nadu

To keep pace with the rapidly growing food demands, the farmers need to produce more food from fewer resources while sustaining the environmental quality. Systems of Rice Intensification (SRI) is one of the recent technologies that fits this need and is being rapidly adopted in South India. This study synthesizes the experience with SRI method among the farmers in Tiruchirapalli District, which is one among the major rice belt in Tamil Nadu.

Overall aim of the research project is to perform the economic analysis of SRI method of paddy cultivation in Trichy district of Tamil Nadu. Specific objectives are

- To assess the economic viability of SRI method of paddy cultivation with reference to net returns/ha, labour and input saving and increase in productivity as compared to conventional method.
- To study the role of socio-economic factors influencing the adoption of SRI method among paddy farmers in Trichy district through constraint analysis.
- To study the perspectives of SRI method of paddy cultivation in the district.

The research methodology followed was primary data collection through personal interview method with pre-tested interview schedule using cluster cum random sample technique supplemented with secondary data from the official sources. The project is being undertaken in coordination with KVK Trichy. Preliminary analysis indicate the following:



Particulars	Details
Sample Size	n = 60
Sampling technique	Cluster cum random sample
Major operational holding	70 % small farmers
Average paddy area in acres	3
Average area in acres under SRI method of paddy	1
Major varieties cultivated under SRI method of paddy	ADT 36, BPT 5204, TRY 1
Additional yield through conventional method	4500 kg/ha
Additional yield through SRI method	7000 kg/ha
Additional profit through SRI method	Rs. 17000/ha

1.4 Budget

A total of Rs. 4498.73 lakh was sanctioned for the Zone VIII for the year 2009-10 and 100% of the sanctioned budget was incurred as expenditure, out of which 90.55% by KVKs, 5.54 % by Directorates of Extension and 3.90 % by the Zonal Project Directorate. Head wise details of budget and expenditure are furnished below:

Heads	RE 2009-10 ('in lakh)				Expenditure ('in lakh)			
	ZPD	KVKs	Support to DEE at SAUs	TOTAL	ZPD	KVKs	Support to DEE at SAUs	TOTAL
Recurring								
Pay & Allowance	101.50	2809.00	-	2910.50	101.50	2805.00	-	2906.50
T.A.	8.00	73.61	8.50	90.11	8.00	73.41	7.00	88.41
HRD	2.50	-	7.90	10.40	2.50	-	7.70	10.20
Contingency	63.50	621.00	31.35	715.85	63.50	621.70	29.30	714.50
Total	175.50	3503.61	47.75	3726.86	175.50	621.70	44.00	3719.61
Non Recurring								
Furniture. & Equipment	-	110.25	-	110.25	-	105.25	-	105.25
Works	-	416.17	205.45	621.62	-	429.42	205.45	634.87
Vehicle	-	39.00	-	39.00	-	38.00	-	38.00
Total	-	565.42	205.45	770.87	-	572.67	205.45	778.12
Revolving fund	-	1.00	-	1.00	-	1.00	-	1.00
Grand Total	175.50	4070.03	253.20	4498.73	175.50	4073.78	249.45	4498.73

2. About Krishi Vigyan Kendras

2.1 Status

Based on the recommendation of Education Commission (1964-66), consideration/review by Planning Commission and Inter-Ministerial Committee, and further recommendation by committee headed by Dr. Mohan Singh Mehta appointed by ICAR in 1973, the idea of establishment of Farm Science Centre (Krishi Vigyan Kendra) was evolved.

The first KVK, on a pilot basis, was established in 1974 at Puducherry under the administrative control of Tamil Nadu Agricultural University, Coimbatore. Since then, ICAR is in the process of establishing the KVKs atleast one per district in the country. At present there are 77 KVKs established and functioning in Zone VIII. The XI Plan envisaged establishing additional KVK in larger districts. The Zone VIII had the privilege of establishing first additional KVK in Tumkur district, Karnataka under Indian Institute of Horticultural Research, Bangalore.

Table 1: State and host institute wise KVKs

Name of the state	Host organization				Total
	SAU	NGO	ICAR	Others	
Karnataka	22	04	02	-	28
Kerala	07	03	04	-	14
Tamil Nadu	17	11	-	02	30
Puducherry	-	-	-	02	02
Goa	-	-	01	01	02
Lakshdeep	-	-	-	01	01
Total	46	18	07	06	77

SAU – State Agricultural University; NGO – Non-Governmental Organization; ICAR – Indian Council of Agricultural Research; Others - Deemed University, State Department of Agriculture

Table 2: Planwise growth of KVKs

Five Year Plan Period	No. of KVKs established	% to existing total of 77 KVKs
IV	01	01.30
V	07	09.09
VI	07	09.09
VII	05	06.49
VIII	19	25.97
X	35	44.16
XI	03	03.90
Total	77	100.00

- Conducting on-farm testing to identify the location specificity of agricultural technologies under various farming systems.
- Organizing frontline demonstrations to establish production potential of various crops and enterprises on the farmers' fields.
- Organizing need based training for farmers to update their knowledge and skills in modern agricultural technologies related to technology assessment, refinement and demonstration, and training of extension personnel to orient them in the frontier areas of technology development.
- Creating awareness about improved agricultural technologies among various clientele through appropriate extension programmes.
- Production of quality seeds, planting materials, livestock breeds, animal products, bio-products etc as per their demand and supply the same to different clientele.

- Work as resource and knowledge centre of agricultural technology to support the initiatives of public, private and voluntary sectors for improving the agricultural economy of the district.

2.4 Manpower

In order to carry out the above mandated activities, the sanctioned staff to each KVK is 16. Accordingly the total sanctioned staff for 77 KVKs is 1232, out of which 997 are in position. Details of state and category wise staff strength of KVKs are furnished in Table 3.

2.5 Infrastructural Facilities

Out of 77 KVKs in Zone VIII, 63 KVKs have Administrative Building, 56 KVKs have Farmer's Hostel and there are 282 Staff Quarters in 47 KVKs, 142 Demonstration Units in 49 KVKs, 52 KVKs have established Soil and Water Testing Laboratories (SWTL), and 37 KVKs have been equipped with connectivity and 14 KVKs have Rain Water Harvesting

Table 3: State and category wise staff strength of KVKs

State	Programme Coordinator			Subject Matter Specialist			Programme Assistant			Administrative			Drivers			Supporting			Total		
	S	F	PV	S	F	PV	S	F	PV	S	F	PV	S	F	PV	S	F	PV	S	F	PV
Karnataka	28	28	0.00	168	145	13.69	84	49	41.67	56	38	32.14	56	39	30.36	56	48	14.29	448	347	22.54
Tamil Nadu	30	24	20.00	180	163	9.44	90	77	14.44	60	57	5.00	60	53	11.67	60	52	13.33	480	426	11.25
Kerala	14	11	21.43	84	71	15.48	42	30	28.57	28	22	21.43	28	10	64.29	28	22	21.43	224	166	25.89
Goa	2	2	0.00	12	11	8.33	6	1	83.33	4	3	25.00	4	2	50.00	4	4	0.00	32	23	28.13
Puducherry	2	2	0.00	12	12	0.00	6	4	33.33	4	4	0.00	4	3	25.00	4	3	25.00	32	28	12.50
Lakshadweep	1	0	100.00	6	4	33.30	3	0	100.00	2	2	100.00	2	0	100.00	2	1	50.00	16	7	56.30
Total	77	67	12.99	462	406	12.12	231	161	30.30	154	126	18.18	154	107	30.52	154	130	15.58	1232	997	19.07

S – Sanctioned, F- Filled, PV- Vacancy Percentage



KVK Campus



Goat Rearing Demonstration Unit

Table 4: State wise details of infrastructure in KVKs

State	Administrative buildings	Farmers hostels	Staff quarters	Demo units	SWTLs	e-connectivity	RWH units	Jeeps	Tractors	Two wheelers
Karnataka	23	22	16	37	19	11	9	26	21	53
Kerala	12	9	7	27	11	10	4	13	3	22
Tamil Nadu	25	23	24	66	19	14	1	28	17	54
Goa	1	1	-	8	1	1	-	1	-	1
Puducherry	2	1	-	4	1	1	-	1	2	4



Soil, Water and Plant Testing Laboratory



Seedling Production Demonstration Unit

(RWH) Units. In case of vehicles, 69 KVKs have jeep, 43 KVKs have tractor and there are 136 two wheelers all together in KVKs. Details are furnished in Table 4.

2.6 Scientific Advisory Committee

Scientific Advisory Committee (SAC) is a district level advisory body for the KVKs, which guides and reviews their activities. Head of host organization is the Chairman and other members include Zonal Project Director, Director of Extension, officials from all line departments pertaining to the district, officials from SHG and progressive farmers. Each year SAC meets and discusses the progress of work done in various mandatory activities and provide guidance for planning activities for the forthcoming year. All KVKs have constituted the Committee and conducting the meeting.

2.7 Revolving Fund

Revolving fund is in operation at 74 KVKs of this Zone. All these KVKs are utilizing revolving fund for production of technological products and 6 KVKs had

net balance more than 10 lakh followed by 30 KVKs had 3-10 lakh, 24 KVKs had 1-3 lakh and 14 KVKs had less than 1 lakh during the reporting period.

2.8 Thrust Areas

As per the agro-ecological and existing cropping and farming systems, KVKs are working with the following identified broad thrust areas:

- Sustainable crop production through integrated nutrient management and organic farming strategies
- Integrated pest and disease management
- Introduction and popularization of improved varieties/hybrids of crops through technical and material back-up
- Development and promotion of crop diversification and alternate land use system
- Empowerment of women and youth through improved nutrition, income and drudgery



reduction

- Scientific management of dairy and small livestock
- Promotion of horticulture as a mechanism of crop diversification, augmenting family and national income
- Value addition, processing and market facilitation of household and commercial enterprises
- Soil, water conservation and watershed management for drought proofing and sustainable

rainfed farming

- Small scale mechanization for saving time and reducing cost and drudgery
- Capacity building of rural youth and women to establish self-employment units
- Increasing income from fishery enterprises through production processing and marketing

3. Achievements

3.1 Krishi Vigyan Kendras

The activities of the KVKs include conducting on- farm trials to identify the location specificity of technologies in various farming systems; frontline demonstrations to establish the production potential of improved agricultural technologies in farmers' fields, training of farmers to update their knowledge and skills, and training of extension personnel to orient them in the frontier areas of technology development. Quality seeds, planting material and bio-products produced in the KVKs are also made available to the farmers. In addition, a large number of extension programmes have been organized by the KVKs to create awareness about improved agricultural technologies among the farmers. Apart from the above, the KVKs have also implemented the programmes for mitigation of drought in the country and Kisan Mobile Advisory Service. In order to showcase potentiality of technologies in terms of technological inputs, services and information at single point to the farmers and extension personnel, KVKs across the country have organized Technology Week. Activity wise achievements are presented here under.

3.1.1 Technology Assessment and Refinement

3.1.1.1 Technology Assessment: KVKs have assessed 350 technologies on various crops under

thematic areas viz. Varietal Evaluation {VE} (54), Integrated Nutrient Management (67), Integrated Crop Management (37), Integrated Disease Management (46), Integrated Pest Management (45), Resource Conservation Technologies (10), Weed Management (6), Integrated Farming Systems (6), Post-Harvest Technology/Value Addition (10), Improved Tools and Farm Machinery (62), Seed and Planting Material Production (5), and Improved Storage Techniques (2) in 435 locations by laying out 2591 trials in the farmers' field. In case of livestock, 42 technologies under the thematic areas namely Production and Management (8), Disease Management (5), Breed Evaluation (13), and Nutrition Management (16) were assessed by various KVKs in 61 locations covering 721 trials. Further, a total of 10 technologies under various enterprises viz., sericulture (1), mushroom production (5), vinegar production (1), vermicomposting (1), market led extension (1) and artimia culture (1) were assessed by KVKs in 14 locations covering 91 trials. State wise details of technology assessment in crop husbandry, livestock and enterprises are presented in Table 5.

3.1.1.2 Technology Refinement: KVKs have refined 29 technologies under the thematic areas namely Integrated Nutrient Management (10), Integrated Crop Management (5), Integrated Pest Management (1), Integrated Disease Management (3), Resource Conservation Technologies (1) Weed management (2),

Percentage Share of technologies assessed under crops

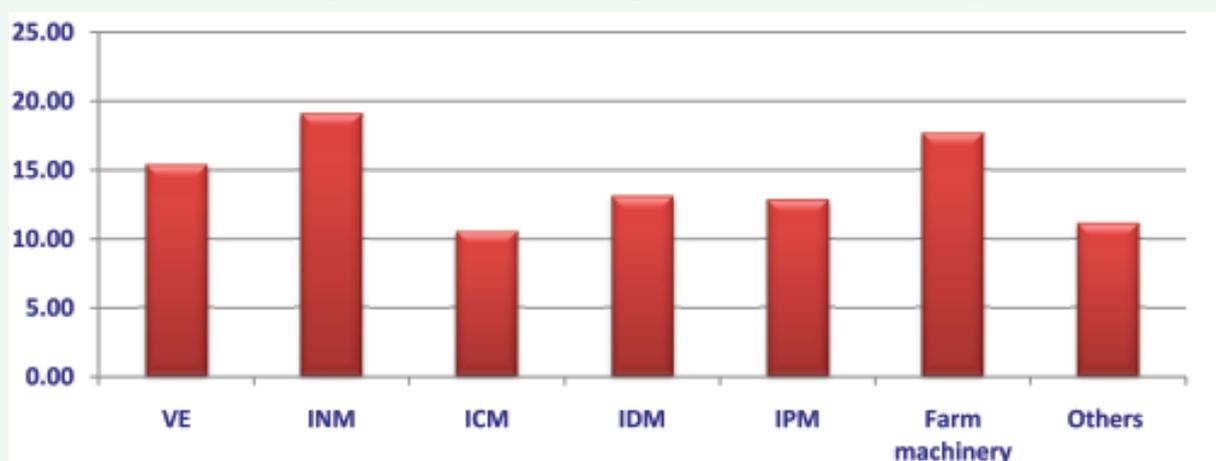
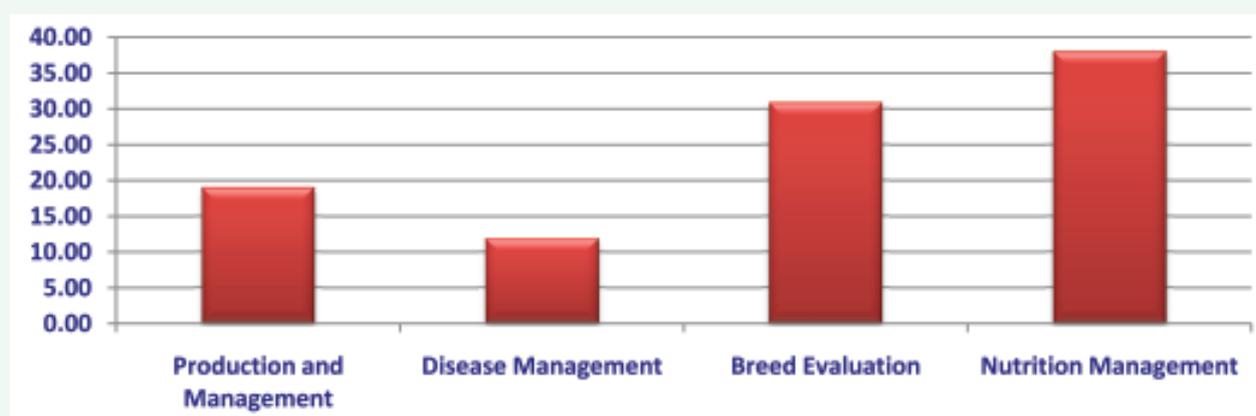


Table 5: State wise technology assessment programmes

States	Technology Assessment		
	No. of technologies	No. of trials	No. of locations
A. Crop Husbandry			
Karnataka	99	920	130
Tamil Nadu	174	1015	201
Kerala	59	512	84
Goa	12	89	14
Puducherry	5	49	5
Lakshadweep	1	6	1
Total	350	2591	435
B. Livestock			
Karnataka	9	82	11
Tamil Nadu	17	470	33
Kerala	14	156	15
Goa	2	4	2
Total	42	712	61
C. Other Enterprises			
Karnataka	2	26	3
Tamil Nadu	4	27	5
Kerala	4	38	6
Total	10	91	14

Percentage share of technologies assessed under livestock, poultry and fisheries



PHT /Value addition (2) Improved Tools and Farm Machinery (4), and Improved Storage Techniques (1) in 30 locations by laying out 294 trials in the farmers' field. State wise details of technology refinement in crops are presented in Table 6.

3.1.1.3 Outcome of Technology Assessment: Salient outcome of assessment of important technologies conducted by KVKs are briefly described here under:

Table 6 : State wise technology refinement programmes

States	Technology Refinement		
	No. of technologies	No. of trials	No. of locations
Karnataka	11	160	11
Tamil Nadu	12	85	13
Kerala	6	49	6
Total	29	294	30

Assessment of mechanization of transplanting in paddy: Planting with mechanized paddy transplanter at a spacing of 25 x 25 cm developed by TNAU was undertaken for assessment by 5 KVKs namely Thiruvallur, Ariyalur, Cuddalore, Vellore and Kancheepuram. A total of 25 OFTs, 5 trails for each KVK, were undertaken and the results indicated that on an average 7.50 hours required for planting one ha with the transplanter with an average planting cost of Rs.4300/ha.



Performance of mechanized paddy transplanter

Assessment of cabbage and cauliflower in non-traditional areas of Kerala: Performance of cruciferous vegetables viz., cabbage and cauliflower with varieties NS 160 and NS 245, respectively was assessed in Malappuram and Kannur districts of Kerala.

Data in Table 7 indicate that cabbage and cauliflower gave an average yield of 47.36 t/ha and 29.03 t/ha with an average net returns of Rs.106715/ha and Rs.252173/ha, respectively. It clearly shows that cauliflower cultivation can be cultivated in non traditional areas of Kerala.



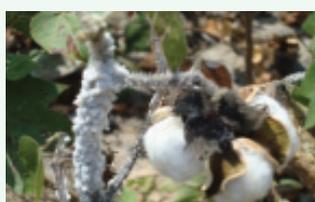
Performance of cauliflower and cabbage in non-traditional areas of Kerala

Assessment of IPM against mealy bug in cotton and sunflower: Mealy bug has become a serious menace in cotton as well as sunflower in Southern India especially in states like Karnataka and Tamil Nadu. In case of cotton, 5 KVKs namely Raichur in Karnataka, Madurai, Pudukottai, Theni and Virudhunagar in Tamil Nadu have conducted 35 OFTs (5 for each KVK) on effectiveness of Integrated Pest Management package which includes clipping and destruction of damaged and pest infested terminal shoots, spraying of Methyparathian 2 ml + Prefenophos 2 ml + Fish oil resin soap 40 gm / l of water + bio-control agent,

Table 7: Performance of cultivation of cabbage and cauliflower in Kerala

KVK	No. of trials		Yield t/ha		Net return Rs./ha		BCR	
	Cabbage	Cauliflower	Cabbage	Cauliflower	Cabbage	Cauliflower	Cabbage	Cauliflower
Malappuram	10	10	34.70	21.00	118870	127093	2.57	2.68
Kannur	5	5	60.01	37.06	94560	377252	1.24	2.27
Total	15	15	47.36	29.03	106715	252173		

Verticillium lecanii against mealy bug where as two KVKs namely Karur and Thanjavur have conducted 10 OFTs (5 for each KVK) on effectiveness of IPM against mealy bug in sunflower. Data presented in Table 8 revealed that mealy bug incidence was reduced upto 70.00, 71.93, 46.00, 97.3, 67.10, 74.10, 66.60 per cent in Raichur, Madurai, Pudukottai, Theni, Virudhunagar, Salem, Thiruvarur, respectively. In case of sunflower, mealy bug incidence was reduced up to 88.56% in Karur and 25.6% in Thanjavur.



Mealy bug infestation in cotton



Mealy bug infestation in sunflower

Assessment of okra and redgram as intercrops in young arecanut garden: KVK Shimoga in Karnataka have conducted on assessment of okra (bhendi) and redgram in young arecanut gardens. Data presented in Table 9 indicated that cultivation of bhendi in arecanut

garden fetched additional net income of Rs.12850/ha and that of redgram had realized Rs.10840/ha. The BCR for arecanut + bhendi and arecanut + redgram system were 2.24 and 2.03, respectively as compared to 2.00 in case of arecanut monocrop.



Performance of bhendi as intercrop in young arecanut garden



Performance of redgram as intercrop in young arecanut garden

Intercropping of soybean and French bean in maize: KVK Tumkur in Karnataka had conducted 3 and 2 OFTs on assessment of soybean and Frenchbean as intercrops in maize, respectively. Results indicated that maize + soybean realized net return of Rs.24250/ha where as maize + French bean gave Rs.30000/ha with BCR of 2.79 and 3.11, respectively as compared to Rs.18300ha and 2.30 BCR under maize mono

Table 8: Performance of IPM package against mealy bug in cotton and sunflower

KVK	Crop	Yield t/ha	% reduction in pest	BCR
Raichur	Cotton	2.09	70.00	3.36
Madurai		0.69	71.93	2.20
Pudukottai		0.19	46.00	1.23
Theni		1.84	97.30	2.40
Virudhunagar		0.99	67.10	1.94
Salem		3.25	74.10	3.07
Thiruvarur		1.50	66.60	2.80
Karur	Sunflower	1.59	88.56	2.73
Thanjavur		0.14	25.60	2.50

Table 9: Performance of bhendi and redgram as intercrops in arecanut garden

Cropping System	Average yield t/ha		Net return Rs./ha		BCR
	Main crop	Intercrop	Main crop	Intercrop	
Arecanut monocrop	2.50	-	100000	-	2.00
Arecanut + bhendi	2.64	2.92	108400	12850	2.24
Arecanut + redgram	2.59	0.71	105400	10840	2.03

crop (Table 10). This clearly shows soybean and Frenchbean are suitable as intercrops in maize and also gave additional income of Rs.5950 and Rs.11,700, respectively.



Intercropping of beans in maize *Intercropping of soybean in maize*

Assessment of cloth gloves for harvesting Bengalgram and sunflower: Harvesting of bengalgram and sunflower is normally carried out by farmwomen with bare hands. This operation causes injury to their palms. In order to reduce the drudgery, UAS Dharwad has evolved cotton cloth hand gloves for harvesting of Bengalgram and sunflower. Three KVKs viz., Bellary, Bijapur and Gadag have assessed the efficiency of harvesting of Bengalgram and sunflower with cloth gloves. From Table 11, it is evident found that in case of bengalgram, on an average, 19.83% of additional area was covered and the percentage

saving of time was 29.17 and percentage saving of labour cost was 28.7. The same in case of sunflower was 17.30%, 24.87% and 24.85% respectively. Therefore, cloth gloves are suitable for increasing the efficiency of harvesting of both bengalgram and sunflower crops and reducing prudgery.



Harvesting Bengal gram with cloth gloves

Assessment of feed on management of post partumanestrum in cows: Delay in appearance of oestrum after parturition results in increase of intercalving interval and thereby increases the production cost. To address this issue, four KVKs viz., Tuticorin, Dindigul, Pudukottai and Shivagangai in Tamil Nadu

Table 10: Performance of soybean and Frenchbean as intercrops in maize

Cropping System	Yield t/ha		Net return Rs./ha	BCR
	Main crop	Intercrop		
Maize monocrop	3.50	-	18300	2.30
Maize + soybean	3.63	0.35	24250	2.79
Maize + Frenchbean	3.65	3.00	30000	3.11

Table 11. Performance of cloth gloves for harvesting Bengal gram and sunflower

KVK	Crop	No. of trials	Harvesting using gloves		
			Additional area covered (%)	Saving of time (%)	Saving of labour cost (%)
Bellary	Bengalgram	5	20.00	33.00	33.50
Bijapur	Bengalgram	5	22.00	32.00	30.00
Gadag	Bengalgram	10	17.50	22.50	22.60
Total/Average		20	19.83	29.17	28.70
Bijapur	Sunflower	5	15.09	25.50	28.50
Gadag	Sunflower	10	19.50	24.23	21.20
Total/Average		15	17.30	24.87	24.85

Table 12: Management of post partumanestrum in cows

KVK	No. of trials	Time required for 1 st heat from calving in days	Inter-calving period in months	Conception rate %
Tuticorin	50	105	14	65
Dindigul	20	50	13	60
Pudukottai	50	70	13	70
Shivagangai	3	60	14	70
Total/Average	123	71.25	13.5	66.25

have conducted 123 OFTs on feeding dairy cows with different technological options viz., Paddy straw/ sorghum straw + green grass (natural grazing) + concentrate + Mineral mixture @ 50g daily/3months+ Vit A injection monthly once for 3 months + deworming. Data in Table12 revealed that the time required for first heat from calving was 71 days and inter-calving period in months was 13.5 and the average conception rate was 66.25%.



Feed management of cows

3.1.2 Frontline Demonstrations

Introduction and popularization of newly released crop varieties, production technologies in crops, animal husbandry and other agriculture related enterprises through Frontline Demonstrations (FLDs) is one of the main activities of KVKs for augmenting the production and productivity in a given farming system. In this direction, KVKs of Zone VIII have carried out a total of 9842 FLDs covering an area of 3909 ha. The success

of the technologies demonstrated were confirmed by their technical feasibility and economic viability for the farmers, which were collected as feedback from them. State and crop category wise FLDs conducted by KVKs in Zone VIII are furnished in Table 13. Details of FLDs conducted by KVKs are briefed here under.

3.1.2.1 Oilseeds : A total of 1587 FLDs were conducted by KVKs in an area of 740 ha on major oilseed crops such as castor, groundnut, niger, safflower, sesame, soybean and sunflower. The FLDs conducted on these crops mainly pertained to popularization of high yielding varieties and production technologies. The major inferences are as follows:

- Results indicated that yield of castor had increased upto 28.78 % with ICM practices in Karnataka.
- High yielding varieties of groundnut viz., TMV-13, GPBD-4, TMV-7, VRI-6, JSP-39, R-2001-12 were introduced through 157 demonstrations covering an area of 67.0 ha. The increase in yield over check ranged from 7.33 % in Puducherry to 29.75 % in Tamil Nadu.
- Similarly, 391 demonstrations on ICM in groundnut were conducted in an area of 187.80 ha, in which the percentage increase over check ranged from 25.62 in Karnataka to 31.25 in Tamil Nadu.
- An area of 95.0 ha was covered in 227 demonstrations conducted on INM in groundnut in which the percentage increase in yield was 23.46.
- Yield of niger and safflower increased upto 28.06 % and 22.50 % respectively with ICM practices, in Karnataka.

Table 13 State and crop category wise FLDs conducted by KVKs

Category & Crops	Karnataka		Tamil Nadu		Kerala		Puducherry		Goa		Lakshadweep		Zonal Total	
	No.of Demo.	Area (ha)	No.of Demo.	Area (ha)	No.of Demo.	Area (ha)	No.of Demo.	Area (ha)	No.of Demo.	Area (ha)	No.of Demo.	Area (ha)	No.of Demo.	Area (ha)
Oilseeds	861	438.80	714	296.00	-	-	12	5.00	-	-	-	-	1587	739.80
Pulses	1359	584.20	786	334.00	-	-	-	-	-	-	-	-	2145	918.20
Cereals and millets	1072	496.00	685	214.00	153	81.10	47	20.00	-	-	-	-	1957	811.10
Commercial crops	5	2.00	37	15.00	-	=	-	-	-	-	-	-	42	17.00
Cotton	913	371.56	575	232.22	-	-	-	-	-	-	-	-	1488	603.78
Fodder crops	32	32.00	157	37.80	15	5.00	-	-	10	1.00	-	-	214	75.80
Vegetable crops	433	145.25	441	136.50	83	15.20	25	2.70	80	9.00	6	10	1062	308.65
Fruit crops	178	72.30	217	75.64	38	1.01	-	-	11	11.00	-	-	444	159.95
Medicinal & aromatic plants	-	-	-	-	20	0.13	-	-	-	-	-	-	20	0.13
Plantation crops	117	32.00	153	59.00	129	28.70	10	5.00	5	2.00	-	-	414	126.70
Spices & condiments	91	35.00	85	29.00	50	6.92	-	-	20	4.00	-	-	246	74.92
Tuber crops	5	0.10	-	-	40	10.50	-	-	-	-	-	-	45	10.60
Flower crops	132	42.00	30	10.00	10	0.25	-	-	-	-	-	-	172	52.25
TOTAL	5198	2251.21	3880	1439.16	538	148.81	94	32.7	126	27	6	10	9842	3908.88

- High yielding varieties of sesame viz., VRI (SV)-1, VRI (SV)-2, SVPR-1 and TMV-4 were demonstrated in 30.0 ha with 74 demonstrations and the percentage increase in yield over check was 35.61.
- 148 demonstrations on ICM in sesame were conducted in an area of 66.0 ha in which the percentage increase over check ranged from 32.48 in Karnataka to 33.3 in Tamil Nadu.
- A total of 180 demonstrations on soybean were conducted in an area of 93.0 ha. The demonstrations were mainly on varietal evaluation (130 demonstrations in 55.0 ha area) in which the percentage increase in yield over check was 14.14.
- 109 FLDs in sunflower were conducted in 50.0 ha.

The demonstrations were mainly on varietal evaluation (CO (SFV)-5 and high yielding variety (DRSF-108), in which the increase in yield over check was 37.16% and 22.21% respectively.



Demonstration on high yielding groundnut variety GPBD 4



Performance of TMV 13 groundnut variety



Integrated Crop Management in sunflower

3.1.2.2 Pulses : A total of 2145 FLDs were conducted by KVKs in an area of 918 ha on major pulse crops namely bengalgram, blackgram, cowpea, greengram, horsegram and redgram. They were mainly pertaining to high yielding varieties and production technologies. The major results are as follows:

- High yielding variety of bengalgram (JG-11) was introduced in 62 demonstrations covering an area of 30.0 ha. The percentage increase in yield over check was 32.13.
- Similarly, 351 demonstrations on ICM in bengalgram were conducted in an area of 150 ha in which the percentage increase ranged from 26.53 in Karnataka to 39.13 in Tamil Nadu.
- An area of 10.0 ha was covered in 25 demonstrations on pest management in bengalgram in which the percentage increase in yield over check was 26.39.
- An area of 85.0 ha of blackgram was covered under 201 demonstrations conducted on varietal evaluation of VBN-4, ADT-3, VBN-5, VBN-3, DU-1 and LBG-625 in which the percentage increase in yield ranged from 22.61 in Tamil Nadu to 36.32 in Karnataka.
- Similarly, 211 demonstrations on ICM in blackgram were conducted in an area of 95.0 ha in which the percentage increase over check ranged from 37.40 in Tamil Nadu to 43.37 in Karnataka.
- In case of greengram, high yielding varieties viz.,

Co (Gg)-7 and ADT-3 were introduced through 48 demonstrations covering an area of 20.0 ha. The percentage increase in yield over check was 44.22.

- In another set of demonstrations on varietal evaluation in greengram an area of 54.0 ha was covered through 124 demonstrations with VBN-3, VBN (Gg)2, VRM-1, Co-7, Co Gg-7 and S-4 in which the percentage increase in yield over check ranged from 13.24 in Tamil Nadu to 26.0 in Karnataka.
- Similarly, 380 demonstrations on ICM in greengram were conducted in an area of 165.0 ha in which the percentage increase over check ranged from 25.81 in Tamil Nadu to 26.33 in Karnataka.
- High yielding varieties of cowpea were demonstrated in 20 locations with an area of 10 ha. Results indicated that yield of demonstrated varieties over check increased upto 49.32 % with BCR of 5.20 in Karnataka.
- Yield of horsegram increased upto 40.20% with ICM in Karnataka.
- High yielding varieties of redgram viz., APK-1, ICP-8, BRG-1 and BRG-2 were introduced through 98 demonstrations covering an area of 46.80 ha. The percentage increase in yield over check was 25.39.
- In another set of demonstrations in rudgram in Tamil Nadu, an area of 25.0 ha was covered in 52 demonstrations conducted on varietal evaluation of Co(Rg)-7, BRG-2 and -BSMR-736 in which the percentage of increase in yield over check ranged from 12.66 to 23.96.



Redgram transplanted



High yielding and YMV tolerant blackgram variety-Rashmi

3.1.2.3 Cereals and millets : A total of 1957 demonstrations conducted in 811 ha area covering major cereal crops and millets like paddy, wheat, finger millet, foxtail millet, pearl millet, little millet, maize, *navane*, *same* and sweet corn during the year. A total of 1217 FLDs were conducted by KVKs on different technologies in cereals in an area of 477 ha. The major results of the FLDs conducted in cereals and millets are as follows:

- Use of Bio agent/bio fertilizer (W. Ponni & BPT in Puducherry and Jyothi & Uma in Kerala) in 41.0 ha with 46 FLDs resulted an increase in yield of 13.26% over local check.
- Disease Management in paddy viz., varieties ADT-36 and BR-2655 resulted in a percentage increase of yield ranging from 21.52 in Tamil Nadu to 25.64 in Karnataka.
- *In situ* green manure application technologies demonstrated for higher yield in paddy resulted an increase in yield of 19.57%.
- Demonstrations on High Yielding Varieties of paddy namely Co (R) 49, CR 1009, PMK 4, RSS-17, IET-13901, KMP-101, Hemavathy, Sharavathy, Tanu, Champaka, KKL(R) - 1 and Manupriya were conducted in 84.60 ha by 16 KVKs. The increase in yield over check in these

demonstrations ranged from 10.80% in Kerala to 35.50% in Tamil Nadu.

- ICM in paddy were demonstrated in 37 ha in which the percentage increase in yield was 21.02 over check.



FLD on Integrated Pest Management in Paddy

- Systems of Rice Intensification (SRI) was popularized through 60 demonstrations in 26 ha area, in which the percentage of increase in yield was 33.93 over check.
- A total of 482 demonstrations in 172.3 ha area were also conducted in other technologies including INM, IPM, introduction of medicinal rice, micronutrient management, nutrient management, application of organic manure, pest management, use of pheromone trap, plant growth regulator, problematic soil management, seed production, soil test based fertilizer recommendation, introduction of basmati high yielding variety (Pusa 1460) and weed management of improved yield.



KAU portable light trap for pest monitoring in paddy

- In case of finger millet (ragi), the major technologies viz., popularization of high yielding varieties including CO (Ra) 14, Paiyur 2, MR-6 and GPU-48, ICM in GPU-28, MR-6, ML-365, L-5, seed production in GPU-28, ICM and planting time were mainly demonstrated.
- In pearl millet (bajra), high yielding varieties viz., Co 28, CSV-22, DSV-6 and M-35-1 were demonstrated and the increase in yield over check was 21.64%.. In addition ICM and seed priming with CaCl_2 were also demonstrated by KVKs wherein the percentage yield increase was 16.39 over check.
- Demonstrations on foxtail millet were conducted in 28 ha with 53 demonstrations and the technologies demonstrated were high yielding variety, ICM and varietal evaluation.
- Demonstrations conducted on ICM in little millet with variety Sukshema in an area of 19.20 ha with 8 demonstrations resulted in percentage increase in yield of 26.81 over check.
- A total of 49 demonstrations on ICM and INM in an area of 21.0 ha were conducted on maize. The percentage of increase in yield in these demonstrations ranged from 11.33 to 13.19 over check.
- Demonstrations on *Navane* conducted in an area of 4.0 ha (ICM in variety STA-326) resulted percentage increase in yield of 54.24 over check.
- Similarly 8 and 30 demonstrations were conducted covering 4 and 2 ha respectively in *Same* and sweet corn.
- Demonstrations (30) on wheat were conducted in an area of 15.0 ha in which the percentage of increase in yield ranged from 15.96 to 37.50 over check

3.1.2.4 Commercial crops: In case of sugarcane, 37 FLDs conducted in 15.0 ha wherein INM, micronutrient management and pest management were demonstrated. Results indicated that the percentage increase in yield varied from 16.81 to 25.00. With regard to tobacco,

ICM in Cotton



introduction of variety KST-28 gave increased yield by 37.04%

3.1.2.5 Cotton: 1488 FLDs in cotton in an area of 603.78 ha in Karnataka and Tamil Nadu. Results indicated that increase in yield over check was 23.19%. The realized BCR in case of demonstration was 2.92 and the same in case of local was 2.25.

3.1.2.6 Fodder crops:

- Conducted 214 FLDs on fodder crops namely fodder cowpea, Napier and fodder sorghum in an area of 75.80 ha.
- A total of 30 FLDs on HYV of fodder cow pea CO (FC) were conducted in 7.00 ha and the percentage increase in yield achieved was 28.19.
- Demonstrations on Napier varieties Co-4, Co(CN)-4, COFC 8, Co (Cu) 9 and Co-3 conducted in 63.80 ha resulted in the percentage increase in yield ranging from 33.69 in Tamil Nadu to 35.67 in Karnataka.
- Fodder sorghum variety FS-29 was demonstrated which gave yield increase over check upto 80%.



Popularization of Co-4 fodder crop

3.1.2.7 Horticultural crops: A total of 7980 demonstrations were conducted on horticultural crops comprising vegetables, fruit crops, medicinal and aromatic plants, plantation crops, spices and condiments, tuber crops in an area of 577 ha by KVKs in Zone VIII. Details of the results are briefed here under.

3.1.2.7.1 Vegetables : A total of 681 demonstrations in 204 ha were conducted in vegetables including amaranthus, ash gourd, bitter gourd, brinjal, cabbage, chillies, cucurbits, French bean, field bean, cow pea, lab lab, okra, onion, potato, pumpkin, snake gourd, spinach and tomato. Demonstrations of High Yielding Varieties

and hybrids, Integrated Crop Management, Integrated Pest Management, nursery techniques, disease management were the major technologies which were popularized in vegetables.



Management of fruit fly in bitter gourd

3.1.2.7.2 Fruit crops: A total of 444 demonstrations on fruits crops were conducted in an area of 160 ha. Demonstrations (334) on banana were conducted in 95.95 ha and the percentage increase in yield achieved ranged from 12.20 in ratoon management to 47.84 in pest management. A total of 110 demonstrations on grape, mango, pomegranate, sweet orange and watermelon covering an area of 64.0 ha were also conducted by KVKs with better performance over check.

3.1.2.7.3 Medicinal and aromatic plants : A total of 20 demonstrations, 10 each in betelvine and coleus (variety Subhala) were conducted by KVKs in Kerala and the percentage increase in yield was 3.72 and 41.18 respectively.

3.1.2.7.4 Plantation crops: A total of 414 demonstrations in 127 ha were conducted on arecanut, cashew nut and coconut. It is worth to observe that demonstrations (141) on disease management in coconut in 31.7 ha area realized an increase in yield of 13.65%. Pest management in coconut was conducted in 20.0 ha with 45 demonstrations in which the percentage of increase in yield was 31.13.



Management of bud rot in coconut

3.1.2.7.5 Spice and Condiments:

A total of 246 demonstrations in 75 ha were conducted on cardamom, dry chilli, ginger, pepper, turmeric and white pepper. Results indicated that demonstrations on micronutrient management in cardamom resulted in an yield increase of 27.14% over check. Disease management in ginger gave percentage increase in yield of 86.86 in Karnataka and 27.47 in Kerala. Disease management and pest management in dry chilli resulted in percentage increase of yield by 37.99 and 33.08 respectively. Demonstrations on high yielding ginger variety Varadha were conducted in 5.0 ha in which the percentage increase yield achieved was 40.38. In addition, demonstrations on disease management & pest management in pepper, disease management & IPM in turmeric and disease management in white pepper were also conducted in 20 ha area with better yied over chek.

3.1.2.7.6 Tuber crops: A total of 45 demonstrations were conducted in an area of 11 ha on cassava in which the percentage increase in yield ranged from 30.21 to 45.74

3.1.2.7.7 Flower crops: A total of 132 demonstrations were conducted in an area of 42 ha on various flower crops including crossandra, gladiolus etc.

3.1.2.8 Hybrids: 1428 demonstrations were conducted by KVKs exclusively on hybrids in an area of 572 ha. Out of which, 274 FLDs conducted on vegetable crops

viz., brinjal, cabbage, chilies, okra, ribbed gourd and tomato in 72 ha, 323 FLDs on maize, paddy and sorghum in 152 ha, 750 FLDs on oilseed crops like castor, groundnut and sunflower in 328 ha and 81 FLDs on fodder (Napier), fruit crops (water melon), flower crops (marigold) and plantation crops (coconut) in 20 ha.

3.1.2.9 Farm implements and machinery:

Conducted 941 FLDs using Farm Implements comprising 212 demonstrations for cultivating equipment's such as rotavator, helical blade puddler, planting, 27 demonstrations on transplanting equipment's such as drum seeder, paddy transplanter, 326 demonstrations on weeding equipment's including cycle weeder, power weeder, rotary power weeder, saralkurupi, sugarcane dethrasher, 91 demonstrations on harvesting equipment's including cassava harvesting tool, coconut tree climber, 225 demonstrations on post-harvest equipment's including cassava chipping machine, chaff cutter, groundnut stripper, groundnut decorticator, sugarcane sett cutter, improved turmeric boiler and 60 demonstrations on spraying equipment viz., power sprayer. Maximum FLDs on farm mechanization (70.24%) were conducted by KVKs in Tamil Nadu followed by KVKs in Karnataka (27.95%) and Kerala (1.81%).

3.1.2.10 Livestock and Fisheries: Conducted 4422 FLDs in animal husbandry with 1486 units. Out of which, sheep and goat occupied more (690) followed by dairy

(446), poultry (321), piggery (16), rabbitry (10) and duckery (3). The major thematic areas demonstrated include disease management, production and nutrition management etc. More number of units were covered in Tamil Nadu (628) followed by Karnataka (550), Kerala (181), Goa (113) and Puducherry (14).

In case of FLDs on fisheries, 79 demonstrations were conducted with 91 units. These units were more on common carps (30) followed by integrated fish culture (25), Aquaculture (10), Ornamental fish (10), Catfish (8), Sea fish (4) and Grasscarp (4). The major technological interventions include common carps, Integrated Fish Culture and ornamental fisheries. Maximum fisheries demonstrations (75.95%) were in Karnataka followed by Puducherry (10.13%), Goa (8.86%) and Tamil Nadu (5.06%).

3.1.2.11 Other Enterprises

Conducted 123 FLDs on apiculture (10), sericulture (61), energy saving device (39), vegetable preservator (2) and vermi composting (11) for increasing the income of the farmers. Out of which, 73 FLDs were conducted in Karnataka and 50 FLDs in Tamil Nadu.

3.1.3 Training

KVKs are mandated to cove hands on training for farmers, farm women, rural youth and village extension workers on fiddereent aspects of agriculture viz. production, management protension, processing etc.,



FLD on control of ecto and endo parasite in sheep and goats



FLD on fresh water fish culture

animal husbandry and rural enterprises by following the principle of "Learning by doing". Training is one of the main activity and it is mainly formulated by KVKs to impart technical 'know-how' and 'do-how' to the farmers, farm women, rural youth, and field level extension functionaries by following the principle of 'learning by doing'. KVKs have organized 12240 training programmes on various aspects of agriculture and allied sectors and trained 427513 participants of different clientele. Out of which, 10324 courses are need

based, 1523 sponsored and 393 vocational (Table 14) wherein trained 360350, 60679, 6484 personnel, respectively. All these training programmes, female participation is more in vocational training programmes (46.97%) followed by sponsored training programmes (37.70%) and need based training programmes (36.41%). State wise details of need based training programmes, sponsored and vocational training programmes organized by KVKs in Zone VIII are furnished in Tables 15 and 16, respectively.

Table 14: Training programmes organized

Type of training	No. of courses	No. of participants		
		Male	Female	Total
Need based	10324	229142	131208	360350
Sponsored	1523	37805	22874	60679
Vocational	393	3438	3046	6484
Total	12240	270385	157128	427513

Table 15: Need based training programmes organized

State	Need based training							
	Farmers		Rural youth		Extension Personnel		Total	
	No. of courses	No. of participants	No. of courses	No. of participants	No. of courses	No. of participants	No. of courses	No. of participants
Karnataka	2726	101454	165	5747	179	5451	3070	112652
Tamil Nadu	4276	146442	471	17386	420	18125	5167	181953
Kerala	1075	34144	267	8138	117	3068	1459	45350
Goa	122	2750	40	574	16	393	178	3717
Puducherry	129	4252	18	640	21	792	168	5685
Lakshadweep	248	9949	18	797	16	247	282	10993
Total	8576	298991	979	33283	769	28076	10324	360350

Table 16: Sponsored and vocational training programmes organized

State	Training programmes			
	Sponsored		Vocational	
	No. of courses	No. of participants	No. of courses	No. of participants
Karnataka	623	26644	95	2244
Tamil Nadu	503	19773	201	2374
Kerala	360	12703	60	1176
Goa	13	389	25	290
Puducherry	17	710	2	30
Lakshadweep	7	460	10	370
Total	1523	60679	393	6484



Off campus training programme in fodder crop production

3.1.3.1 Farmers' Training: A total of 8576 training programmes were organized for the benefit of 298991 farmers and farm women on various technologies to update their knowledge and skill.

Out of which, maximum training programmes (1888) were organized in crop production followed by horticulture (1450), home science (1116), plant protection (1029), livestock production and management (831), soil health and fertility management (744), production of inputs at site (477), capacity building and group dynamics (378), agricultural engineering (366), fisheries (185) and agro-forestry (112). This clearly indicates that farmers have need on various technologies in agriculture and allied sectors. State and thematic area wise need based training programmes for farmers organized are presented in Table 17 and 18, respectively. Among the participating farmers trained were, 22.77 % participants from SC/ST category that shows KVKs have identified the training needs across the social system.

3.1.3.2 Training for Rural Youth: Organized 979 training programmes wherein trained 33283 rural youth. Out of which, maximum training programmes were organized in home science (226) followed by entrepreneurship development programmes (205), livestock production and management (148), agriculture engineering (114), capacity building and group dynamics (74), production of inputs at site (73), horticulture (53), fisheries (12) and plant protection (8). From the Table 6, it is found that female youth were trained more in Kerala and Puducherry. Further it indicates that 23.76% of the participants were trained from SC/ST category. Data in Table 20 revealed that female participation was

equally good in entrepreneurship development programmes (51.22%) and male participation in home science/women empowerment programmes (32.09%).

3.1.3.3 Training for Extension Personnel: A total of 769 training programmes were organized benefitting 28076 extension personnel working in different organizations both state and central governments as well as NGOs. Out of which, maximum training programmes were organized in Capacity Building and Group Dynamics (277) followed by crop production (253), plant protection (87), home science (71), Livestock Production and Management (47), agricultural engineering (23) and horticulture (11). From table 21, it is evident that female extension personnel were trained in all states and their representation was 35.23% of which 24.54% belonging to SC/ST category. Data in table 22 shows that extension personnel needs were covered in all aspects of agricultural technologies. Further, it is to note that 26.38% of male extension personnel were trained in home science. In all thematic areas of training, participation from SC/ST category was observed which indicate that all categories of extension personnel were trained.

3.1.3.4 Sponsored Training Programmes: Organized 1523 training courses which were sponsored by different organizations under state and central sector schemes as well as NGOs and trained 60679 participants. Out of which, maximum training courses were sponsored and organized in crop production and management (533), capacity building and group dynamics (127), livestock and fisheries (188), production and value addition (119), home science (117), post harvest

Table 17 : State wise need based training programmes

Thematic area	Karnataka		Tamil Nadu		Kerala		Puducherry		Goa		Lakshadweep		Total	
	No of Courses	No.of Participants	No of Courses	No of Participants										
Crop Production	649	24331	870	31706	248	8174	24	645	34	618	63	3184	1888	68658
Horticulture	375	12447	786	33816	200	6156	14	599	16	435	59	1331	1450	54784
Soil Health and Fertility Management	277	8153	385	13613	27	906	0	0	10	300	45	1930	744	24902
Home Science/Women empowerment	415	14196	563	13992	84	2487	36	1212	12	191	6	375	1116	32453
Agril. Engineering	17	758	282	11222	54	1550	9	470	2	56	2	80	366	14136
Plant Protection	461	16600	372	10440	145	4509	8	214	27	639	16	750	1029	33152
Production of Inputs at site	150	5062	189	6774	108	3783	11	253	3	40	16	637	477	16549
Capacity Building and Group Dynamics	89	8428	239	7863	23	709	4	224	6	100	17	485	378	17809
Agro forestry	25	1355	81	2267	2	111	0	0	0	0	4	165	112	3898
Livestock Production and Management	232	8777	412	12641	163	5239	2	50	6	166	16	794	831	27667
Fisheries	36	1347	97	2108	21	520	21	585	6	205	4	218	185	4983
Total	2726	101454	4276	146442	1075	34144	129	4252	122	2750	248	9949	8576	298991

Table 18: Area wise need based training programmes for farmers

Thematic area	No. of courses	No. of participants					
		Total		SC/ST			
		Male	Female	Total	Male	Female	Total
Crop Production	1888	50845	17813	68658	11026	4909	15935
Horticulture	1450	37575	17209	54784	7822	4285	12107
Soil Health and Fertility Management	744	17624	7278	24902	4448	2428	6876
Home Science/Women empowerment	1116	5866	26587	32453	1812	6418	8230
Agril. Engineering	366	10204	3932	14136	1911	898	2809
Plant Protection	1029	25356	7796	33152	4984	2104	7088
Production of Inputs at site	477	10285	6264	16549	2227	1876	4103
Capacity Building and Group Dynamics	378	11851	5958	17809	951	1864	2815
Agro forestry	112	2656	1242	3898	621	381	1002
Livestock Production and Management	831	17775	9892	27667	3203	2561	5764
Fisheries	185	3167	1816	4983	882	481	1363
Total	8576	193204	105787	298991	39887	28205	68092

Table 19: State wise need based training programmes rural youth

State	No of courses	No. of participants					
		Total		SC/ST			
		Male	Female	Total	Male	Female	Total
Karnataka	165	3241	2506	5747	679	621	1300
Tamil Nadu	471	10359	7027	17386	2569	2156	4725
Kerala	267	3167	4971	8138	333	589	922
Goa	40	322	252	574	77	46	123
Puducherry	18	150	491	641	11	30	41
Lakshadweep	18	514	283	797	514	283	797
Total	979	17753	15530	33283	4183	3725	7908



Training on black pepper CMS technology



Training on soil sampling in horticultural crops



Training on fodder cultivation is in progress



Training on mushroom cultivation is in progress

Table 20: Area wise need based training programmes organized for rural youth

Thematic area	No of courses	No. of participants					
		Total		SC/ST			
		Male	Female	Total	Male	Female	Total
Crop Production	66	1573	768	2341	554	261	815
Horticulture	53	1441	683	2124	388	267	655
Plant Protection	8	64	96	160	24	30	54
Production of Inputs at site	73	1476	827	2303	385	259	644
Agricultural Engineering	114	2560	1902	4462	363	248	611
Home Science/ Women empowerment	226	2168	4586	6754	451	905	1356
Capacity Building and Group Dynamics	74	1945	1226	3171	501	359	860
Entrepreneurship Development Programmes	205	3354	3523	6877	884	837	1721
Livestock Production and Management	148	3059	1578	4637	586	492	1078
Fisheries	12	113	341	454	47	67	114
Total	979	17753	15530	33283	4183	3725	7908

technology and value addition (114), soil health and fertility management (101), methods of protective cultivation (67), farm machinery (64), production of inputs at site (63), integrated production and marketing system (9), product pricing (8), coconut processing (7) and storage of spices (6). Table 23, indicates that 100% of the female participants belonging to the SC/ST

category in Goa and the same in case of in Kerala was 15.60 %. Data in Table 24 reveals that female participation dominated in post harvest technology and value addition (70.03%), equally represented in livestock and fisheries (50.11%) and male participation was observed in home science (27.26%) of which 26.33% are under SC/ST category.

Table 21: State wise need based training programmes organized for extension personnel

State	No of courses	No. of participants					
		Total		SC/ST			
		Male	Female	Total	Male	Female	Total
Karnataka	179	3686	1765	5451	496	365	861
Tamil Nadu	420	11748	6377	18125	2119	1784	3903
Kerala	117	1635	1433	3068	254	180	434
Goa	16	309	84	393	26	5	31
Puducherry	21	634	158	792	70	19	89
Lakshadweep	16	173	74	247	173	74	247
Total	769	18185	9891	28076	3138	2427	5565

Table 22: Area wise need based training programmes organized for extension personnel

Thematic area	No of courses	No. of participants					
		Total		SC/ST			
		Male	Female	Total	Male	Female	Total
Crop Production	253	5936	2565	8501	956	642	1598
Horticulture	11	305	175	480	97	58	155
Plant Protection	87	2539	903	3442	480	232	712
Agricultural Engineering	23	444	337	781	86	80	166
Capacity Building and Group Dynamics	277	7342	3622	10964	1259	858	2117
Home Science	71	518	1966	2484	105	509	614
Livestock Production and Management	47	1101	323	1424	155	48	203
Total	769	18185	9891	28076	3138	2427	5565

Table 23: State wise sponsored training programmes organized

State	No of courses	No. of participants					
		Total		SC/ST			
		Male	Female	Total	Male	Female	Total
Karnataka	623	17395	9249	26644	2713	2400	4897
Tamil Nadu	503	13142	6631	19773	2354	1813	4167
Kerala	360	6723	5980	12703	747	933	1680
Goa	13	164	225	389	-	-	-
Puducherry	17	171	539	710	-	162	162
Lakshadweep	7	210	250	460	210	250	460
Total	1523	37805	22874	60679	6024	5558	11366



Table 24: Area wise sponsored training programmes organized

Thematic area	No of courses	No. of participants					
		Total		Total	SC/ST		Total
		Male	Female		Male	Female	
Crop production and management	533	17042	6057	23099	2642	1468	4110
Production and value addition	119	3610	1966	5576	619	404	1023
Soil health and fertility management	101	3396	954	4350	468	254	722
Production of Inputs at site	63	1648	827	2475	288	139	427
Methods of protective cultivation	67	1553	440	1993	175	98	273
Integrated production and marketing system	9	180	138	318	33	35	68
Coconut processing	7	271	43	314	30	10	40
Storage of spices	6	62	125	187	10	19	29
Product pricing	8	36	184	220	3	38	41
Post harvest technology and value addition	114	1100	2571	3671	223	553	776
Farm machinery	64	1416	761	2177	188	108	296
Livestock and Fisheries	188	4346	4366	8712	668	969	1421
Home Science	117	1105	2948	4053	219	872	1091
Capacity Building and Group Dynamics	127	2040	1494	3534	458	591	1049
Total	1523	37805	22874	60679	6024	5558	11366

3.1.3.5 Vocational Training Programmes: A total of 393 programmes on commercial floriculture, fruit production & vegetable production, Integrated Crop Management, organic farming, post harvest technology and value addition, dairy farming, composite fish culture, sheep and goat rearing, poultry farming, EDP viz., vermicomposting, production of bio-agents, bio-pesticides & bio-fertilizers, repair and maintenance of farm machinery and implements, rural crafts, seed production, sericulture, mushroom cultivation, nursery & grafting, tailoring, stitching, embroidery & dying, agril. para-workers & para-vet and capacity building & group dynamics were organized wherein trained 6484 participants. From the Table 25 it was observed that 100% participants in Puducherry belonging to female

that too 50% from SC/ST category. Further, female participation was equally represented in Tamil Nadu (49.77) and dominated in Kerala (70.07%) and Goa (55.86%). Data in Table 26 indicates that maximum number of vocational training programmes were conducted on entrepreneurship development programmes (212) followed by post harvest technology and value addition (90), crop production and management (40), livestock and fisheries (39) and capacity building and group dynamics (12). As a whole, 46.98% of participants were female, of which 28.99% from SC/ST category.

3.1.4 Extension Programmes: Organization of extension programmes is one among the major activities

Table 25: State wise vocational training programmes organized

State	No of courses	No. of participants					
		Total		SC/ST			
		Male	Female	Total	Male	Female	Total
Karnataka	179	3686	1765	5451	496	365	861
Karnataka	95	1530	714	2244	398	216	614
Tamil Nadu	201	1193	1181	2374	250	311	561
Kerala	60	352	824	1176	41	137	178
Goa	25	128	162	290	10	19	29
Puducherry	2	-	30	30	-	15	15
Lakshadweep	10	235	135	370	235	135	370
Total	393	3438	3046	6484	934	833	1767

Table 26: State wise vocational training programmes organized

Thematic area	No of courses	No. of participants					
		Total		SC/ST			
		Male	Female	Total	Male	Female	Total
Crop production and management	40	653	335	988	249	142	391
Post harvest technology and value addition	90	98	341	439	14	40	54
Livestock and fisheries	39	514	245	759	88	44	132
Entrepreneurship development programmes	212	2125	2047	4172	575	586	1161
Capacity Building and Group Dynamics	12	48	78	126	8	21	29
Total	393	3438	3046	6484	934	833	1767

of the KVKs, which focus on technology dissemination on a larger scale through different approaches. Various extension programmes organized through different ways by KVKs in the Zone VIII are briefed hereunder.

3.1.4.1 Extension programmes through different means and methods: During the period under report, organized a total of 86488 extension programmes wherein technologies related to agriculture and allied sectors were appraised among 6139760 personnel of which 5949629 farmers and 190131 extension

personnel. KVKs in Karnataka organized maximum extension programme (35265) followed by Tamil Nadu (29493), Kerala (20747), Puducherry (723), Goa (181) and Lakshadweep (79). Details of extension programmes based on the methods and means organized by KVKs in Zone VIII are furnished in Table 28.

3.1.4.2 Extension programmes through mass media: All KVKs are engaged in publication activities followed by extension literature, newspaper coverage, Radio/TV talks and video CDs. Media wise details of



Table 27: State wise extension programmes organized

State	No. of programmes	No. of participants		
		Farmers	Extension personnel	Total
Karnataka	35265	5422282	166553	5588835
Tamil Nadu	29493	171117	16072	187189
Kerala	20747	321583	5087	326670
Goa	181	5698	571	6269
Puducherry	723	27349	1198	28547
Lakshadweep	79	1600	650	2250
Total	86488	5949629	190131	6139760

Table 28: Activity wise extension programmes organized

Methods and means	No. of programmes	No. of participants		
		Farmers	Extension personnel	Total
Field days	637	29314	1897	31211
Kisan melas	64	2630203	95003	2725206
Kisan Ghosthies	77	4862	490	5352
Exhibitions	370	2855464	74867	2930331
Film shows	806	19561	1306	20867
Method Demonstrations	1191	25237	1679	26916
Workshops	104	6962	2423	9385
Group meetings	866	21338	1680	23018
Lectures delivered	2489	53972	3330	57302
Advisory services	31767	29824	1924	31748
Scientific visits to farmers field	8847	28829	1421	30250
Farmers visits to KVK	34434	215575	2048	217623
Diagnostic visits	4041	12884	892	13776
Exposure visits	698	11210	808	12018
Soil health camps	75	3321	218	3539
Agri mobile clinic advisories	22	1073	145	1218
Total	86488	5949629	190131	6139760

extension programmes organized by KVKs are furnished in Table 29.

3.1.4.3 Technology Week : A total of 48 KVKs conducted Technology Week Celebrations in which 157346 farmers were exposed to various aspects of agriculture and allied sectors. The main activities undertaken during the technology week are organization of extension activities like field visits, exhibitions, seminars, group discussions, etc, providing extension

literature on latest production technologies in agriculture and allied sectors, supply of quality seeds and planting materials of different crops, supply of bio products, bio fertilizers, fish fingerlings and animal products and specimens.

3.1.4.4 Kisan Mobile Advisory Service: KVKs have made initiation for implementation of Information and Communication Technology (ICT) for dissemination of requisite information at the right time



KVK Cuddalore Stall – Farmers day 2010



Farmers Scientists interaction – KVK Davangere

Table 29: Mass media programmes organized

Type of media	No. of KVKs	No. of programmes
Electronic media (CD/DVD)	24	179
Extension Literature	58	1099
Newspaper coverage	33	1944
Radio talks	34	244
TV Talks	26	178
Publications	77	816

to the right people. This revolution in information technology has made access to the information easy and cost effective to the rural masses. During the reporting year, 6765 SMS were sent benefitting 34844 farmers. Out of which maximum SMSs sent by KVKs in Karnataka (5192) followed by Tamil Nadu (1022) and Kerala (551) covering 21752, 8499 and 4593 farmers, respectively.

3.1.4.5 E- Connectivity: The Indian Council of Agricultural Research as a part of its mega ICT driven technology application strategy has provided e-linkage to its network of KVKs and Zonal Project Directorates during XI plan. Under the project, internet connectivity has been provided to 37 KVKs and the ZPD for access to global e-content on agriculture and also developed software for on-line reporting and monitoring system for management of KVKs and ZPDs which is being tested. KVK staff are regularly apprised of the latest technologies through guest lectures by eminent scientists in the respective fields and other communications through e-connectivity/video conferencing. During the year, 12 programmes and one on-line training for KVKs

regarding the online reporting system have been organized.

3.1.5 Production of Technological Products: The non-availability of good quality seeds, planting materials, livestock breeds and bio-products is one among the reasons for not achieving potential yield in crops and livestock in the country. In order to overcome this problem, KVKs are actively involved in the production of quality seeds, planting materials, livestock materials and bio-products worth of Rs.197.62lakh and supplied the same to 192654 farmers (Table 30). Details of these technological products briefed hereunder.

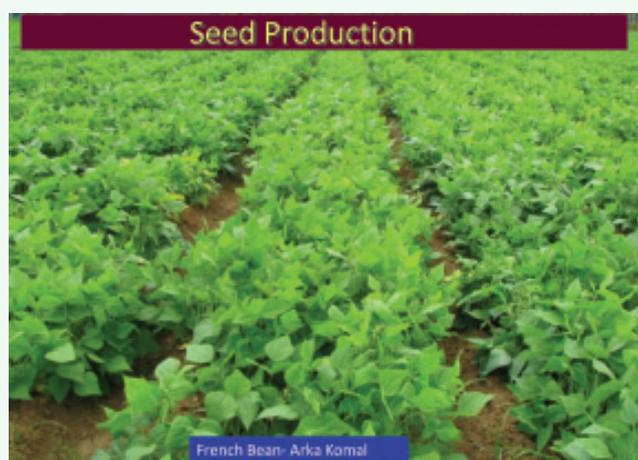
3.1.5.1 Production and supply of seeds : KVKs produced a total quantity of 5961.76 q quality seeds of crops like cereals, commercial, flower, fodder, forest species, oilseeds, green manure, pulses, spices and vegetables worth Rs. 6746906 and supplied to 6139 farmers. Crop category wise details are presented in Table 31. In case of hybrids, KVKs produced 216.82 q quality seeds of crops like cereals, vegetables, oilseeds, pulses and commercial worth Rs 208859 and supplied to 303 farmers (Table 32).

Table 30: Production and supply of technological products

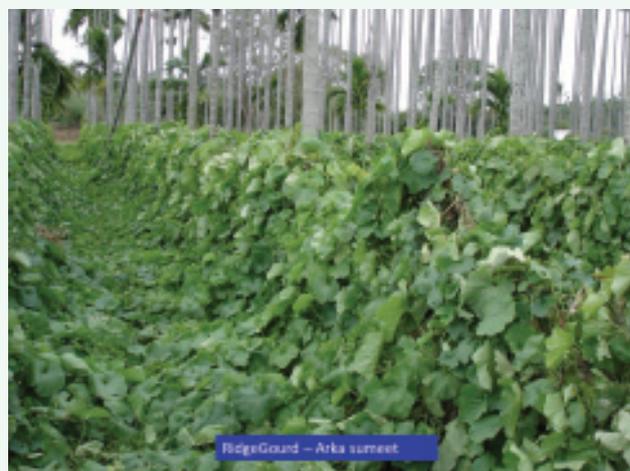
Category	Production and supply of technological products		
	Quantity	Value (Rs in lakh)	No.of farmers
Seeds -Varieties (q)	5961.76	67.47	36139
Seeds -Hybrids (q)	216.82	2.09	303
Planting materials - Varieties (No.)	1130098	67.79	93693
Planting materials – Hybrids (No.)	1002352	6.83	7575
Livestock and fisheries (No.)	99180	24.15	4463
Bio products (kg)	216307.15	29.31	50481
Total		197.62	192654

Table 31 : Production and supply of seeds of crops

Crop category	Production and supply of crop varieties seeds		
	Quantity	Value (Rs in lakh)	Number of farmers
Oilseeds	202.55	5.01	605
Pulses	470.35	9.84	1899
Cereals	5005.11	20.99	7762
Commercial crops	45.80	1.37	660
Flower crops	0.29	0.26	103
Fodder crops	2.78	0.56	213
Spices	4.47	0.29	115
Vegetables	224.28	29.02	24537
Forest species	1.00	0.01	200
Green manure	5.13	0.13	45
Total	5961.76	67.47	36139



French bean seed production – KVK Tumkur



Ridge gourd production – KVK Tumkur

Table 32 : Production and supply of seeds of crop hybrids

Crop category	Production and supply of crop hybrids seeds		
	Quantity (q)	Value (Rs in lakh)	Number of farmers
Cereals and vegetables	12.31	1.00	105
Oilseeds, pulses and commercial crops	204.51	1.09	198
Total	216.82	2.09	303

Table 33: Production and supply of planting materials of varieties

Crop category	Production and supply of planting materials of varieties		
	Quantity (No.)	Value (Rs in lakh)	Number of farmers
Commercial	228806	3.45	8707
Fodder	312815	1.06	213
Plantation	54324	13.17	9995
Spices	11863	0.69	4933
Vegetable crops	182317	2.44	5335
Fruits	221097	41.11	50574
Forest species	84949	2.74	2718
Medicinal & aromatic	7135	0.62	911
Ornamental	26792	2.50	10307
Total	1130098	67.79	93693

Table 34: Production and supply of planting materials hybrids

Crop category	Production and supply of planting materials of hybrids		
	Quantity (No.)	Value (Rs in lakh)	Number of farmers
Fodder	476366	1.51	715
Fruit crops	8423	2.17	946
Ornamental plants and Spices	6367	0.48	5260
Vegetables	511196	2.66	654
Total	1002352	6.82	7575

3.1.5.2 Production and supply of planting materials: KVKs produced a total number of 130098 quality planting materials of crops like commercial, fodders, forest species, fruits, medicinal & aromatic, ornamental, plantation, spice and vegetables worth Rs. 67.79 lakh and supplied to 93693 farmers. Crop category wise details are presented in Table 33. In case of hybrids, KVKs produced 1002352 number of quality planting materials of crops like fodder, fruits, ornamental, spice crops and vegetables cereals, vegetables, oilseeds,

pulses and commercial crops worth Rs 6.82 lakh and supplied to 7575 farmers (Table 34.).

3.1.5.3 Production and supply of livestock strains and fish fingerlings: KVKs produced a total number of 99180 quality livestock and fisheries materials pertaining to dairy animals, sheep and goat, piggery, rabbitry, poultry and fisheries worth Rs.24.14 lakh and supplied to 4463 farmers. Category wise details are presented in Table 35.



*Production and supply of cabbage seedlings –
KVK Pathanamthitta*



Papaya nursery unit at KVK Namakkal

Table 35: Production and supply of livestock strains and fish fingerlings

Category	Production and supply of livestock strains and fish fingerlings		
	Number	Value (Rs. in lakh)	No.of Farmers
Dairy Animals	51	6.67	26
Poultry	31440	10.09	3867
Piggery	97	2.48	43
Fisheries	67182	0.98	277
Sheep and Goat	209	3.58	145
Rabbitry	201	0.34	105
Total	99180	24.14	4463

Table 36: Details on production and supply of bio-products

Category	Production and supply of bio-products		
	Quantity (q)	Value (Rs. in lakh)	No. of farmers
Bio agents	305.19	17.32	10394
Bio fertilizer	20.56	0.48	8204
Bio pesticides	3.54	1.75	1351
Organic manure	1659.15	7.12	16125
Earthworms	174.63	2.64	14407
Total	2163.07	29.31	50481

3.1.5.4 Production and supply of Bio-products: KVKs produced a total number of 2163.07 q bio-products namely bio agents, bio fertilizer, bio pesticides, organic manure and earth worms worth Rs. 29.31 lakh and supplied to 50481 farmers. Category wise details are presented in Table 36.

3.1.6 Soil, Water and Plant Analysis: A total of 22902 samples of soil, water, plant, manure and lime were analysed for 17045 farmers belonging to 8080 villages, which realized an amount Rs. 1237500 (Table 37). Maximum samples analysed were soil (16788) followed by water (5544), lime (331), plant (205) and manure (34).

Table 37: State wise details of soil, water, plant analysis performed

State	No. of KVKs	Soil, water and plant analysis			Amount realized (Rs.)
		No. of samples	No. of farmers	No. of villages	
Karnataka	19	10994	9329	5208	778420
Tamil Nadu	19	9503	5934	2661	305214
Kerala	11	2269	1735	179	147325
Puducherry	1	118	37	22	6440
Lakshadweep	1	18	10	10	101
Total	51	22902	17045	8080	1237500

3.1.7 Rain Water Harvesting with Micro Irrigation

System: Rainwater harvesting unit with micro irrigation system was established in 15 KVKs of Zone VIII. These 15 KVKs have conducted 145 training programmes, 119 demonstrations utilizing this facility and produced 84256 planting materials. Apart from this, 14862 farmers and 326 officials visited these units and get acquainted with the system.

3.1.8 Innovative Technology Delivery Mechanism

3.1.8.1 So shall we reap –Paddy Task Force (PTF) – the solution to farm labourshortage (KVK Kannur, Kerala):

Traditionally, Kerala has been an agricultural state. Tropical monsoon climate and abundant water sources favour Kerala to grow crop like paddy in three seasons a year. The panoramic view of lush green paddy field spread over a large area (*Padashekharam*) fringed with coconut grooves and rivers, the distinctive identity of Kerala in the past, is now a rarity in recent times.

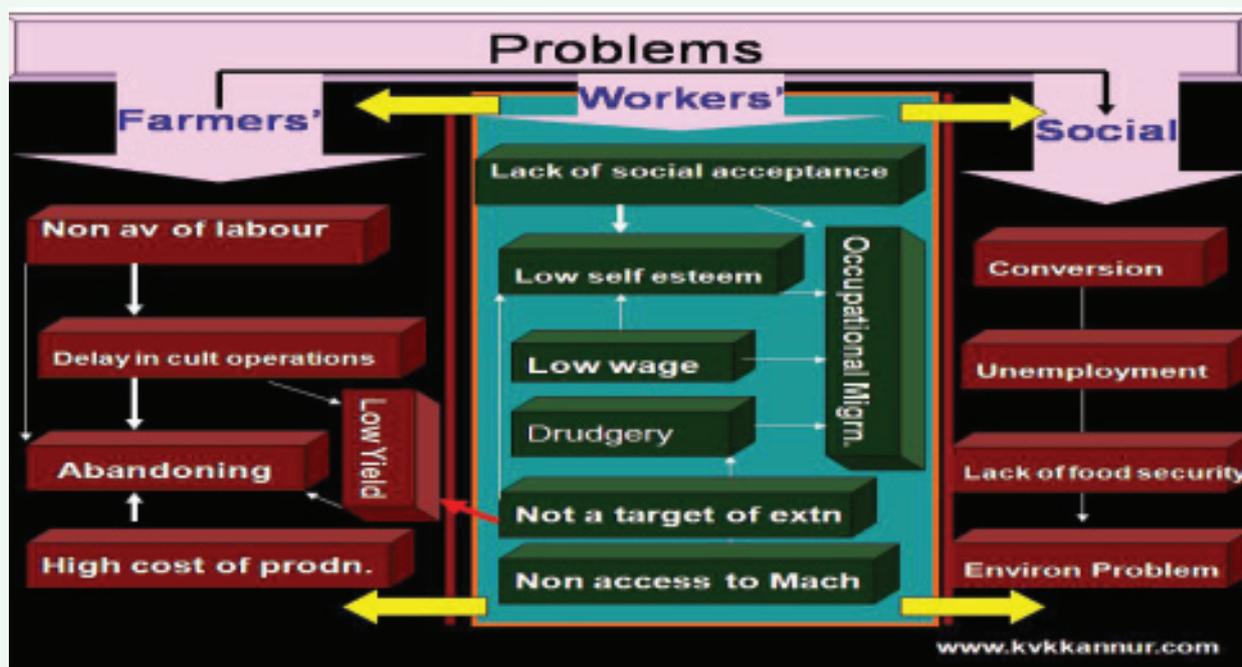
Over the last three decades the area under paddy cultivation in the state has been truncated at an alarming rate. From 8.94 lakh ha in 1974 the area declined to 4.72 lakh ha by 1995 and further to 2.89 by 2004-05. During 1950, paddy production in Kerala was sufficient to meet 50 % of its annual requirement. But fallowing of paddy fields and their conversion for non-agricultural purposes caused serious threat to its food security in the recent past. At present, the state is able to meet only 15 % of its requirement of paddy from its own production.

On the one hand the central and state governments

give special emphasis for boosting paddy production as part of the food security programme and on the other hand even the traditional farmers are forced to abandon paddy cultivation. This cannot be attributed to low profit or lack of interest alone. In Kerala the farmer has to wander in search of paddy labourers and by the time he could manage to get a few that too aged, the season would be off. Paddy being a labour intensive crop, non-availability of timely labour is by far the most critical problem faced by many farmers resulting in large scale fallowing and conversion of paddy land.

Due to high literacy percentage and urbanized life style majority among younger generation in Kerala have migrated to Middle East and other countries in search of better jobs. Unemployed women are also not attracted to agricultural works as it is laborious and also due to low social status attributed to such work. Many high yielding varieties have been bred and modern machineries developed for mechanization of paddy cultivation. Programmes like group farming were also introduced. But the goal could not be achieved as the very basic problem remained unaddressed.

Laborious nature of work, low wage structure, low self-esteem of paddy field workers and lack of social status, leads to occupational mobility to other lucrative fields. A model, which solves both labour problem (farmers' problem) and labourers' problem, simultaneously holds the key to revival of paddy production. The solution lies not far away. Paddy Task Force (PTF), a team of trained paddy field workers in uniform and equipped with modern machineries at



Problem cause Diagram of Paddy cultivation in Kerala

Pariyaram in Kannur is hailed as the ideal solution for revival of paddy cultivation in the state. Conceived and developed by the Krishi Vigyan Kendra, Kannur under Kerala Agricultural University with the support of state planning board in 2007 PTF provides high end labour to farmers. A paddy field owner needs to just call or send SMS to the task force to avail of the service. The Paddy Task Force formed by Kannur KVK is bringing revolution in paddy farming as a success model for revival of paddy cultivation in Kerala. It introduced a new work culture in farming sector. It is also a classical example for women empowerment through mechanized paddy cultivation.

Statewide Impact: The concept, PTF, has become synonymous with mechanization and has virtually created a wave among paddy farmers of the state for actualizing mechanization of paddy cultivation. The State Planning Board has now recommended the model for statewide adoption.

Revival of Paddy Fallows: Within two years the 16 member Paddy Task Force has revived 924 acres of paddy fields spread in six gramapanchayats and produced 1478 tons of paddy.

More number of PTF formed: During 2009,

Agriculture Department of Kerala came forward and requested KVK to form 9 PTF under RKVY. Krishi Vigyan Kendra has formed Paddy Task Force in nine gramapanchayats by imparting field training to 41 (15 male and 26 female) agricultural labourers covering one crop season utilizing the services of the first PTF of KVK. Soon after training the new PTFs have rendered their services in 225 acres of paddy fields spread in five GramaPanchayats of the district. The district Panchayat has vowed to declare Kannur as the 'district free of paddy fallows' using the services of Paddy Task Forces.

3.1.8.2 Innovative approach in Sericulture (KVK Mysore, Karnataka): Sericulture is the traditional and cultural entity of the district, popularly known as Mysore silk all over the world has got the history of 220 years. Mysore is recognized in the world through "Mysore silk" as Geographical Indication Tag. Presently sericulture is being taken up in 682 villages in the district with an area of 2371 ha with an average cocoon yield of 59 kgs/100DFLs. Main constraints faced by Sericulture farmers of the district are (i) non availability of quality planting material – Victory -1 variety and (ii) around 75% of the farmers still not getting quality chawki worms for rearing. Keeping these

in view, it was planned to start model Chawki Rearing Centers (CRCs) through farmer group initiatives i.e. through SHGs in the needy areas. In this regard funding support obtained from Department of Bio-technology (DBT), New Delhi to “Establishment of Two Chawki Rearing Centers by Self Help Groups of SC/ST farmers or Weaker sections for Employment Generation and Improvement of Cocoon Yield in Sericulture Villages”.

Steps taken to start CRCs:

- Identified needy sericulture village and farmers
- Formation of Self Help Groups (SHGs) by involving SC/ST farmers or weaker sections in the society.
- Imparting soft skills on management and maintenance of SHGs
- Group farmers made to attain technical skills to manage and run CRCs on their own.
- Provided needy equipments through project to initiate CRC activities
- Regular follow up and technical know-how given through KVK for smooth functioning of CRCs respectively.

As a result, two CRCs started functioning one each in Indavalu village of T. Narasipur taluk of Mysore district and Kuderu village of Chamarajanagar taluk and district in the month of August & September 2009. In a short span of just three months, two CRCs have earned an income of Rs. 98,761/-with profit of Rs.36,596/-

Besides serving sericulture farmers of the surrounding villages in supply of quality chawki worms, the group of farmers has started supplying critical inputs like lime powder, wherein group farmers procured lime stone from local vender-powdered, packed and starting selling through CRC.

Benefits derived by SHG farmers:

- Each group farmer could able to earn Rs. 1500 to 2000/month
- Improved living standards and earned respect in the society

3.1.9 Awards and Recognition

The Indian Council of Agricultural Research has initiated three National level KVK awards to encourage and recognize the efforts of KVKs for the betterment of farming communities in the districts across the country.



KVK Erode Receiving ICAR Best KVK Award



KVK North Goa Receiving ICAR Best KVK Award

During the period under report, out of three awards for 2008, two awards bagged by Erode and North Goa KVKs of Zone VIII. Further, KVK Hassan from Zone VIII bagged Best Institution award at National level from Fertilizer Association of India (FAI) for the year 2009-10.

3.2: Agricultural Technology Information Centres (ATICs)

During X Five Year Plan, Indian Council of Agricultural Research (ICAR) had established Agricultural Technology Information Centres (ATICs)



with the mandate of providing services to the farming community based on “Single Window System”. The major services provided to the farmers are i) technology services, (ii) input services and (iii) information services. At present there 10 ATICs in Zone VIII and the details are as follows:

The number of visitors to the ATIC ranged from 28664 (29.73%) in case of TANUVAS at Kattupakkam to 848 (0.88%) in CMFRI Cochin.

3.2.1 Technology Services provided: A total of 96416 farmers as well as other personnel have visited ATICs. Out of which, majority (33803) were visited for the purpose of purchase of technology inputs followed by technical advises (35733) and as a study tour (26880). Further, 282 training courses organized and 1099 samples of soil/plant analyzed for the benefit of 5851 farmers. A total of Rs. 2345.75 lakh was generated by ATICs by providing technology services.

3.2.2 Inputs provided: Major technological inputs provided by ATICs were seeds (13094.32 q), planting materials (573287 number), livestock strains (7748 number), bio-products (1687.66 q) and value added products with which generated an income of Rs. 298.12 lakh, Rs.61.15 lakh, Rs. 1.64 lakh, Rs. 5823.37 lakh and Rs.2.03 lakh, respectively.

Location of the ATIC	Host Institute
Dharwad	UAS Dharwad
Bangalore	IIHR Bangalore
Bangalore	UAS Bangalore
Kattupakkam	TANUVAS Chennai
Coimbatore	TNAU Coimbatore
Cochin	CIFT Cochin
Cochin	CMFRI Cochin
Thrissur	KAU Thrissur
Kasaragod	CPCRI Kasaragod
Calicut	IISR Calicut

3.2.3 Information provided: ATICs have provided 49110 e-publications in the form of CDs to 240993 farmers. Further, ATICs participated in 146 exhibitions wherein 2176379 farmers were exposed to modern agricultural technologies. In addition, replied to 2092

queries from various farmers and provided relevant technical reply for 9671 phone calls and 216 TV/Radio talks through ATICs.

3.3 Technological Backstopping by Directorates of Extension

Directorates of Extension are the major source for providing technological backstopping to the KVKs in the form of HRD programmes, conducting seminars, workshop etc and through supply various technology products. There are six Directorates in Zone VIII under University of Agricultural Sciences Bangalore for Southern Karnataka, University of Agricultural Sciences Dharwad and Raichur for Northern Karnataka and Goa, Karnataka Veterinary Animal and Fisheries Sciences University for Karnataka, Kerala Agricultural University for Kerala and Lakshadweep, Tamil Nadu Agricultural University for Tamil Nadu and Puducherry, Tamil Nadu Veterinary and Animal Sciences University for Tamil Nadu and Puducherry. Technological backstopping and the major ways and means of support extended to KVKs by Directorate of Extension are as follows:

- Providing inputs especially that of HYV and hybrids to all KVKs under their jurisdiction for undertaking various technological interventions
- Reviewing the mandated activities of KVKs through meetings, field visits, monitoring and evaluation processes
- Undertaking common interventions / projects in all the KVKs under their State / various agro-climatic zones
- Encouraging participation of KVKs staff in various seminars, workshops, Kisan Mela and other extension programmes conducted by the State Agricultural University.

A total of 20 training programmes were conducted by 5 SAUs in the Zone VIII, in which 549 KVK staff have participated. The topics include i) Sensitization programme on agri tech portal & ICT tool for north eastern zone, ii) Strategies to mitigate papaya mealy bug, iii) Team Work and Building Alliances for Development, iv) Seed production, v) Participatory

extension tools and techniques, vi) Climate change and its impact in agriculture, vii) Recent advances in soil, plant and water analysis, viii) Crop planning strategies, ix) Site specific nutrient management, x) Care and maintenance of kiosks, xi) Participatory training management, xii) Dryland agriculture, xiii) Watershed management, xiv) Information Technology in Agricultural Extension, xv) Extension strategies for promotion of organic farming, xvi) Management of post harvest technology and value addition, xvii) Integrated

Pest and Disease Management, xviii) Value addition of livestock and fish products for income generation, and xix) ICT in extension outreach for livestock development.

In addition, the Directorates of Extension have conducted 12 workshops, meetings and seminars to 185 KVK staff on themes such as i) Possibilities and Challenges in technology transfer from Lab to Farmer's field – A way forward, ii) Agri-Food Technology and iii) Quality protein maize production.



4. Human Resources Development

A total of 6 training programmes were organized by the Zonal Project Directorate and trained 154 KVK staff. Out of which 25 are Programme Coordinators trained on agri-business management and 129 newly joined Subject Matter Specialists in KVKs on Technology Assessment, Refinement and Demonstration and building alliances through team spirit. The details are furnished below:

- Training programme on "Agri business management" was organized at Tamil Nadu Agricultural University Coimbatore from 14.12.2009 to 18.12.2009 in which 25 KVK staff have participated.
- Orientation programme on "Technology assessment, refinement and demonstration" was conducted at KVK Pathanamthitta from 09.02.2010 to 12.02.2010 with 27 participants.
- Orientation programme on "Technology assessment, refinement" and demonstration" was organised at KVK Bijapur from 23.02.2010 to 26.02.2010 with 27 participants.
- Orientation programme on "Technology assessment, refinement" and demonstration" was conducted at KVK The Nilgiris from 02.03.2010 to 05.03.2010 in which 25 KVK staff have participated.
- Training programme entitled "Building alliances through team spirit" was organized at Karl Kubel Institute, Coimbatore from 07.03.2010 to 22.03.2010 with 25 participants.
- Orientation programme on "Technology assessment, refinement" and demonstration" was conducted at KVK Dakshina Kannada from 24.03.2010 to 27.03.2010 in which 25 KVK staff have participated.

5. Publications

5.1 Zonal Project Directorate

Research articles

- **Moolchand Singh, S. Prabhu Kumar and C.V.Sairam** (2009), “Effect of slow release nitrogen fertilizers on the growth and yield of tomato”, *Crop Research* 39 (1-3), pp.88-90

Books / Chapters in book

- Chief editors: Kokate, K.D and **Prabhu Kumar, S.** (Eds.) A.K.Mehta, V.Venkatasubramanian, Ashok Kumar Singh, Ajoy Kumar Singh, N.Sudhakar, **C.V.Sairam, Moolchand Singh, D.V.Srinivasa Reddy, R.S.Ramamurthy and MallikarjunB.Hanji**, (eds.) {2009}, “Case studies on transformation of district agriculture – experiences of KVKs”
- **Prabhu Kumar S, Reddy, D.V.S., Sairam, C.V** (2009), In: “Drought Mitigating Interventions of KrishiVigyanKendras”, (Eds.), Kokate, K.D., Singh, A.K., Singh, Lakhan

Technical / Popular articles

- Rajagopal,V and **Sairam, C.V.** 2009. Minimum support price for agriculture produces –a boon or bane? *Agriculture Today*, 12(7): 42-43
- Rajagopal,V. and **Sairam, C.V.** 2009. Post drought scenario on food security issues. *Agriculture Today*, 12 (10): 52-53

5.2 Krishi Vigyan Kendras

KVK scientists have published 67 research articles, 119 technical reports, 179 Newsletters, 398 popular articles, 648 extension literature, 61 training manual, 70 books/booklets and also 61 VCD/DVD on various technological aspects of agriculture and its allied enterprises (Table 38).

Table 38: Details of Publications by KVKs

State	Type of publication and number								
	Research Articles	Technical Reports	News letters	Technical Bulletins	Popular articles	Extension literature	Training manual	Booklets /books	VCD/ DVD
Karnataka	-	36	64	30	249	167	42	9	15
Tamil Nadu	35	64	78	46	112	401	15	59	24
Kerala	32	13	21	17	31	44	4	2	22
Goa	-	4	4		4	28	-	-	-
Puducherry	-	2	12	16	2	8	-	-	-
Total	67	119	179	16	398	648	61	70	61



6. Workshops/Meetings/Conferences

6.1 Meetings organized

Action Plan Meeting 2009-10

- The meeting was conducted in three phases viz., the first phase during 15-16th April 2009 for KVKs in Tamil Nadu and Puducherry, 27-28th April 2009 for KVKs in Kerala and Lakshadweep, 4-6th May 2009 for KVKs in Karnataka and Goa at Zonal Project Directorate Bangalore.
- Programme Coordinators from the respective KVKs presented their Action Plan for 2009-10 which was reviewed by Zonal Project Director and the respective Directors of Extension. and finalized for implementation by KVKs.
- A total of 300 technologies were planned to be assessed/refined through OFTs. In addition a total of 400 technologies were planned to be popularized through Front Line Demonstrations by the KVKs in Zone VIII.

Annual Review Workshop 2009

Annual Review workshop 2009 was conducted in a befitting manner during November 7-9th December 2009 at KVK Mysore. The presentations were held in three concurrent sessions chaired by Directors of Extension of SAUs.

Major outcome of the workshop are detailed below.

- a) Technology Assessment, Refinement and Demonstration need to be the primary mandate of KVKs and measures need to be taken to have scientific basis for the proposed interventions
- b) Training programmes need to be effectively conducted with an aim for transferring the skill involved in technology assessment, refinement and demonstration process.
- c) Technology Week has to be observed by all KVKs in their campus every year with a aim to demonstrate the salient technologies within their premises
- d) Integrated Farming System models need to be strengthened wherever possible.
- e) National priorities like water management, drought management and contingent plans under climate change regime need additional emphasis by the KVKs
- f) Each KVKs need to change operational villages at constant time periods so that their focus and attention will be there throughout the district.
- g) SWTL and e-connectivity facilities need to be effectively utilized
- h) Construction of buildings and other farm infrastructures need to be completed in time
- i) Hostel and other facilities should be utilized for the purpose for what it is meant and database on their effective utilization need to be maintained.
- j) Overall impact of major technologies like System of Rice Intensification, Integrated Pest and Disease Management in various crops need to be documented by the KVKs
- k) KVKs need to document innovative methodologies of the farmers
- l) KVKs also need to document success stories / case studies for 2010
- m) Technology Dissemination through Mobile - SMS services may be popularized

- n) Farm mechanization need additional emphasis to meet the challenges arising out of increasing labour cost
- o) KVKs need to subscribe ICAR publications for their libraries

Fourth National Conference on KVKs

The fourth National Conference was conducted by the Agricultural Extension Division, ICAR, New Delhi in a befitting manner at Tamil Nadu Agricultural University (TNAU), Coimbatore during 6-8th November 2009. The theme of Conference was KVKs as Resource and Knowledge Centres for Agricultural Technologies. The theme was further focused on six sub-themes viz., (i) Role of ICT in KVKs for making them as knowledge and resource centres, (ii) Quality production technologies for horticultural crops, (iii) Farm mechanization for quality production and value addition for income generation, (iv) Quality production technologies for livestock production and fisheries, (v) Emerging technologies for higher production of major field crops, and (vi) Integrated farming system models and optimized natural resource management for sustainable production.

In addition to the above the following meetings / workshops were also organized

- State Level Workshop on Jack Fruit at KVK, Pathanamthitta, Kerala on 28th May 2009.
- Inter Zonal Interface: Organized sensitization programme on agricultural portal and e-extension for participants from the KVKs of Zone III at TNAU, Coimbatore on 01-02 June 2009.
- Seminar cum exhibition on Advanced Techniques in Goat Farming on July 5, 2009 at KVK, Namakkal.
- Interaction meeting of selected KVKs conducted on August 10-11, 2009 at KVK, Puducherry.
- Review meeting of FLD on Oilseeds, Pulses and Cotton: Organized the Action Plan and Review meeting on Oil seeds, Pulses and cotton at KVK, Dharwad during 10-12, June 2009.

6.2 Meetings attended

Scientific Advisory Committee Meetings

Zonal Project Director and his officials have attended 53 Scientific Advisory Committee Meetings during 2009-10 and participated in the discussions and field visits.

State	Number of meetings attended
Karnataka	24
Kerala	12
Tamil Nadu	14
Goa	01
Puducherry	01
Lakshadweep	01
Total	53

- Zonal Project Director and his officials have also participated in 45 Technology Week celebrations by KVKs.
- Mid-Term Review of DARE/ICAR for XI Plan Interface with Planning Commission held during October 25, 2009 at CIFE, Mumbai.



7. Personnel

Director	Dr.S.Prabhu Kumar	Zonal Project Director
Scientific	Dr.D.V.Srinivasa Reddy Dr.C.V.Sairam Dr.B.T.Raydu	Principal Scientist (Agronomy) Principal Scientist (Ag.Economics) Senior Scientist (Ag.Extension)
Technical	Shri.R.S.Ramamurthy Dr.MallikarjunB.Hanji Shri.M.N.Prasad	Field Officer Computer Programmer Driver
Administrative	Mrs. C.Sunanda Shri.T.Dasappa Shri.J.Mathew Mrs. Ramola Pinto Shri. J.Prabhu Kumar	Assistant Finance and Accounts Officer Assistant Personal Assistant to ZPD Stenographer Upper Division Clerk
Supporting	Shri.Chennakesava	SSG 2

Transfers/Promotions

- Dr.Moolchand Singh, Senior Scientist (Agronomy) transferred from Zonal Project Directorate, Bangalore to NBPGR, New Delhi on 16th June 2009.
- Dr.D.V.Srinivasa Reddy, Senior Scientist (Agronomy) transferred from Central Plantation Crops Research Institute Kasaragod to Zonal Project Directorate, Zone VIII Bangalore on 20th July 2009.
- Dr.B.T.Rayudu Senior Scientist (Ag .Extension) transferred from Central Plantation Crops Research Institute Kasaragod to , Zonal Project Directorate, Zone VIII Bangalore on 28th October 2009.
- Dr.D.V.Srinivasa Reddy promoted from Senior Scientist (Agronomy) to Principal Scientist (Agronomy) from 5th August 2008.
- Dr.C.V.Sairam promoted from Senior Scientist (Agril. Economics) to Principal Scientist (Agril. Economics) from 29th August 2008.



With Best Compliments From:

Dr. S. Prabhu Kumar

Zonal Project Director

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