



A WINDOW TO KVKS OF ICAR-ATARI, ZONE XI, BENGALURU

KVK TIMES

VOL-2, ISSUE 23, 01 TO 15TH JUNE, 2024

Fighting
Climate Change
With Innovations



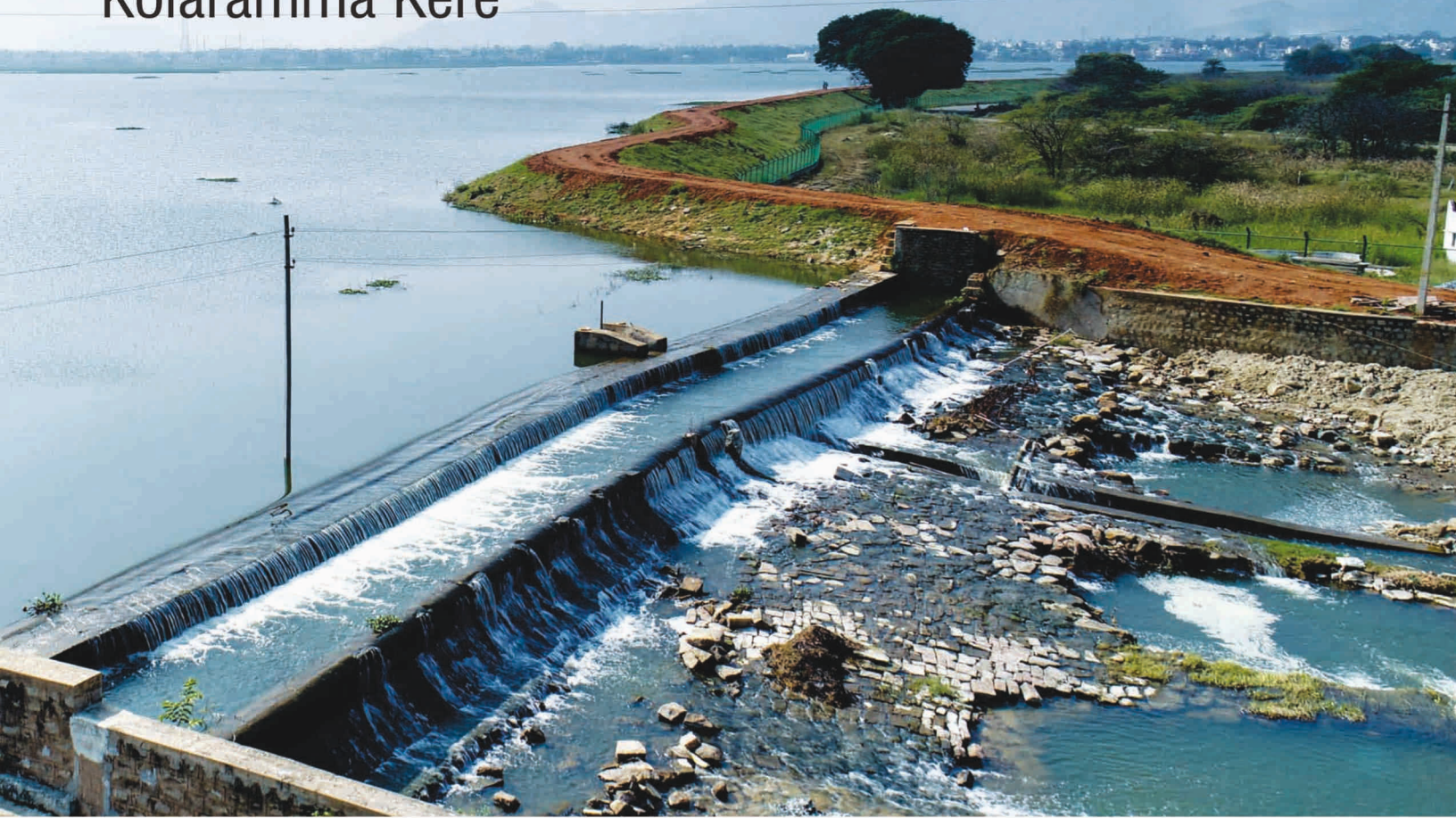
**ICAR - AGRICULTURAL TECHNOLOGY
APPLICATION RESEARCH INSTITUTE (ATARI), ZONE XI**

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ICAR- KRISHI VIGYAN KENDRA, KOLAR

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Kolaramma Kere



Ramasagara Lake





A WINDOW TO KVKs OF ICAR-ATARI, ZONE XI, BENGALURU

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Fighting
Climate Change
With **Innovations**





*If Conservation of Natural
Resources Goes Wrong
Nothing Else Will Go Right*

-M S Swaminathan



Message

The Krishi Vigyan Kendras conceptualized by the initiator of Green revolution in India and the father of Indian agricultural research Dr.M.S. Swaminathan with a noteworthy intent to cater services like technology assessment, refinement and demonstrations to the farming community. With the consecutive valiant efforts, Krishi Vigyan Kendra's are now evolving as the grass root level institution for empowering the farming community through exemplary extension services. Also KVKs are responsible for augmenting the great contribution of agriculture research in the country with their remarkable extension activities, thus leaving an indelible impression among the farming communities.

The idea of publishing KVK TIMES for every fortnight is a great distinctive feature of ATARI Zone XI illustrating the advancing progress of each KVK under the jurisdiction, also unfolding ones accomplishments for the period persuading the other KVKs.

I would like to congratulate the whole KVK system for bringing agriculture to a new horizon and convey heartfelt regards to the whole KVKs staff for their future endeavours. I should never stay back to acknowledge Dr. Venkatasubramian, Director, Zone XI, ICAR-ATARI, Bengaluru for his immense support and guidance to all the KVKs in every perspective, also for standing as a pillar for all the KVKs in his authority.

I wish to appreciate ICAR-KVK Kolar for publishing this special issue on "NICRA/Promotion of Climate Resilient Technologies" by compiling the foot prints of each KVK towards the Climate Smart Agriculture which is the current need of an hour.

DR. VISHNUVARDHANA

VICE-CHANCELLOR

UHS, BAGALKOT





Foreword

Krishi Vigyan Kendras are performing an outstanding role in delivering the technological support to the farmers and entrepreneurs promising the enhanced crop productivity and profitable enterprise, leading to sustainable social & livelihood security to farm families. Each KVK is unique and novel in its approaches to achieve its objective of serving for the wellbeing of the farming community.

I am pleased fulsome to proclaim that 48 KVKs in Zone XI of ICAR ATARI, Bengaluru in the states of Karnataka, Kerala and Lakshadweep, the Union Territory are expanding from the layer of elite extension to revolutions and innovations like assisting marketing linkages to farmers, fabricating FPOS for the benefit of farmers, scientifically assisting Processing and Value addition, Waste management to bring "wealth from waste" etc., ensuring the sustainable farming system. This real time manifestation of KVKs are certainly promising new dimensions to the farming community.

KVK Times a unique virtual platform cataloguing the fortnightly activities of each KVK is gaining a practical impulse leaving behind an incredible impression among all ensuring a cross learning among KVKs and worth reading. This unique feature should augment the morale of all of us and many such noteworthy efforts of our zone fraternity. KVK network being a frontline extension system at grass root level, is addressing the climate change impacts through adoption of appropriate mitigation technologies such as the cultivation of tolerant varieties/breeds to overcome the climate stress, water and nutrient management for efficient productivity and resource utilization, agro-adversaries for timely crop monitoring and conservation of agricultural practices to build soil organic carbon for sustainable agricultural production under its mandate activities.

I am delighted that KVK Kolar is bringing out the 23rd issue of second volume of KVK Times covering a special note on "Promotion of Climate Resilient Agriculture Technologies" along with the advancing events of first fortnight of June, 2024. I congratulate the whole KVK family of Zone XI specially Dr. Shivanand V Hongal, Senior Scientist and Head, and his enthusiastic team of ICAR-KVK Kolar for marking this unique special edition of KVK Times.

Not the least, I would acknowledge the sincere support rendered by Dr. Vishnuvardhana, Hon'ble Vice Chancellor and Dr. Lakshminarayan Hegde, Director of Extension, University of Horticultural Sciences, Bagalkot in backstopping the KVK activities and comforting ATARI.

DR. V VENKATASUBRAMANIAN

DIRECTOR

ICAR ATARI ZONE XI





Message

Krishi Vigyan Kendras are operating at the farmers' field level at almost each district in the country to achieve the set of objectives through diverse approaches suiting the specific locality. The KVKs are performing an impressive work by creating a wider awareness on improved agricultural technologies among the farming community by demonstrating them in the farmers' fields, thus directly footing the progress and well-being of the whole farming community in the scientific manner. All KVKs are tremendously revitalizing the rural community scenarios building them self-sustained providing self-employment opportunities for their livelihood securities. In this context KVKs play a pivotal role in fostering the rural farming community.

I heartily admire the eternal services rendered by every scientist of KVKs for disbursing the most essential service in the country. Further, I would like to convey my best wishes for their future pursuit.

The climate change is posing increasing challenges to farmers and farming community around the country affecting the cropping pattern, livestock, fisheries, poultry, etc. The national perspective is emerging as research to mitigate impact of climate change over agriculture through scientific farm practices which is yelled as 'Climate Resilient Agriculture'. I feel privileged and pleased for the ICAR-KVK, Kolar which is compiling a special issue on this national emerging call of promoting Climate Resilient Agricultural Technologies to address the conflicts of climate change over agriculture, along with the regular issues for the period of June 1-15th.

I extend my profuse thanks to the Director of ATARI, Zone XI, Bengaluru Dr. Venkatasubramanian for according this opportunity and all the KVKs of the zone for their collaboration in bringing this special issue of 'KVK Times'.

I would like to endorse my sincere regards to our Hon'ble Vice Chancellor of University of Horticultural Sciences, Bagalkot Dr. Vishnuvardhana for his constant support and directions in leading our KVK, Kolar to best contribute for the rural community.

DR. LAXMINARAYANA HEGDE

DIRECTOR OF EXTENSION

UHS, BAGALKOT





Acknowledgement

It feels immense pleasure, honour and proud privilege to compile a special issue of KVK Times on "NICRA/Promotion of Climate Resilient Technologies" along with regular events for the 1st fortnight of June 2024. Climate change is becoming a major threat for agricultural productivity, soil and water resources, livestock's viability, wildlife, etc. Indian agriculture is currently facing many challenges from the scenario of climate change, and can impose significant losses unless farmers can quickly recognize and adapt technologies to mitigate the issues of climate change. Agriculture is crucial in India for ensuring food, nutrition and livelihood securities. However, KVK scientists are ubiquitous as front-line warriors for educating the farmers in adapting climate smart/resilient agriculture technologies and paying for the national cause. It gives me immense pleasure to compile these great maneuvers of zone XI KVKs against climate change screenplay.

I hold this moment to extend my sincere gratitude to Dr. Venkatasubramanian, Director, ATARI, Zone XI, Bengaluru for showing his visionary of collaborating all the KVKs of Zone XI under a single virtual condave that is through KVK Times E-Magazine published every fortnight covering the endeavours of each KVK. The KVK times will reiterate the ongoing events and accomplishments of each KVK invigorating other KVKs. I am very grateful to the whole fraternity of ATARI, Bengaluru for according this golden opportunity and assisting for the same. I earnestly extend my thanks to the entire Zone XI family for sharing their valuable accomplishments in promoting climate resilient agriculture technologies.

I sincerely acknowledge the ceaseless support and motivation receiving from our hon'ble Vice Chancellor, Dr. Vishnuvardhana, University of Horticultural Sciences, Bagalkot for serving the farming community through various events. I wholeheartedly thank Dr. Laxminarayan Hedge, Director of Extension, University of Horticultural Sciences, Bagalkot for his righteous guidance and inspiration in executing our activities. Also, I would like to convey my special thanks to our Nodal officer Dr. D. V. Kolekar for his unerring and indispensable reinforce.

Last, but not the least I express my fulsome appreciation to the whole KVK Kolar team who really deserve for rendering their everlasting involvement in bringing out this pleasing and revelatory special issue.

DR. SHIVNAND V. HONGAL
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ICAR CELEBRATING KVK'S GOLDEN JUBILEE YEAR 2024



KVK TIMES

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ICAR-KVK, ALAPPUZHA

Predominant Climate Change Situations Focused

- Below sea level farming, water logging in monsoon seasons and thereby no cropping activity for 4-5 months (from June-July to September-October)
- Summer showers at the time of maturity and harvest of paddy during March-April leading to lodging of the crop and thereby loss in yield and increased cost of harvesting
- Severe acidity owing to the presence of acid sulphate soils and inadequate liming leading to poor nutrient use efficiency resulting in leaching of fertilizer nutrients and leading to accumulation of aquatic weeds in the fields, water bodies and canals which affect the cropping activities and even navigation
- Improper/inadequate housing of animals and birds causing disease outbreaks and higher mortality rate, and scarcity of feed and fodder during the water logging period leads to distress sale of animals and birds by the farmers. Poor land holding by dairy farmers leads to improper utilization and open dumping of cow dung resulting in environmental pollution

MAJOR CRTS DEMONSTRATED BY KVK TO ADDRESS THE SITUATION AND IMPACT :

1. RESOURCE CONSERVING AND ECO-FRIENDLY TECHNOLOGIES IN PADDY CULTIVATION

Sowing using Drum seeder to reduce the quantity of seeds, optimizing the plant population and incidence of pests and diseases, short duration variety Manu Ratna (95 days) to harvest before summer showers in April, seed treatment using bio-agents against diseases, Site specific (soil test based) nutrient management (SSNM) to optimize the use of chemical fertilizers



and micro nutrients, Foliar application of nutrients using drones. As a result of these interventions in paddy cultivation, seed rate could be reduced to 30 kg/ha compared to 100 kg/ha in conventional broadcasting. By adopting SSNM and application of dolomite as liming material soil acidity could be managed, magnesium deficiency corrected and the cost of fertilizers could be reduced by 30%. Drum seeder sowing resulted in reduced susceptibility to pest and diseases due to optimum spacing and strong anchorage of the crop helped to survive lodging during summer showers thus offering resilience in the harvesting stage. This package of technology is being adopted by more than 400 farmers in more than 200 ha in the region now. The number of drum seeders in use increased to more than 600 at present compared to nil before the start of the project.

2. CARBON SEQUESTRATION THROUGH COMPOSTING OF AQUATIC WEEDS IN THE REGION

The problem of accumulation of aquatic weeds was addressed through community based composting of the biomass in collaboration with farmer groups and MGNREGS. Farmer groups were facilitated to compost the aquatic weeds collected from paddy fields and heaped, by applying activated EM solution and cow dung slurry on it and covered with coconut fronds/gunny bags. The compost is ready within 50-55 days and used for vegetable cultivation by the farmer groups.

So far 3685 tonnes of fresh aquatic weeds removed from 550 ha of the paddy fields (Padashekharms) were converted to about 500 t of compost in three villages of Kuttanad. The compost contains an average 9.51% Organic carbon, 0.71% N, 0.24% K, 34.8 ppm Ca, 11.0ppm Mg and 2.05ppm B. Analysis of the compost, plant leaves, stem, and fruits of Tomato, Brinjal, Chilly, Okra, Cowpea and flowers and seeds of Amaranthus revealed that their content of Cd, Pb, Cr were lower than the critical limits proving their suitability to use for vegetable cultivation.

3. FLOATING DUCK SHELTER FOR HOUSING DUCK DURING FLOOD

For the duck farmers to overcome sudden and unexpected flooding during monsoon seasons, a floating duck shelter was fabricated in consultation with them using GP pipes, PVC pipes and Trafford sheets in 8 ft (L) X 5 ft (B) X 7 ft (H) by fixing over sealed plastic barrels (4 barrels and one no on each side).

ICAR-KVK - ALAPPUZHA

This shelter floats freely on water body and tethered using a long rope from the shore for feeding and other purposes. PVC pipes paved evenly in a gap of 1.5 cm on the floor of the shelter allow the faecal materials of duck to drop into water. This floating type of duck shelter helps the farmers to rear ducks throughout the year without the fear of flood and thus earn a reasonable income from duck farming. Nearly 60 farmers have replicated this technology in Kuttanad region after visiting this unit.



4. GOAT SHED WITH ELEVATED FLOOR TO REDUCE CLIMATIC STRESS

In order to overcome the climatic stress (mainly cold) due to water logging, climate resilient goat sheds were fabricated using PVC slabs, square tubes, chain links and shade net. These sheds of 6 m² floor area with platform fixed at 4 feet height from the ground level could accommodate 10 goats and prevent cold stress and disease incidence leading to mortality. As the shelter was fabricated 1 m from the ground level, flood water never affected the shed and animals.

With the elevated floor goat sheds, the average gross income increased from Rs.85,000/- to Rs.1,51,000/- per annum from a unit of 10 goats giving an additional net income of Rs.66000/- annually on account of the reduced mortality and better growth



5. HOUSING OF POULTRY ON SLATED FLOOR TO OVERCOME THE WATER LOGGING CONDITIONS

Poultry cages of 120cm x 90cm x 75cm size were fabricated with wooden planks at the bottom, tin sheet as roofing material and placing wire mesh on all the four sides to accommodate a unit of 20 birds in homesteads. The cages were placed at a standardized height of 120 cm using GI pipes to withstand flood. By the introduction of these slated floor poultry cages, the average no of bird stock per unit increased to 22 and the mortality rate reduced to 13% in 2021 – 22 from 9.2 and 53 %, respectively in 2011-12. The average egg production per unit was also increased by 231% (to 2684 from 810/per year/unit). This intervention resulted in a near self-sufficiency of egg production and a decent income to the families of NICRA villages with minimum investments and efforts. While about 150 units were established as demonstration under the NICRA project, an additional 300 such poultry cages were replicated by farmers themselves in the villages. This cages could survive even the worst ever flood in 2018. Farm women could earn an additional annual income of Rs.4000/- after meeting the household consumption and continue the poultry rearing activity throughout the year.





ICAR-KVK BALLARI

*Predominant
Climate Change
Situation Focused*

DEMONSTRATION OF CROPS FOR DROUGHT TOLERANCE

MAJOR CRTS DEMONSTRATED BY KVK TO ADDRESS THE SITUATION AND IMPACT :

**Revolutionizing Foxtail Millet Cultivation: Success of
HN-46 Variety Demonstration**

The demonstration of the foxtail millet variety HN-46 by ICAR-Krishi Vigyan Kendra, Ballari, underscores the significant advantages of adopting the new recommended practices over traditional farming methods. Here are the key justifications for the implementation of the new technology :

1. INCREASED YIELD : The recommended practice resulted in a noticeably higher yield compared to the farmers' local variety. This improvement in productivity translates to better resource utilization and higher production.

2. HIGHER ECONOMIC RETURNS : The gross return per hectare for the recommended practice was considerably higher than that achieved with traditional methods. This increase in gross return indicates a more profitable venture for farmers adopting the new technology.





ICAR-KVK - BALLARI

3. IMPROVED NET RETURN : After accounting for costs, the net return per hectare using the recommended practice was significantly greater than with traditional methods. The higher net return provides farmers with more income, enhancing their economic stability and capacity to reinvest in their farms.

4. BETTER BENEFIT-COST RATIO : The benefit-cost (BC) ratio, a critical indicator of economic efficiency, was higher for the recommended practice compared to traditional methods. This indicates that the investment in the recommended practices yields better returns per unit of cost incurred, making it a more efficient and sustainable option.

5. SUSTAINABLE AGRICULTURE : The adoption of improved agricultural practices as demonstrated can lead to more sustainable farming. These practices often involve better pest management, soil health maintenance, and optimized resource use, contributing to long-term agricultural sustainability.

6. MARKET POTENTIAL : With a stable market price for foxtail millet, the increased yield and quality from the recommended practices make cultivation a lucrative option for farmers. This can lead to improved market competitiveness and higher bargaining power for farmers.

7. KNOWLEDGE TRANSFER AND CAPACITY BUILDING : The demonstration also serves as an educational tool, empowering farmers with knowledge about advanced agricultural practices. This knowledge transfer is crucial for building the capacity of the farming community to adopt modern techniques and improve overall agricultural productivity.

In conclusion, the introduction of the new technology in foxtail millet cultivation offers numerous benefits in terms of yield, economic returns, and sustainability. The successful demonstration by ICAR-Krishi Vigyan Kendra, Ballari, provides compelling evidence for farmers to transition to these recommended practices, ensuring better livelihoods and contributing to the agricultural development of the region.





ICAR-KVK BELAGAVI – I

*Predominant
Situation faced :*

RAIN WATER MANAGEMENT TO MITIGATE DROUGHT SITUATION



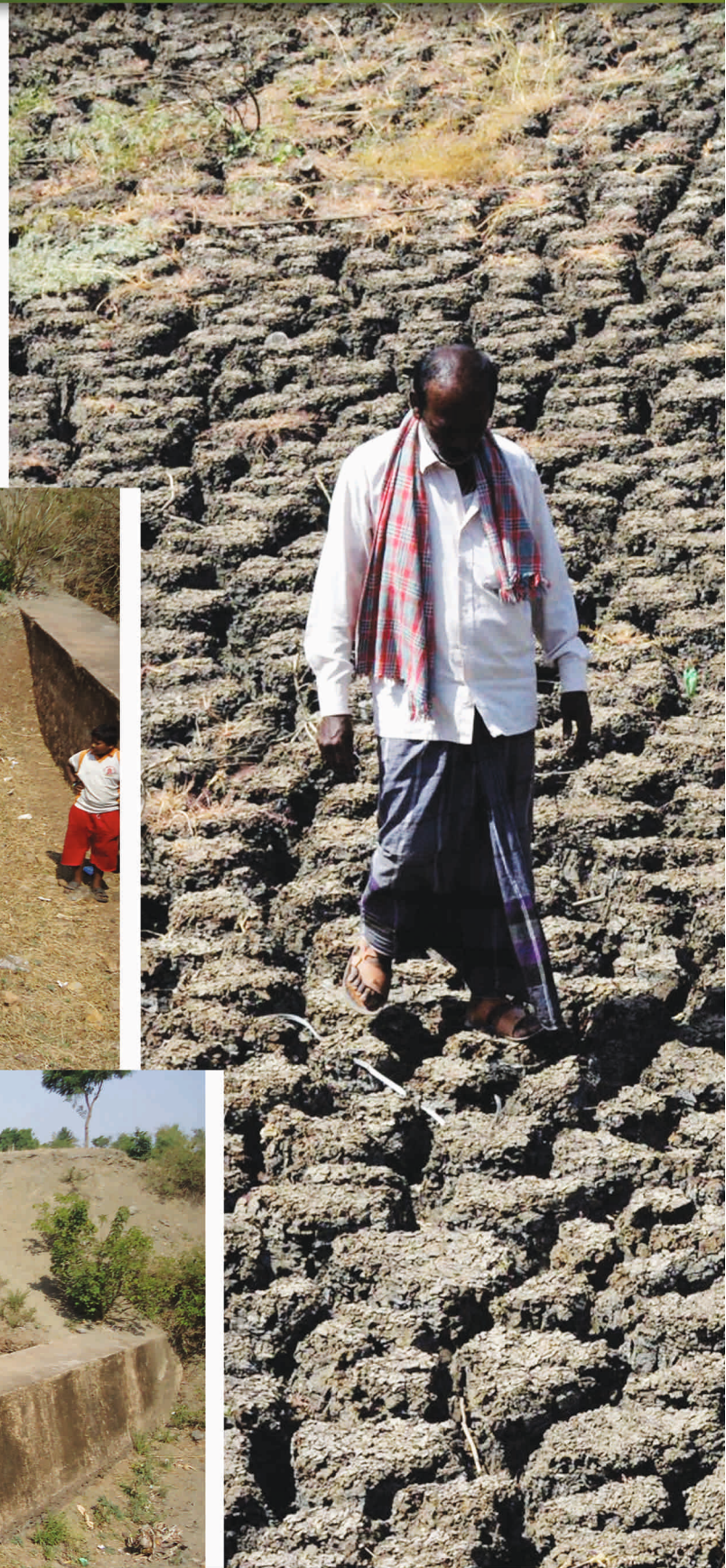
MAJOR CRTS DEMONSTRATED BY KVK TO ADDRESS THE SITUATION: DESILTING OF NALAS

NAME OF THE NALA'S: JANAMATTI NALA, TALADAPPA NALA AND DONAGRI NALA :

The above mentioned three Nalas viz. Janamatti Nala, Taladappa Nala and Donagri Nalas were desilted under NICRA project at NICRA village Yadagud. Before NICRA Natural Resource Management (NRM) interventions water storage capacity these three nalas were 872.81 cum and after desilting of these nalas the water storage capacity was increased upto 3959.19 cum and also Protective irrigation potential created upto 35.1 ha. Totally 25 farmers are benefitted by the desilting of this nala. Area under cultivation increased in Kharif upto 13.6 to 29.2 ha and Rabi 6.2 to 23.2 ha was increased.

IMPACT : After desilting of Nala the water storage capacity was increased upto 3959.19 cum. The Nalas were filled two times due to rainfall on the 20th July, 2017 and 11th Sept, 2017, 28.4 mm/day and 35.1 mm rain was occurred respectively. The Maize crop was sown on 2nd and 3rd week of June-2017. Total area had sown upto 17.7 ha. This stored water was used at irrigated at three times first at 55 days after sowing, 75 days after sowing and third at 80-95 days after sowing. The stored water was used for critical growth period of Maize crop. In cob initiation, Grain formation and Grain filling stages about three irrigations were given to Maize crop. After desilting of Nala's the area was increased 9 to 17.7 ha was brought under irrigation and also crop yield was increased upto 1805 Kg/ha to 2115 Kg/ha. From Nalas 25 Farmers got the extra income Rs.6, 96,000/- compare to the Non NICRA intervention farmers.

ICAR-KVK - BELAGAVI - I





ICAR-KVK BELAGAVI – II

*Predominant
Climate Change
Situation Focused :*

DEMONSTRATION OF MITY MILLETS FOR DROUGHT MANAGEMENT

MAJOR CRTS DEMONSTRATED BY KVK TO ADDRESS THE SITUATION AND IMPACT :

1. RABI JOWAR :

A. Conducted frontline demonstration on integrated crop management in rabi jowar variety SPV-2217 in an area of 4.0 ha by involving 10 farmers at Ganikoppa village, Bailhongal taluk

B. The existing variety M-35-1 is susceptible to charcoal rot and lodging and resulting in low yield. The farmers are not practicing seed priming, seed treatment and other improved cultivation practices

KVK has introduced high yielding, charcoal rot resistant, non-lodging, and fodder stay green at harvesting stage variety SPV-2217. KVK has demonstrated seed priming with calcium chloride 90 g/acre seeds, seed treatment with Azospirillum @ 200g/acre seed and foliar application of KNO₃ @ 5g/l of water. The farmers were given training on integrated crop production practices, regular field visits and field day was organized.

C. The demonstrated technology gave higher grain (23.6 q/ha) and fodder (45.1 q/ha) yield compared to farmers practice (19.8 q/ha and 37.3 q/ha respectively). The farmers were realized net returns of (Rs. 66,092/ha) with a benefit cost ratio (3.8) in demonstrated technology compared to their own practice (55, 335 and 3.5 respectively)



ICAR-KVK - BELAGAVI -II

2. FOXTAIL MILLET

A. Batakurki village of Ramdurg taluk comes under northern dry zone receiving low rain and higher temperature and having marginal soils. The existing local variety has unknown pedigree, low yielding and susceptible to lodging

B. KVK has taken up frontline demonstration on popularization of foxtail millet variety HN-46 for higher yield. KVK has provided seeds (HN-46) and Azospirillum to 20 farmers in an area of 8.0 ha. The farmers were trained on seed treatment, integrated nutrient, weed, pest and disease management. Regular field visits were made, training programmes and field day was organized to showcase the technology.

C. The demonstrated variety has recorded higher grain (8.70 q/ha) and fodder (14.10 q/ha) yield compared to local variety (6.45 q/ha and 10.50 q/ha respectively) with an increase in yield of 34.88 %. The demonstrated variety registered higher plant height (84.6 cm), more no. of tillers (8.2 /hill) and ear head length (18.10 cm) compared to local variety (73.1 cm, 5.8 /hill and 12.90 cm) respectively





ICAR-KVK BIDAR

*Predominant
Climate Change
Situation Focused :*

**WATER CONSERVATION
BY MAINTAINING SOIL
MOISTURE THROUGH IN SITU
VERMICULTURE DECOMPOSITION
OF SUGAR CANE TRASH FOR
HIGHER CANE YIELD.**

MAJOR CRTS DEMONSTRATED BY KVK TO ADDRESS THE SITUATION AND IMPACT :

The Front Line Demonstration (FLD) on sugarcane trash decomposition through in situ vermiculture has significantly addressed critical agricultural issues and improved cane yields. Conducted in 10 farmers' fields during the 2023-24 season, this initiative targeted the prevalent problems of burning sugarcane trash (78%), laborious trash removal, reduced plant population (20%) due to burning, environmental pollution, and poor soil fertility caused by the loss of beneficial microorganisms.

The FLD introduced climate-resilient technologies, emphasizing water conservation by maintaining soil moisture. Key components of the demonstration included the release of earthworms at 25.0 kg/ha, gap filling with sugarcane seedlings at 1200 per acre, and spraying with Chlorantraniliprole at 150 ml/acre. These practices were compared to traditional methods of burning crop residue and manual removal.



Results from the demonstration were compelling. The number of non-clitellate and clitellate earthworms averaged 9.3 and 0.5 respectively. At 100 days post-release, the residue to vermicompost conversion rate was 46.7% in the demonstration plots, significantly higher than the 0.4% observed in conventional practices. At harvest, the conversion rate soared to 90.8% in the demonstration fields.

Additionally, notable improvements were recorded in cane girth and internodal length. The demonstration fields showed a cane girth of 4.52 cm and internodal length of 20.20 cm, compared to 3.40 cm and 17.3 cm respectively in the control fields.

Overall, farmers provided positive feedback, appreciating the organic nature, soil enrichment benefits, and cost-effectiveness of in-situ vermicomposting. This method enhanced soil health and crop yield, making it a sustainable and profitable practice. The FLD concluded with a field day attended by over 50 farmers, who benefited from the insights and practices demonstrated. The success of this initiative highlights the potential of insitu vermiculture as a transformative agricultural practice.





ICAR-KVK CHAMARAJNAGARA

*Predominant
climate change situations
and Impact of climate
resilient practices
under NICRA project*

Chamarajanagara district is located in the southern part of Karnataka bordering TamilNadu and Kerala. The district lies between 11°55' N latitude and 76° 56' E longitude and the altitude is 733 m above mean sea level. The district falls under Southern dry zone (Zone 6) of agro ecological sub-region. The geographical area of the district is 5,69,901 ha out of which cultivable area is 2,48,211 ha and 61% is under rainfed conditions. The average rainfall of the district is 730 mm and its distribution is more during May-June and September-October months. With this background, the National Innovations on Climate Resilient Agriculture (NICRA) project was implemented by KVK Chamarajanagara during 2022 with an aim to enhance resilience of agriculture to climate change and climate vulnerability through strategic research and technology demonstrations for sustainable development in the face of changing climate. The village selected was Putthanapura, Gundlupete taluk which has 522 ha cultivable area with 95.6 % under rainfed condition. The major climate constraints faced in the village were long dry spells, drought and erratic rainfall. To address these situations, the farming system was categorized into four typologies namely rainfed without animal, rainfed with animal, irrigated without animal and irrigated with animal.

MAJOR CRTS DEMONSTRATED BY KVK TO ADDRESS THE SITUATION AND IMPACT :

Specific interventions were demonstrated matching with the typologies under natural resource management, crop production and livestock. Promising climate resilient technologies demonstrated are:

1. NATURAL RESOURCE MANAGEMENT

A) FARM PONDS FOR LIFE SAVING IRRIGATION AND MINIMIZING THE IMPACT OF DROUGHT

Farm pond is a dugout structure with specified size and shape having proper inlet and outlet and collects the surface runoff from the farm or catchment. The collected and stored water is utilised during dry spells as supplementary irrigation.

PERFORMANCE AND IMPACT : The number of farm ponds constructed and adopted by the farmers through demonstration is 8 with dimensions specific to their land area (12 m x 12 m x 3 m being most common). The average rainwater harvested is 2,16,000 litres. The crops experienced dry spells during vegetative and reproductive development stages during 2023 and the harvested water served as a source of critical irrigation for the crops, mainly sorghum, thereby saving the crop during water stress conditions.

B) TRENCH CUM BUND (TCB) FOR ENHANCING SOIL MOISTURE STORAGE AND TO MINIMISE THE IMPACT OF DRY SPELLS

These are artificial depressions and embankments made on the field and are generally rectangular or trapezoidal in section and help to store the runoff water leading to an increased infiltration and enhanced moisture availability during considerable crop growth periods. The size of the TCB is 3 m length, 1 m wide and 0.6 m depth.

PERFORMANCE AND IMPACT : Total 10 farmers each with 0.4 hectare area adopted 5 TCBs enabling harvest of 9000 litres. This benefited sorghum, chickpea and horsegram crops during dry spells thereby supporting crop during water shortage periods.

2. CROP PRODUCTION :

Introduction of early maturing varieties to escape dry spells and drought benefits farmers through assured yields. The demonstrated technologies are early maturing (88 days), tolerant to powdery mildew, anthracnose & white flies, non-shattering, brown seeded horsegram variety CRHG-19 (source: CRIDA, Hyderabad) and short duration (103 days), drought tolerant, high yielding, dual purpose sorghum hybrid CSH-30 (source: IIMR, Hyderabad).



ICAR-KVK - CHAMARAJNAGARA



A) Horsegram is cultivated by small and marginal farmers as a rainfed crop. The farmers practice was cultivation of long duration, powdery mildew susceptible, low yielding local variety with high seed rate sown by broadcasting leading to a hurdle during intercultivation and had crop competition. CRHG-19 was demonstrated by following line sowing, seed treatment with bio agents and intercultivation.

PERFORMANCE AND IMPACT : These improved practices resulted in 17.9 to 34.5 % increase in yield over non-NICRA farmers' practice. The farmers preserved 3.9 q seeds and used for sowing during next year covering an area of 15.6 ha.

B) In sorghum, the non-NICRA farmers' practice was cultivation of long duration, private hybrid which was susceptible to drought and low yielding. CSH-30 was demonstrated by following seed treatment with biofertilizer and foliar application of KNO₃ during drought condition.

PERFORMANCE : These improved practices resulted in 27.2 to 41.5 % increase in yield over non-NICRA farmers' practice.

C) Improved chickpea variety Jaki-9218 which is tolerant to drought and wilt disease was demonstrated and the farmers were able to obtain 15.3 to 18.6 % increased yield over check variety JG-11 which succumbed to drought and wilt.

3. LIVESTOCK : Improved multicut fodder crop variety seeds (Co.FS-29), mineral mixture, dewormer and disinfectant solution were introduced that benefited 113 number of farmers having milch cattle. Treatment of livestock against different diseases and parasites was done during animal health camp organized at the village.

PERFORMANCE AND IMPACT : These interventions helped farmers to realize additional milk yield with better quality fetching increased income. Apart from this, by growing multicut fodder variety Co.FS-29 in 20 ha area (99 farmers), 912 tonnes of green fodder was obtained and utilised for cattle.

4. A CUSTOM HIRING CENTRE : facilitating easy and timely agriculture operations has been established and put to use at the village managed by the village level climate risk management committee members (VCRMC). Different extension activities such as trainings, method demonstrations, agro-advisory services (Through Whatsapp groups and telecom), awareness programmes, significant days (world soil day, world environment day), exposure visits (National Horticulture Fair, Krishimela), group discussion, field visit, farmers scientist interaction and group meeting with VCRMC were also conducted benefiting the farmers through 29 number of programmes.

As a part of introduction of dryland horticulture and agroforestry, selected farmers were provided with saplings of mango, sapota, guava, avocado, custard apple, jamun, tamarind, melia, mahagoni, silver oak in convergence with department of horticulture and forestry to plant all along the field borders, on field bunds and on the bunds of farm ponds & TCBS. Further, applications of drone technology was demonstrated (5 ha area in sunflower, sorghum) in collaboration with department of agriculture with the objectives of reducing drudgery during spray, achieve timely and uniform spraying for better crop management during stress periods.

Scaling up the demonstrated CRTs for higher adaptation: The seeds of improved chickpea variety (Jaki-9218) and hybrid sunflower (KBSH-78) has been supplied through RSKs of department of agriculture in the taluk during 2023-24 and the area of spread is 1600 ha and 580 ha, respectively. Further, other NRM and livestock interventions demonstrated can be scaled up through many schemes and projects of respective development departments.

Adoption of climate resilient practices witnessed an improvement in management pattern and income savings of the NICRA beneficiaries. Yields of all the crops demonstrated found measurable difference with significant increase. This is due to implementation of climate resilient improved varieties tied with better water and healthy soil management practices. Mechanization of agricultural operations through custom hiring centre, timely availability of inputs and climate resilient technologies, soil test based nutrient management, increased awareness through various training programs and extension activities are the reasons for improvement in yield and income.





ICAR-KVK CHIKKABALLAPURA

*Predominant
climate change
situation focused*

Chikkaballapura district comes under the Agro-Climate Zone of Eastern Dry Zone in Karnataka State. The climate of the district is semi-arid and annual rainfall of the district is 750 mm. Rainfall is usually erratic and the probability of agricultural drought is to the extent of 75 percent over the years. Long dry spells between two rains during June to September period affects the crop yield and thereby the livelihood of the farmers.



MAJOR CRTS DEMONSTRATED BY KVK TO ADDRESS THE SITUATION AND IMPACT :

1. TRENCH CUM BUND FOR ENHANCING THE SOIL MOISTURE STORAGE AND TO MINIMIZE THE IMPACT OF DRY SPELLS AND DROUGHT

Trench cum bunds was constructed in S.Raguttahalli village of Chikkaballapur districts covering an area of 54 ha benefitting 106 farmers. Generally the dimension of trenches should be 5 m length, 1 m width and 0.6 m width by leaving one meter berm between each trench and trench cum bunds can be used to store runoff water, there by more water infiltrates into the soil and makes available moisture for longer periods. Trench cum bund helped to enhance the yield of pigeon pea more compared to cases without trench cum bund. Additional net return of Rs.22,490 per ha was obtained as compared to farmers' practice.

CLIMATE
CHANGE
IS REAL

SAVE THE
EARTH

NO
PLAN



ICAR-KVK - CHIKKABALLAPURA

INTERVENTION CROP	INTERVENTION	CROP YIELD (Q/HA)	NET RETURN (RS./HA)
Pigeon pea	Trench cum bund	14.2	48,560
	Without trench cum bund	12.7	37,950

2. APPLICATION OF TANK SILT TO INCREASE THE MOISTURE HOLDING CAPACITY AND FERTILITY OF THE SOIL IN DROUGHT PRONE REGIONS

In Hanumaigarahalli and Somakalahalli villages of Chikkaballapura districts, 400 tons of tank silt was excavated and applied to the 08ha area benefitting 23 farmers during 2023. The tank silt applied improved the physical and chemical properties of the soil, enhanced the water holding capacity and improved the moisture availability for longer duration as compared to without tank silt applied field. The finger millet and pigeon pea crops were taken in the tank silt applied field, which resulted in an additional yield by >4 and >3 q/ha respectively and correspondingly an additional net return of Rs. 7870 in finger millet and Rs.5810 in pigeon pea per ha over the farmers' practice.



INTERVENTION CROP	INTERVENTION	CROP YIELD (Q/HA)	NET RETURN (RS./HA)
Finger millet	Silt application	28.4	42560
	Farmers practice	24.1	34690
Pigeon pea	Silt application	14.6	40550
	Farmers practice	11.8	34740





ICAR-KVK CHIKKAMAGALUR

*Predominant
climate change
situation focused*

A CROPPING SYSTEM WITH INTRODUCTION OF CLIMATE RESILIENT CROPS

*Farming in a different, regenerative way has
the potential to help us tackle many of the
major environmental challenges the world faces.*

MAJOR CRTS DEMONSTRATED BY KVK TO ADDRESS THE SITUATION AND IMPACT :

1. INTRODUCTION OF SOYBEAN CROP (DSB-34) AS A CLIMATE RESILIENT CROP IN THE CROPPING SYSTEM OF CENTRAL DRY ZONE OF CHIKKAMAGLAURU DISTRICT

IMPACT : During Kharif season farmers of Central Dry Zone of Chikkamaglauru district were cultivating onion crop. This region received incessant rains during the kharif season of 2020, 2021, which resulted in rotting of onion bulbs and complete loss of crop. In order to avoid this problem, KVK, Chikkamaglauru introduced climate resilient drought tolerant soybean crop as an alternate crop to onion. By cultivating the Soybean crop (DSb-34), farmers realized the yield of 16.5 q/ha with total net income of Rs.34,000/- per hectare with B:C ratio of 1.52. Due to all these advantages the area under the soybean crop is increasing in the region

ICAR-KVK - CHIKKAMAGALUR

2. INTRODUCTION OF SHORT DURATION FINGER MILLET KMR-630 SUITABLE FOR MECHANICAL HARVESTING

IMPACT : The farmers in Transition Zone & Central Dry Zone of Chikkamagaluru district cultivate finger millet in late kharif. Farmers were demanding for short duration draught tolerant finger millet variety suitable for late sowing. Hence, KVK Chikkamagaluru introduced KMR-630 variety in the region, the new variety outperformed the local varieties. KMR-630 variety is lodging resistant hence, suitable for mechanical harvesting and realized the yield of 28.25 q/ha recorded a total net income of Rs.92837/- per hectare showing an increase in yield of 43.03 percent.

Farmers opined that, suitability of KMR-630 for mechanical harvesting facilitated them to carry out harvesting and threshing operations in time and saved the crop from heavy rainfall occurred during the harvesting season.





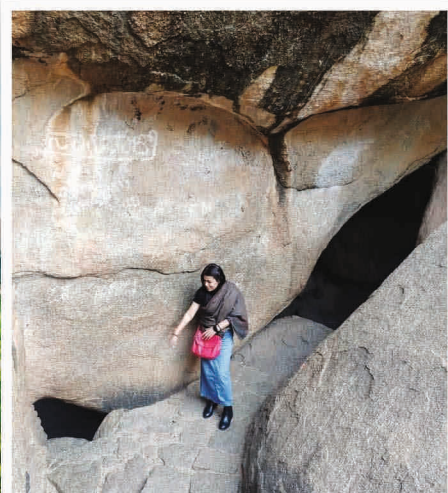
ICAR-KVK CHITRADURGA

*Predominant
climate change
situation focused :*

**CHALLAKERE AND
MOLAKALMURU THALUK
OF CHITRADURGA
DISTRICT ARE RECEIVING
VERY LOW RAINFALL**

MAJOR CRTS DEMONSTRATED BY KVK TO ADDRESS THE SITUATION AND IMPACT :

As Challakere and Molakalmuru thaluk of Chitradurga district are receiving very low rainfall in the Chitradurga district, ICAR-KVK Chitradurga implemented NICRA project is in Yelaghata village of Challakere taluk during December month of 2022. The programme was inaugurated by Honourable Shri. T. Ragumurthy, MLA, Challakere Tq., Dr. Hemala Naik, Director of Extension, KSNUAHS, Shivamogga and Dr. Kumara O, Senior Scientist and Head, KVK Chitradurga . It is an opportunity for the farmers of this region to get more benefits with various scientific technologies related to dryland agriculture and horticulture as well as agro-forestry system and moisture conservation practices



ICAR-KVK - CHITRADURGA

A) In order to promote field crops under NICRA project various technology suitable for dryland as well as climate variation was demonstrated by the KVK like Groundnut + Redgram (4:1)-(Kadiri Lepakshi-(K-1812), BRG-5 , Groundnut + Castor (4:1)-(Kadiri Lepakshi-(K-1812), ICH-66), Redgram + Castor(2:1)-BRG-5, ICH-66, Redgram (sole cropping)- BRG-5, Castor (sole cropping)- ICH-66 were conducted in NICRA Village .

B) Promotion of the agro-forestry (Mahagani) and Dryland horticulture crops was demonstrated (cashew, jack, amla and mango) to the farmers of Yalagatte village. Water conservation practices like check dams, trench cum bund activities were carried out at farmer's field for conservation of soil and water.

C) Custom hiring centre (CHC) was implemented at Yalagatta Village with farm machineries/equipment's on hiring basis so that it is easily available with low cost to the farmers of the village in order to focus on carrying out farm activities in low cost at NICRA Village.





ICAR-KVK DAKSHINA KANNADA

*Predominant
climate change
situation focused*

Paddy is the staple crop of Dakshina Kannada district of coastal Karnataka which is grown in an area of 11248 ha. The district falls under agroclimatic zone no. 10 coastal zone where the normal rainfall is 4000 mm. Red kernel rice varieties such as MO4 and indigenous variety-Kajejaya have been cultivated in large area even under weeklong flood situation resulting in less production.

During kharif season nearly 550-600 ha of paddy area is inundated with flood for long duration creating unfavourable situation for paddy cultivation and resulting in low production as well as loss of crop.

CRT DEMONSTRATED BY KVK TO ADDRESS THE SITUATION :

Realizing above situation ICAR-Krishi Vigyan Kendra, Dakshina Kannada, Mangalore popularized flood tolerant red rice variety –sahyadri panchamukhi which could withstand biotic and abiotic through FLD and Extension Activities.

Paddy growers in the flood prone area are the target groups. The paddy variety-Sahyadri Panchamukhi that has been developed by Keladi Shivappa Nayaka University of Agriculture and Horticultural University, Shivamogga was provided to farmer named Mr. Dayanand hailing from Delantha Bettu for the implementation of the FLD programme on flood tolerant red rice -sahyadri panchamukhi under the technical guidance of the scientist of KVK. He could produce 100 quintal of paddy seeds and provide 60 quintals of quality seeds to 210 farmers of Mangalore and Bantwal Taluks through Department of Agriculture for vertical spread. Remaining 20 quintals of paddy was processed to rice as it possesses good aroma with good consumer preference. The characteristic feature of the variety is that it can withstand flood situation up to 12 days and also tolerant to many insects, pests and diseases. KVK produced 34.89 quintal of seeds at instructional farm and provided them to the paddy farmers of the district resulting in area coverage of 55.82 ha for the period 2021to 2023. Feedback of the farmers include that the variety has performed better under flood situation with higher production and no lodging problems.





ICAR-KVK - DAKSHINA KANNADA

IMPACT : Adoption of this technology has registered 47 % higher yield over farmer practice. Demonstration of the technology have recorded higher grain yield (53 q/ha), net returns (Rs. 62,400) and BC ratio (3.66:1) over farmer practice (36 q/ha, Rs. 33,074 and 1.86), respectively. This has also resulted in an area expansion of 84 ha across the district with a production of 4200 quintals and increased in productivity from 12 to 20%. The district total additional return gained is Rs. 130 Lakhs due to varietal replacement.





ICAR-KVK DAVANAGERE

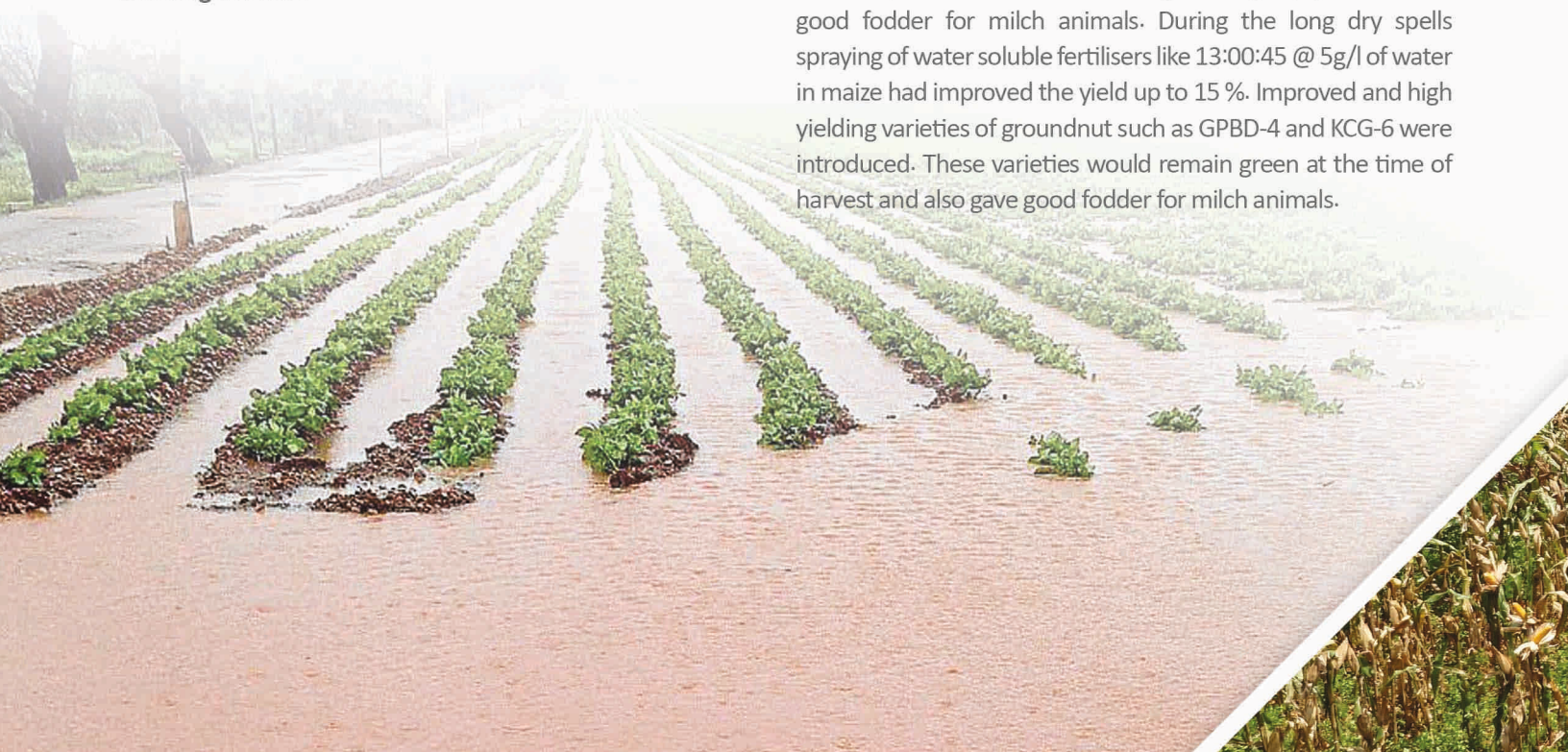
*Predominant
climate change
situation focused*

Davanagere district is at the centre of the state and lies in between latitude of 750.30' and 760.30' and longitude of 130.45' and 140.50' with MSL of 602.5 m. The annual average rainfall of the district is 662.7 mm (actual 721.1 mm in 2023). The variety of soil is medium to deep black and red sandy loam. Predominant climate change situation focused here is drought condition. Drought mitigating technology interventions were planned in Siddanuru cluster of Davanagere taluk.

CLIMATE RESILIENT TECHNOLOGY DEMONSTRATED

Under Natural resource management : Constructed the farm ponds (23) and deepening of the check dams which had helped them to harvest the rain water. Whenever dry spells (more than 20days) were there for the field crops like maize and finger millet, during the critical stages of the crop growth irrigation was provided from the farm ponds. The crop yields were supported with this intervention. Sowing across the slope, insitu moisture conservation, trench cum bunds technologies were given to farmers for conserving the soil and moisture. Protective irrigation was given to the vegetable crops by these farm ponds during the critical stages. All along the bunds forest saplings were planted.

Crop Production : Intercropping of Medium duration red gram as intercrop in Hybrid maize which has given good returns during the low rainfall and drought situation. The medium duration and drought tolerant varieties of red gram like BRG-1/2 white seeded, BRG-5 red seeded were grown as a intercrop. The drought tolerant Finger Millet varieties like MI-365, GPU-48, and GPU-28 were introduced and grown in NICRA villages. These varieties performed well even during the long dry spells and also good fodder for milch animals. During the long dry spells spraying of water soluble fertilisers like 13:00:45 @ 5g/l of water in maize had improved the yield up to 15 %. Improved and high yielding varieties of groundnut such as GPBD-4 and KCG-6 were introduced. These varieties would remain green at the time of harvest and also gave good fodder for milch animals.



ICAR-KVK - DAVANAGERE

IMPACT: The intercropping of redgram in the hybrid maize is followed by the NICRA villages till date. The area of intercropping of redgram in hybrid maize is nearly 15,000 ha and sole crop of redgram in 150 ha. The finger millet variety ML-365 area has been spread throughout the district as medium duration variety suitable for late kharif and summer where the farmers grown under bore well irrigation. The area under this variety is nearly 8000 ha in kharif.

The farm pond construction were increased in surrounding villages for rain water harvesting after observing the benefits in NICRA villages. This year the farm ponds and Check dams were filled during the month of May. The farmers were involved in cleaning the trenches, farm ponds and check dams on their own even after the completion of the project.





A WINDOW TO KVKS OF
ICAR-ATARI, ZONE XI, BENGALURU
VOL-2, ISSUE 23, 01-15TH, JUNE, 2024

NICRA / PROMOTION OF
CLIMATE RESILIENT TECHNOLOGIES



ICAR-KVK ERNAKULUM

*Predominant
Climate Change
Situation Focused*

Addressing the Climate Change Impacts on Pokkali Paddy-Shrimp Farming. Low returns due to recurrent challenges in conventional Pokkali paddy-shrimp farming due to delayed monsoons, floods, low paddy productivity, and widespread White Spot Syndrome (WSS) virus attacks in shrimp.

CLIMATE RESILIENT TECHNOLOGY (CRT) DEMONSTRATED BY KVK:

To enhance returns from Pokkali farming and offset losses, KVK demonstrated the integration of cage culture of fin fishes alongside Paddy and Shrimp in Pokkali fields.

IMPACT : This innovative approach resulted in an additional profit of INR 80,000 per hectare compared to the INR 50,000 per hectare from traditional Paddy-Shrimp farming. Species such as Pearlsplit, Mullet, and Seabass were found to be suitable for cage culture in Pokkali fields. To further support this initiative, farm gate markets were established to eliminate middlemen and reduce transportation costs. Additionally, KVK registered a trademark to promote the branded sale of Pokkali rice and rice products at a premium price. Following the success of this NICRA program, the Fish Farmers Development Agency (FFDA) under the state government initiated a scheme called Integrated Fish Farming in Pokkali Fields.





ICAR-KVK - ERNAKULUM





ICAR-KVK GADAG

*Predominant
Climate Change
Situations Focused*

INTERCROPPING SYSTEM OF MAIZE + REDGRAM – AN EXEMPLARY CLIMATE RESILIENT TECHNOLOGY FOR GADAG DISTRICT

Gadag is one of the drought prone Districts in Karnataka state with an annual average rainfall of 664 mm. More than 80% of the cultivated area in the District is under rainfed situation. Prolonged dry spells coupled with inconsistent rainfall during kharif season results in poor crop growth and loss of yield. Maize is one of the major cereal crops cultivated in nearly 55,000 hectares in the District. Production of maize crop is precarious for the farmers with uncertainty of good rain. Farmers used to cultivate maize as sole crop. This practice often leads to low productivity due to drought situation caused at early (i.e. vegetative stage: 30-40 DAS) and mid-season (initiation tassel and cob formation stage: 50-70 DAS). This prominent problem of low productivity had to be addressed for sustainability of farming community, especially of small and marginal farmers under dryland situation who rely completely on growing of seasonal crops year over year.

CLIMATE RESILIENT TECHNOLOGY DEMONSTRATED

Maize + Redgram (5:1) intercropping system was demonstrated under National Innovations for Crop Resilient Agriculture (NICRA) in the Shingatarayankeri cluster of villages. Various activities such as capacity building programmes, method demonstration of seed treatment and timely farm advisories were provided. Following technologies were implemented under this demonstration.

- Demonstration of medium duration TS-3R variety of Redgram crop as intercrop in Maize, since Redgram can sustain early and mid-season drought during Kharif season
- Seed priming with CaCl₂ @ 2% to Redgram seeds
- Seed treatment with Trichoderma @ 10g per kg of Redgram seeds
- Seed treatment with Rhizobium & PSB @ 40 g per kg of Redgram seeds
- Foliar spray of Pulse Magic @ 1% during flowering and pod setting in Redgram crop
- Installation of yellow sticky traps @ 20 No's/ha in Redgram crop for biological control of pest and disease

OUTCOME AND IMPACT

Due to dry spells, Maize crop suffered moisture stress during vegetative, tassel initiation and cob formation stages, whereas, Redgram crop was found to withstand moisture stress situation during early vegetative stages. Demonstrations were conducted in an area of 112 hectares covering 230 farmers during 2019-20 to 2023-24. The results of the demonstrations during 5 years from 2019-20 to 2023-24 are given in Table 1. From the results, it was observed that 25.98 % increase in yield was noticed in Maize+Redgram intercropping as compared to farmers' practice of sole maize crop. The net income of the farmers also rose by about 42.65%. Average B:C ratio of demonstration was 2.53 as opposed 2.15 in local check. Hence, the farmers in the village were convinced about the demonstrated technology. Further, efforts were made for horizontal and vertical spread of this technology in and around the village.

ICAR-KVK - GADAG

TABLE 1: PERFORMANCE OF MAIZE+REDGRAM INTERCROPPING SYSTEM

SL NO	YEAR	YIELD (Q/HA)		INCREASE IN YIELD (%)	NET INCOME (RS./HA)		INCREASE IN INCOME (%)	B : C RATIO	
		LOCAL	DEMO		LOCAL	DEMO		LOCAL	DEMO
			(CEY)						
1	2019-20	44.56	57.33	28.66	25225	36558	44.93	1.95	2.38
2	2020-21	53.93	70.37	30.48	44246	62938	42.25	2.54	2.89
3	2021-22	53.76	71.95	33.84	36327	54542	50.14	1.93	2.18
4	2022-23	55.73	67.78	21.62	65352	86327	32.10	2.42	2.75
5	2023-24	48.45	55.87	15.31	28665	41228	43.83	1.89	2.44

Demonstration of Maize+Redgram intercropping showed a promising path to the farmers in tackling climate change risk. There was additional income realized from intercropping system compared to the maize as sole crop. The increase in average net income was Rs. 16,456 per ha compared to cultivation of maize as sole crop. The average increase in net income was Rs. 9,42,190 from 2019-20 to 2023-24. Efforts were made towards horizontal spread of the technology by conserving the TS-3R seeds of redgram grown by the farmers and seeds were propagated from farmers to farmers. The intercropping of maize+redgram was further spread to 122 farmers in the adopted villages as well as neighboring villages.





ICAR-KVK HASSAN

*Predominant
climate change
situation focused:*

Hassan District is located in the south-western part of Karnataka state and the district lies partly in "malnad" tract and partly in southern "maidan"(plains) tract. By considering the physical aspects, climate, rainfall, etc. the district may be divided into three regions, viz., (1) southern malnad, (2) semi-malnad and (3) southern maidan. The climate of the district is semi-arid and annual rainfall of the district is 1147 mm. Rainfall is usually erratic and the probability of agricultural drought is to the extent of 25 percent over the years.

MAJOR CRTS DEMONSTRATED BY KVK TO ADDRESS THE SITUATION AND IMPACT :

Finger millet variety KMR-316 for early maturity and to escape drought for Hassan region : Finger millet is the staple food grain of Hassan district and it is cultivated by small and marginal farmers as rainfed as well as irrigated crop. Farmers of this region cultivate local and long duration varieties (GPU-28) of finger millet realizing low yield. Low productivity is due to delayed onset of monsoon, low and erratic rainfall. To cope with the climatic variability's, medium duration and drought tolerant variety of finger millet KMR-316 was demonstrated in the villages during kharif season. The variety has duration of 100-105 days with high grain and fodder yield. The variety was demonstrated in Arasikere, Channarayapatna and parts of Hassan taluk in Hassan district. The variety is suitable for rainfed and delayed sowing conditions. It is also resistant to neck blast and stem rot disease.





ICAR-KVK - HASSAN

INTERVENTION	INTERVENTION	CROP YIELD (Q/HA)	COST OF CULTIVATION (RS./HA)	GROSS RETURN (RS./HA)	NET RETURN (RS./HA)	B:C RATIO
Farmers practice	GPU-28	24.07	44838	120764	75926	2.69
Improved variety	KMR-316	28.75	44838	126084	81246	2.81



UPSCALING : Finger millet variety KMR-316 was adopted in 31.60 ha area in K. Hosahalli, Rajapura and Rampura village of Hassan district and upscaled to 262 ha in the district. The variety can be further spread through convergence with line departments.





ICAR-KVK HAVERI

*Predominant
climate change
situation focused:*

MANAGEMENT OF SOIL BORNE DISEASES WITH ENVIRONMENT FRIENDLY APPROACH IN REDGRAM

MAJOR CRTS DEMONSTRATED BY KVK TO ADDRESS THE SITUATION AND IMPACT :

Method demonstration on seed treatment in redgram

ICAR-Krishi Vigyan Kendra, Haveri (Hanumanamtti) organized method demonstration on redgram seed treatment for Rahutanakatti farmers. Dr. Guruprasad G.S., Senior Scientist and Head of Krishi Vigyan Kendra briefed the role of seed treatment in enhancing the crop yield and management of diseases. Further, he urged to use bioagents as a promising environmental friendly approach for improving crop production. Dr. Laxmi Patil (SRF, NICRA) imparted knowledge about seed treatment with trichoderma to prevent soil and seed borne diseases and rhizobium to enhance root nodulation in pulses and atmospheric nitrogen fixation. More than 50 farmers benefitted with method demonstration.





ICAR-KVK - HAVERI





ICAR-KVK IDUKKI

Predominant climate change situation of Idukki District

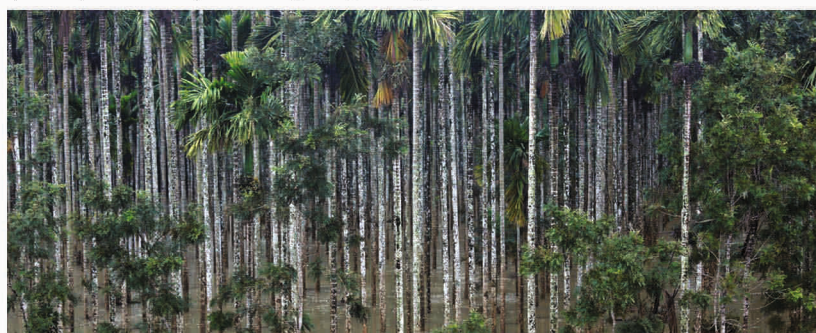
Idukki is the land of spices with major crop of small cardamom plantation. Drought situation in the cardamom-producing centres of Idukki poses a threat to farmers. Due to the severe drought a large number of cardamom plantations were damaged in Vandanmedu, Pathumury, Santhanpara, Nedumkandam, Rajakumari, Bisonvalley, Kattappana, Anavilasom, and Chakkupallam, major cardamom growing belts of Idukki district. During 2022-23, unusual hot weather, coupled with the absence of summer showers, has left cardamom crops yellow and farmers in panic in Kerala's hill district.

CLIMATE RESILIENT TECHNOLOGY DEMONSTRATED BY KVK, IDUKKI

ICAR- Krishi Vigyan Kendra, Idukki has supported small cardamom farmers, by the following observations: (1) Foliar application of Pigmented Facultative Methylo-trophic Bacteria (PPFM) to small cardamom during summer period which enhance the plant growth and increase yield, (2) Treated plants to decrease disease incidence of Fusarium disease caused by Fusarium oxysporum in small cardamom, (3) The PPFMs inoculation induced number of stomata, chlorophyll concentration and malic acid content and led to increased photosynthetic activity, (4) Screening of such kind of bacteria having immense plant growth promoting activities like nitrogen fixation, Phytohormone production.

PPFM as Microbial Farmers on Small cardamom plantation like little farmers, methylo-trophic bacteria play an important role in plant growth and 35 percentage yield increased. They feed compounds (cytokinin and auxin) that stimulate plant growth. They protect their crop from pathogens and pests by induction of systemic resistance. They reap a harvest of plant metabolites as methanol. The liquid formulation of PPFMs recommended for foliar spray (1% PPFM spray during morning or evening, recommended for all crops, spray at the critical stage of crop growth (or) 30-45 days' interval). Alleviating water stress to the plants and integration of such kind of organism in crop production will lead to 35% increased productivity in small cardamom plantation.

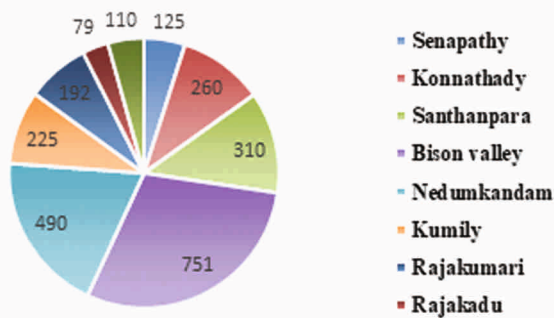
Under drought conditions, plants produce higher amounts of ethylene and reactive oxygen species and, besides increase the frequency of stomata closure and membrane damages, which leads to yield loss. Methylo-trophic bacteria produce 1-aminocyclopropane-1-carboxylate (ACC) deaminase and induce the production of antioxidant enzymes and osmolytes in plants, which helps in mitigating drought stress.



IMPACT OF PPFM ON DROUGHT MITIGATION IN SMALL CARDAMOM PLANTATION

PPFM is widely used in small cardamom plantation by recommended spraying of bacteria to mitigate drought and save crops. Foliar application of PPFMs to small cardamom during summer period which enhance the plant growth and increase yield, Treated plants to decrease the disease incidence of Fusarium caused by Fusarium oxysporum in small cardamom, The PPFMs inoculation induced number of stomata, chlorophyll concentration and malic acid content and led to increased photosynthetic activity and Screening of such kind of bacteria having immense plant growth promoting activities like nitrogen fixation, phytohormone production, alleviating water stress to the plants can be successfully isolated and characterized and integration of such kind of organism in crop production will lead to 35% increased productivity in small cardamom plantation. The evidence of that spraying of PPFM helps the small cardamom plantation remain green for 30 to 45 days.

Increase in area PPFM technology after KVK intervention in ha





ICAR-KVK KALABURGI – I

Predominant Climate Change Situation Focused

Despite the fact that, Kalaburagi is called as pulse bowl of Karnataka and pigeonpea being one of the major contributor in total production, its productivity is declining year by year due to erratic rainfall leading to heavy downpour within short period and/or early withdrawal.



MAJOR CRTS DEMONSTRATED BY KVK TO ADDRESS THE SITUATION AND IMPACT:

TECHNOLOGY 1: RIDGES AND FURROW METHOD OF SOWING IN PIGEONPEA

So, to tackle erratic rainfall, ridge and furrow method of cultivation was followed as furrows can acts as a drainage channel to drain out excess water out of field and thereby stagnation of water was avoided to facilitate luxurious growth during heavy downpour and the same furrows can acts as in-situ water harvesting structure and helps in water availability to plants during dry spells. The added advantage of ridge and furrow method of cultivation as it saves the 25-30 % water if irrigated, in irrigated conditions.

TECHNOLOGY 2 : PULSE MAGIC-A UNIQUE TECHNOLOGY TO ENHANCE PULSE PRODUCTIVITY

The flower and pod drop being a major problem in pulses and thereby reduces the yield to a greater extent irrespective of varieties and method of cultivation. So, to reduce this major problem, Pulse magic was developed in the year 2014 from University of Agricultural Sciences, Raichur, Karnataka, to reduce flower and pod drop in pulses. By use of this technology it has helped in enhancing the productivity by reducing excess flower drop leading to more number of effective pods, higher the length of pod, increasing the number of seeds per pod, pods per peduncle and also seed size, the combined effect of these yield traits has increased the overall yield, if spraying was carried as per recommended dosage and time.

Based on the several farm results, the pulse magic was tested in Kalaburagi district, Karnataka state in area of 2090 ha and the yield increased by 17-20%, at different locations and the economic benefit varied from to Rs. 4900-6000/ acre. However, pulse magic has replaced these with excellent results so the farmers are eager for repeat of pulse magic use in next season and also recommend to other farmers in next season.



ICAR-KVK - KALABURGI - I



“An ever-green revolution implies the enhancement of productivity in perpetuity without associated ecological harm”





ICAR-KVK KALABURGI-II

*Predominant
Climate Change
Situations Focused*

DEMONSTRATION OF COMPARTMENT BUNDING FOR DRY LAND AGRICULTURE

ICAR-KVK, Kalaburgi-II jurisdiction falls under north-eastern dry zone, where exactly, the retention of moisture is very essential with minimal and delayed rainfall. Now a day the rainy days are reducing with heavy rainfall. So, the farmers in the dry land black soil regions should aim to harvest every drop of rainwater in situ and increase the water use efficiency for higher crop productivity.

MAJOR CRTS DEMONSTRATED BY KVK TO ADDRESS THE SITUATION :

To address this situation, ICAR-KVK, Kalaburgi-II demonstrated compartment bunding in an area of 2ha at KVK farm to show the impact to the farmers and extension workers. Compartment bunds were made with the help of bund former, to form compartmental bunds all along the area at a required spacing (5Mx5M), depending upon the field area. Similarly, compartmental bunds must also be formed across the slope at a required distance so that the entire field is laid out with compartments of required size. With the help of the spade, shaping of the bunds may be done at the corners of the compartments after laying out the field. In the same field crops like Greengram followed by sorghum for the higher yield was demonstrated.

Impact : In ICAR-KVK, Kalaburgi-II deep black soils (Vertisols), laying out of fields with compartmental bunds increased the rabi sorghum yields by 19%.The magnitude of increase in grain yield with compartmental bunding was higher (19%) during moderate drought year 2023-24.





ICAR-KVK - KALABURGI-II





ICAR-KVK KANNUR

*Predominant climate
change situation focused*

MANURATNA A SHORT DURATION PADDY VARIETY

Rice cultivation area in Choorikkad paadashekharum, Chuzhali, has declined over the years due to the unavailability of water during the end of second crop season due to the terminal drought condition.

CRT DEMONSTRATED BY KVK TO ADDRESS THE SITUATION

Manuratna is a short duration paddy variety developed from KAU, which has lodging resistance and is semi-dwarf in nature. The crop duration is about 95-100 days. The variety is suitable for water scarce areas and can be cultivated in all the three seasons.

IMPACT : The introduction of short duration rice variety- Manuratna helped to escape the terminal drought stress in the Choorikkad paadashekharum. As the crop completed its yielding stage before the drought condition, the yield was not affected by the drought stress. Also, the land was made available for crop rotation with pulse before the next season.





ICAR-KVK - KANNUR

INTERVENTION	YIELD (Q/HA)	COST OF CULTIVATION (RS/HA)	GROSS RETURNS	BC RATIO
Before (Uma variety)	45.50	75000	127400	1.69
After (Manuratna variety)	49.80	75000	139440	1.86

2. INSTALLATION OF WOODEN PLANKS IN EXISTING CHECK DAMS PREDOMINANT CLIMATE CHANGE SITUATION FOCUSED

Water availability during second crop season was a serious problem faced by the paddy farmers in Chuzhali and Mungam paadashekharms. As water management was not possible in the existing check dams, the farmers faced drought related problem in the rice cultivation.

CRT demonstrated by KVK to address the situation

Wooden planks were installed in the existing check dams in Chuzhali and Mungam paadashekharms in Chengalayi, to manage the water required for rice cultivation.

IMPACT : Around 6 hectares of wetland which was left fallow otherwise was made arable by the installation of wooden plank in the check dam. The availability of water was ensured during the critical stages of crop growth as a result of this intervention.

INTERVENTION	IMPACT
BEFORE	Only 2 hectares were utilized for rice cultivation
AFTER	The rice cultivation area increased from 2 hectares to 6 hectares





ICAR-KVK KASARGOD

Predominant climate change situation focused

The Kasaragod district, agriculture is the mainstay of population and sustainable livelihood can be ensured only if the production and productivity is maintained. The events like Extreme rainfall, Flood, Wind and Drought are the four major constraints faced by the farmers of Kasaragod district. Demonstrations on coconut gardens to address the leaching of nutrients and drought management and intercropping can ensure the sustainable production and economic wellbeing of the small and marginal farmers who contribute majority of the population. The adoptions of climate resilient technologies are essential for ensuring sustainable income of farmers. Increasing productivity in coconut by adoption of nutrient management and drought management can improve economic wellbeing of the farmers. The additional incomes through suitable intercropping in coconut gardens are essential for economic empowerment of farmers. The adoption of latest technologies can mitigate the challenges due to extreme weather conditions and ensure sustainability such as precision farming and demonstration of early maturing disease resistant intercrops etc.



MAJOR CRTS DEMONSTRATED BY KVK TO ADDRESS THE SITUATION AND IMPACT :

KVK conducted demonstrations on mosaic resistant variety of tapioca “Sree Raksha” as intercrop in coconut gardens and precision farming in vegetables to mitigate the drought and improve input use efficacy in these regions. The cassava variety yielded 36.9 tonnes per hectare and was observed to have good cooking quality and uniform tubers. The irrigation and fertigation schedules for the open precision farming were popularized among the farming community through training programmes. Open precision farming improved the optimum utilization of available water for irrigation and also resulted in higher crop yield.





ICAR-KVK - KASARGOD





ICAR-KVK KODUGU

*Predominant climate
change situation focused:*

INTEGRATED APPROACHES TO ADDRESS THE YELLOWING OF BLACK PEPPER DUE TO MOISTURE AND HEAT STRESS



1. PREDOMINANT CLIMATE CHANGE SITUATION FOCUSED :

The growth and development of black pepper in the Ponnampet cluster of Virajpet taluk were adversely affected by uneven rainfall distribution, temperature stress, and micronutrient deficiencies, leading to low productivity across 156 hectares.

2. CRT DEMONSTRATED BY KVK TO ADDRESS THE SITUATION :

In the year 2022-23, ICAR-Krishi Vigyan Kendra in Gonikoppal, Kodagu intervened by demonstrating climate-resilient technology for stress management. This involved integrated approaches such as applying Soil test-based Farmyard Manure (10 kg per vine), soil application of NPK, and foliar nutrition with Potassium Nitrate (13:0:45, 0.5%) alongside 19:19:19 NPK during the post-monsoon period. Additionally, foliar nutrition with Black Pepper Special and 19:19:19 NPK was carried out during the pre and post-monsoon periods. Furthermore, the application of Arka Microbial Consortium (20 g/lit) to boost growth was implemented by drenching, along with mulching and hose irrigation (40 lt. per vine once every 15 days for 4 months) during the summer period.

3. IMPACT : The plants showed increased resistance to yellowing, with a reduction in yellowing by 11.2% compared to the check (which had 39.25% yellowing). There was no spike shedding observed, and mortality of the vines was reduced. Additionally, there was an improvement in yield, with a production of 7.68 quintals per hectare compared to the control which yielded 5.76 quintals per hectare, in the coffee-based mixed cropping system.





ICAR-KVK - KODUGU





ICAR-KVK KOLAR

*Predominant
climate change
situations focused :*

Kolar district, situated in the state of Karnataka, falls under the Agro-Climate Zone known as the Eastern Dry Zone. The district experiences a semi-arid climate characterized by an annual rainfall of approximately 700 mm. However, this rainfall is often erratic, leading to significant challenges for agriculture in the region.

One of the critical issues faced by the farmers in Kolar is the high probability of agricultural drought, which stands at an alarming rate of 75 percent over the years. This means that three out of four years, the district experiences conditions that severely impact crop production. The primary reason for this is the long dry spells that occur between rains, particularly during the crucial agricultural period from June to September. These prolonged dry periods disrupt the growth cycles of crops, leading to reduced yields. The inconsistency and unpredictability of rainfall mean that farmers cannot rely on natural irrigation, which is essential for the sustainability of their crops.

Consequently, the livelihoods of farmers in Kolar are severely affected, as their income and food security are heavily dependent on the success of their agricultural activities. The semi-arid conditions, coupled with erratic rainfall patterns, necessitate the implementation of effective water management and drought-resistant agricultural practices to mitigate the adverse effects on farming. Initiatives such as rainwater harvesting, drought-resistant crop varieties, and efficient irrigation systems could provide much-needed support to the farmers in Kolar, helping them to better cope with the challenges posed by the climate of the region.

MAJOR CRTS DEMONSTRATED BY KVK TO ADDRESS THE SITUATION

1. DEMONSTRATION OF EARLY MATURING AND DROUGHT-ESCAPE FINGER MILLET VARIETIES: ML-365 AND KMR 630 IN KOLAR :

DETAILS OF TECHNOLOGY : Finger millet, a staple food in Kolar district, is predominantly cultivated by small and marginal farmers as both rainfed and irrigated crops. Local varieties like MR-8 and GPU-28, as well as long-duration types, have historically yield poorly due to delayed monsoons and erratic rainfall patterns. To address these challenges, medium-duration and drought-tolerant varieties such as ML-365 and KMR 360 were introduced in 10 villages of Kolar district during the kharif seasons of 2022 and 2023. ML-365 and KMR 360 mature in 105-110 days, yielding high quantities of grain and fodder. Demonstrations across talukas highlighted their suitability for rainfed conditions and delayed sowing, along with their resistance to leaf spot, neck blast disease, and lodging.

PERFORMANCE AND IMPACT : In adopted villages of Kolar district there was a rainfall deficit of 30-40% in 2022 and 2023 experienced prolonged dry spells in June-July during 2022 and 2023. To mitigate the impact of low rainfall and dry spells, the finger millet variety ML-365 and KMR 630 was demonstrated in KVK adopted villages. Significant yield improvements of up to 20-25% were observed compared to local varieties. ML-365 and KMR 630 exhibited resilience in withstanding dry spells, yielding 33.15 and 30.60 quintals per hectare in ML-365 and KMR 630 respectively. The adoption of ML-365 and KMR 630 coupled with only one critical irrigation increased the resilience by 35-40% across various locations, minimizing yield losses during drought years.





2. TRENCHING & MULCHING FOR ENHANCING THE SOIL MOISTURE STORAGE AND TO MINIMIZE THE IMPACT OF DRY SPELLS AND DROUGHT

DETAILS OF TECHNOLOGY : Trench cum bunds is artificial depressions and embankments made in the field, typically rectangular or trapezoidal in section, designed to minimize soil erosion. These structures store runoff water, allowing more water to infiltrate into the soil and increasing moisture availability for longer periods. This technology has been demonstrated in Muthnoor village, Bangarpet Taluka of Kolar district, with general dimensions of 5 meters in length, 1 meter in width, and 0.6 meters in depth, leaving a one-meter berm between each trench.

PERFORMANCE AND IMPACT : In Muthanuru village, Bangarpet Taluka of Kolar district, under the Farmers Field School program, trench cum **Mulching** were constructed over an area of 25 hectares, benefiting 25 farmers. These structures reduced soil erosion and stored rainwater in trenches, conserving soil moisture for extended periods. As a result, the leaf yield of mulberry increased by 20% compared to areas without trench cum bunds. This practice provided an additional net return of Rs. 18,000 to 25,000 per hectare compared to traditional farming methods.

3. FARM PONDS FOR LIFESAVING IRRIGATION AND MINIMIZING THE IMPACT OF DROUGHT

DETAILS OF TECHNOLOGY : A farm pond is a structured dugout with specific dimensions and equipped with inlet and outlet structures to collect surface runoff from the farm or surrounding catchment areas. These ponds store water for supplementary irrigation during dry spells, effectively mitigating the impact of drought. The size of a farm pond is determined by factors such as rainfall, soil type, slope, water requirements, and crop area. Typical dimensions include 10 × 10 × 3 meters, 12 × 12 × 3 meters, 15 × 15 × 3 meters, and 20 × 20 × 3 meters. Construction costs range from approximately Rs. 15,000 to 45,000 per pond, depending on its size. Numerous farm ponds have been successfully implemented in Kolar district under the Krishi Bhagya initiative.

PERFORMANCE AND IMPACT : Farm ponds were strategically constructed in all adopted villages across kolar district. These ponds effectively harvested runoff during high rainfall events in KVK Kolar adopted villages throughout the monsoon seasons. Despite facing dry spells during critical crop stages in 2022 and 2023, the stored water from these ponds played a crucial role in providing supplemental irrigation to finger millet, groundnut and pigeon pea crops. This intervention resulted in significant yield increases of up to 30%, 35% and 28% respectively, compared to plots without critical irrigation. Additionally, farmers realized additional returns of Rs. 6000, Rs. 16000 and Rs. 20000, per hectare over those who did not utilize farm pond water. This success underscores the importance of farm ponds in enhancing agricultural resilience and productivity in drought-prone regions.





ICAR-KVK KOLLAM

Predominant climate change situation focused :

Erratic rainfall and prolonged dry spells are posing threat to agriculture. Annual weather reports in Kollam district indicates the average temperature rise by 4-50C over the years with incidents of water scarcity becoming common in recent times. Thrust has been given to climate resilient technologies that can better suit to the changing situation.

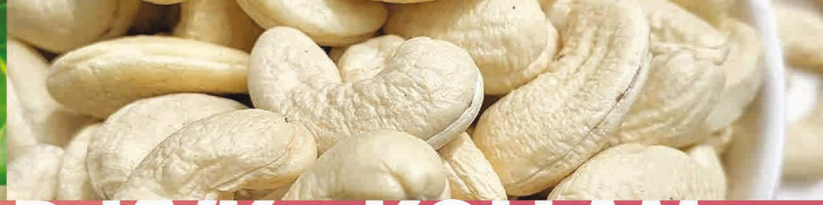
Millets were in cultivation since pre-historic times. Later they were substituted by our major cereal crops. Millets are better candidates to mitigate the problems relating to climate stress especially water stress and heat tolerance. They are drought tolerant, and can sustain even under moisture stress conditions. They can thrive in less fertile and nutrient poor soils. The longer and denser root systems enhance their ability to absorb nutrients in poor soil conditions.

Millets exhibit a higher resistance to pests and diseases compared to many other cereals. Their hardiness extends to a natural resilience against common pests and diseases that typically affect crops. The presence of certain bioactive compounds in millets acts as natural pest deterrents. This resistance is advantageous not only in reducing crop losses but also in minimizing the dependence on chemical pesticides.

MAJOR CRTS DEMONSTRATED BY KVK TO ADDRESS THE SITUATION AND IMPACT: MILLETS- A SOLUTION TO CLIMATE CHANGE

With an aim to popularize these climate resilient crops, A Millet Park was established at KVK campus including all the millet crops in field. FLDs and OFTs were conducted by ICAR KVK Kollam on Small millets especially Little millet, Proso millet, Kodo millet and foxtail millet under Farm Plan Production Programme (FPPP) during 2022-23 and Ragi during 2023-24. Popularization of Small Millets in Vettikkavala Block of Kollam district was initiated including 30 farmers. All the small millets showed excellent adaptability under Kollam conditions with foxtail millet being the best performer under Kerala conditions. OFT on Assessment of Finger Millet varieties was also conducted with 3 popular best yielding varieties- CFMV 1, CFMV 2 & GPU 67. Results showed that CFMV-1 performed well under Kollam conditions. In view of existing climate change, popularisation of Millets proves a better climate resilient technology.





ICAR-KVK - KOLLAM



In India, rice is grown below sea level in Kuttanad in Kerala and at above 3,000 meters in Kashmir and Himachal Pradesh. The importance of rice as the mainstay of a sustainable food security system will grow during this century because of climate change. No other cereal has the resilience of rice to grow under a wide range of growing conditions.





ICAR-KVK KOTTAYAM

*Predominant
climate change
situation focused:*

Krishi Vigyan Kendra, Kottayam has been implementing the ICAR-NICRA Project at Kumarakom village considering its peculiar climatic vulnerabilities and challenges due to lowland situation below the mean sea level accompanied with the erratic rains. The practise of cultivating only a single crop of rice in a year due to flooded conditions during monsoon was shifted to two crops by adjusting the crop calendar and inclusion of short to medium duration varieties. Water regulation in the rice fields were made possible with Sluice gates.

CRTS DEMONSTRATED BY KVK:

High disease incidence was recurrent due to the prevalent humid conditions. Seed treatment with *Pseudomonas* and sowing with drum seeder for maintaining optimum plant population was advocated for reducing disease incidence.

Weed menace, yet another problem due to the erratic rains was controlled through the use of conoweeder and KAU Weed Wiper. To reduce the indiscriminate use of fertilizers, soil test based recommendations were given to the farmers. Drone application of Micronutrient Mixtures for rice at active tillering and panicle initiation stages of the crop were demonstrated to prevent micronutrient deficiencies.

With the technology interventions, yield increase of 24.76% was recorded over control. The B:C ratio could be enhanced to 2.59 over 2.18 in the Non NICRA fields.

The practice of leaving the land fallow due to waterlogging during monsoon was altered through planting Short duration crop varieties of turmeric (Pragathi), elephant foot yam, and tapioca and flood tolerant crops like sugarcane. Saplings of fruit trees like mango, guava and garcinia that can tolerate waterlogged conditions were distributed to the stakeholders. Vertical stands were given to the farmers for vegetable cultivation during flooded conditions. Cultivation of vegetables in rafts was also promoted to avoid crop loss due to flood. To avoid casualties to livestock, due to recurring catastrophic floods, KVK introduced the novel idea of rearing animals in raised cages.



ICAR-KVK - KOTTAYAM





ICAR-KVK KOZHIKODE

*Predominant
climate change
situation focused :*

HIGH RAINFALL



CRT DEMONSTRATED BY KVK TO ADDRESS THE SITUATION :

1. Demonstration of Okra variety suited to high rainfall viz. Salkeerthi

IMPACT : The variety outperformed local type during rainy season. The average yield in demonstration plots was 116.5 q/ha compared to 102.0 q/ha in local check. The technology was well accepted by the farmers in the NICRA and nearby villages.

2. Demonstration of Amaranth variety suited to high rainfall viz. KAU Vaika

IMPACT : The variety came up well in heavy rainfall compared to local varieties and fetched more yield. The average yield in demonstration plots was 114 q/ha compared to 104 q/ha in local check. Leaf spot incidence was also comparatively less with respect to local types. The technology was recognized well by the farmers in the NICRA and nearby villages.





ICAR-KVK - KOZHIKODE





ICAR-KVK LAKSHADWEEP

DEVELOPMENT INTERVENTIONS UNDER NICRA PROJECT

KVK-Lakshadweep implements the NICRA project in Kadmat Island which is one amongst the 10 inhabited islands of Lakshadweep. The available land for crop husbandry is scarce in Kadmat islands, as the total cultivable area is only 310 ha (the island is 7 km long and 1.5 km width). Similar to the other NICRA centres the KVK implements the project with a set of development interventions.

During 2022-23, the KVK targeted 25 households in partnership with ICAR-IIHR, Bangalore on vegetables suitable for the islands considering the present climatic situations. The KVK organized capacity building activities towards improved vegetable cultivation methods, provided seeds to farmers (8 vegetables and 1 fruit crop) and other inputs. Best two farmers under this project attended the National Horticulture Fair-2023 of IIHR, Bangalore which was coordinated by KVK. The KVK targeted 25 households and promoted TC Banana cultivation and involved ICAR-NRC for Banana in the activities. During 2022-23, as per the recommendations Tapioca and Cashew were promoted under this project. KVK demonstrated Sree Rekha a high yielding top crossed hybrid variety of tapioca with excellent cooking quality. To work on Tapioca and Cashew the KVK worked closely with ICAR-CTCRI and ICAR-Directorate of Cashew Research.





ICAR-KVK - LAKSHADWEEP



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Hessaraghatta Lake post, Bengaluru- 560 089

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ಹೆಸರಗಟ್ಟು ಕೆರೆ ಅಂಚೆ, ಬೆಂಗಳೂರು - ೫೬೦೦೮೯

Capacity Building Programme on
ICAR- IHR Technologies

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ICAR-KVK MALAPPURAM

*Predominant
Climate Change
Situation Focused*

The incidence of extreme weather events, including hurricanes, floods, droughts, and wildfires, has surged globally. These events cause widespread devastation, displacing populations, and disrupting ecosystems. Nations are working on improving disaster preparedness and response mechanisms while also emphasizing the need for sustainable infrastructure to withstand such events. The planet continues to experience rising temperatures, with 2023 being one of the hottest years on record. The increasing frequency of heatwaves poses severe risks to human health, agriculture, and biodiversity. Efforts to limit global warming to 1.5 degrees Celsius above pre-industrial levels remain a central focus of international climate agreements and policies.

CRT DEMONSTRATED BY KVK TO ADDRESS THE SITUATION

In a significant move to promote environmental sustainability and combat climate change, the Krishi Vigyan Kendra (KVK) in Malappuram conducted a large-scale distribution of 5000 forest trees on June 5. This event was organized as part of their ongoing initiative, the Promotion of Climate Resilient Technologies, aligning with the global observance of World Environment Day. The distribution event, held at the KVK Malappuram premises, attracted a diverse crowd of local farmers, environmentalists, and community members eager to participate in the afforestation drive. The initiative aims to enhance the region's green cover, improve biodiversity, and foster climate resilience in the face of increasing environmental challenges. Dr. Priya G. Nair, the Head of KVK Malappuram, highlighted the importance of such initiatives in mitigating the adverse effects of climate change.

**KVK MALAPPURAM DISTRIBUTES 5000 FOREST TREES
TO PROMOTE CLIMATE RESILIENT TECHNOLOGIES**

ICAR-KVK - MALAPURAM





ICAR-KVK MANDYA

*Predominant
Climate Change
Situation Focused*

SOIL FERTILITY MANAGEMENT IN EXHAUSTIVE CROP SUGARCANE



MAJOR CRTS DEMONSTRATED BY KVK TO ADDRESS THE SITUATION AND IMPACT :

Trash management in sugarcane- A climate resilient approach
for improved soil fertility

Sugarcane is a major commercial crop grown in Mandya district in an area of 44390 ha with a productivity of 112 t ha⁻¹. Sugarcane crop grown in a hectare area after harvest produces 7-12 tons of trash which contains about 5-6 kg N, 1.3-1.5 kg P₂O₅, 3.1-3.5 kg K₂O and small quantities of micronutrients. However if sugarcane trash is burnt most of the organic matter and nutrients in the trash are lost leading to environmental pollution and in turn leads to depleting soil health, soil microflora and crop productivity, it also reduces germination percentage and hinders routine ratoon cultivation practices. On the contrary the farmers have a practice of applying huge quantity of fertilizers to meet the nutrient requirement of the crop which has a negative impact on the soil quality. In this view Krishi Vigyan Kendra, V C farm, Mandya took demonstrations (93 Frontline demonstrations) in the farmers field of Mandya district from the year 2008-09 to 2014-15 with the technology wherein application of 500 kg of FYM mixed with 25kg microbial culture (Trichoderma) and during 2022-23 and 2023-24 (50 Frontline demonstrations) an introduction of a new microbial consortia which consists (Phanerochaete + Pleurotus + Trichoderma + Pseudomonas + Bacillus + Cellulomonas) micro-organisms helped in better degradation of the trash and narrowing down the C:N ratio and enhanced decomposition rate in short duration. As a result the ratoon germination percentage improved upto 84-85 percent and improved soil moisture upto 90 days as trash served as mulch, soil organic carbon content increased from 0.40 to 0.58 percent and the sugarcane yield could increase to an extent of 15-20 percent and Net returns upto 20 percent. This technology has spread to an extent of 28634 ha area on carrying out the activities like conducting awareness programmes, trainings, campaigns, recommendation to farmers via social media (whats app and SMS) and field visits. Thus the technology helped in managing weeds via mulching and conserving soil health through better decomposition and increasing productivity in sugarcane growing regions in the Mandya district.



ICAR-KVK - MANDYA





ICAR-KVK MYSURU

*Predominant
Climate Change
Situation Focused*

DROUGHT, ERRATIC RAINFALL, RAINFED SITUATION, BIOTIC STRESSES

**MAJOR CRTS DEMONSTRATED BY KVK TO
ADDRESS THE SITUATION AND IMPACT :**

1. DEMONSTRATION OF BLAST RESISTANT FINGER MILLET VARIETY KMR-316 SUITABLE FOR LATE SOWING UNDER RAINFED CONDITION

ICAR JSS KVK Mysuru has demonstrated various technologies in finger millet variety KMR-316. The Finger Millet variety KMR-316 is a blast resistant variety suitable for delayed sowing, yields more number of tillers per plant. KVK has conducted various extension activities like farmers meeting, PRA activity, coordinated with VC farm Mandya for varietal seed supply, training on improved agronomic cultivation in Ragi, field demonstration on finger millet variety KMR-316. The Finger Millet variety KMR-316 has recorded 20% higher yield. Finger Millet variety KMR-316 is suitable for delayed sowing and blast resistant feedback given to Department of Agriculture Mysuru for further up scaling the variety.

2. PROMOTION OF CHIA AS A CLIMATE RESILIENT, NON-GRAZING SUPER FOOD CROP IN TRANSITION ZONE OF MYSURU DISTRICT

The chia crop is non-grazable by wild bores/elephants, the crop requires less water and can be grown in less fertile soil with less cost of production and fetches higher price in the market, chia is a suitable alternate crop in cotton cropping system (double cropping cotton-chia) for higher returns. ICAR JSS KVK Mysuru has conducted 3 On Farm Trials (OFT) on chia crop in Chidarahalli, Sollepura, Magudilu villages of H D Kote taluk of Mysuru district and conducted training on chia crop, field visits, method demonstrations, field day and market linkage to NGO and FPO's for increasing area under chia crop. Video recording on chia crop cultivation and marketing and broadcasted in DD chandana during 2020 year, published in Kannada Prabha newspaper, media coverage during krishimela 2018-22 highlighted on importance of chia crop and its cultivation.

3. FRONTLINE DEMONSTRATION (FLD) ON GROUNDNUT VARIETY KADRI LEPAKSHI -1812 AS A DROUGHT TOLERANT VARIETY UNDER RAINFED CONDITION

ICAR JSS KVK Mysuru has conducted Frontline Demonstration (FLD) on groundnut variety Kadri Lepakshi -1812 as a drought tolerant crop under rainfed condition. Improved ground nut variety Kadri Lepakshi -1812 is a disease and drought resistant high yielding variety. The variety has high oil content 52% suitable for oil milling. KVK has conducted extension activities like farmers group meeting, PRA activity, Coordinated with KSSC and NSC Mysuru & Kadiri ARS, ANGRU, AP for seed supply, seed treatment, field demonstration, field visit and crop monitoring. The variety has recorded 26% higher yield and 47% higher net income. KVK has organized a field day program to collect farmer's feedback and shared with agriculture department, KSSC, NSC Mysuru for up scaling of technology.



4. DEMO OF HORSE GRAM VAR. CRHG-19 IN DOUBLE CROPPING SYSTEM (RAGI-HORSE GRAM) UNDER RAINFED CONDITION

The horse gram variety CRHG-19 bears more number of pods per plant which gives economic benefit in terms of yield. KVK has conducted extension activities like farmers meeting, PRA activity, coordinated with CRIDA Hyderabad for varietal seed supply, training on horse gram, and field demonstration on horse Gram var. CRHG-19 in double cropping to increase yield and income under rainfed agriculture.

5. INTEGRATED CROP MANAGEMENT IN COWPEA IMPROVED VAR. KBC-9 AS A SHORT DURATION CROP SUITABLE FOR CLIMATE RESILIENT AGRICULTURE IN DOUBLE CROPPING SYSTEM UNDER TRANSITION ZONE

Cowpea variety KBC-9 is a short duration variety which has special characteristics like leaf rust resistance, more long pods per plant, bold seeds gives higher yield and income to farmers, ICAR JSS KVK Suttur has conducted field demonstration and farmers meeting, field demonstration of Cowpea Var. KBC-9, seed treatment, method demonstration, training on cowpea seed production, farmer advisory on importance of seed production and benefits to farmers and field day on cowpea var:KBC-9 with Department of Agriculture H.D. Kote for up scaling of cowpea variety KBC-9 in the district.



ICAR-KVK - MYSURU

6. DEMONSTRATION OF SESAME IMPROVED VARIETY GT-01 AS A CLIMATE RESILIENT CROP UNDER RAINFED CONDITION

ICAR JSS KVK Suttur has conducted field demonstration on sesame improved variety GT-01, Special Characteristic of sesame improved variety GT-01 is high pod yield per plant and crop withstand during drought condition. KVK has conducted farmers meeting and training, field demonstration of sesame improved variety GT-01, field visits and crop monitoring.

7. DEMONSTRATION OF MULTI-CUT FODDER SORGHUM VAR. COFS-31 UNDER RAINFED CONDITION AS A CLIMATE RESILIENT FODDER CROP

ICAR JSS KVK Mysuru has identified scarcity of green fodder for dairy animals through farmers meeting in villages. KVK has conducted field demonstrations on multi-cut fodder sorghum Var. CoFS-31 under rainfed condition and also created awareness about multicut fodder varieties, advisory on green fodder production, training on fodder production, field demonstration of Multi cut fodder sorghum COFS-31. Multi-cut fodder sorghum Var. CoFS-31 has recorded 33% more green fodder yield compare to single cut varieties yield. COFS 31 is more palatable compared to other fodder varieties. Conducted field day on Multi cut fodder sorghum COFS-31 for further up scaling.

8. DEMO OF GREEN GRAM VARIETY KKM-3 IN TOBACCO CROPPING SYSTEM (RF) AS A SHORT DURATION CROP SUITABLE FOR CLIMATE RESILIENT AGRICULTURE

The green gram variety KKM-3 bear more pods and moderately resistant to YVM which gives economic benefit interms of yield. KVK has conducted extension activities like Farmers meeting, PRA activity, coordinated with KVK Mandya for varietal seed supply, training on green gram, field demonstration on green gram variety KKM-3 in tobacco cropping system as climate resilient crop to with stand drought.

9. PARTICIPATION IN FIELD DAY PROGRAM ON "DSR METHOD IN PADDY"

ICAR JSS Krishi Vigyan Kendra Suttur, Agronomy scientist Shri. Shamaraj participated as a resource person in field day program on "DSR method in paddy" on 1st July 2023 at hulimavu village nanjanagud taluk mysuru organized by Myrada nanjanagud. KVK Scientist briefed about different methods of paddy cultivation to address labor problems and reduce cost of production in paddy cultivation and also explained about integrated management of weeds, pest and diseases in paddy. Myrada CEO Mr. Shefulla, retired IAS officer and CEO of Myrada addressed about FPO formation and benefits of FPO to farmers at hulimavu village.





A WINDOW TO KVKS OF ICAR-ATARI, ZONE XI, BENGALURU

VOL-2, ISSUE 23, 01- 15TH, JUNE, 2024

NICRA / PROMOTION OF CLIMATE RESILIENT TECHNOLOGIES



ICAR-KVK PALAKKAD

Predominant climate change situation focused:

NICRA project is being implemented at Pattithara panchayath of Thrithala block in Palakkad district. The major problems faced by the farmers of this area were flood during rainy season during which around 100 ha of paddy field are under water and left without any farming operation for around six months and drought in other areas during summer. During flood the padasekhrams are under submerged condition, and in drought time due to scarcity of water, crop cultivation is impossible.



MAJOR CRTS DEMONSTRATED BY KVK TO ADDRESS THE SITUATION AND IMPACT:

As the major crop in the area is paddy majority interventions were in paddy based cropping system. The major interventions undertaken in the project include construction of a temporary check dam across Bharathapuzha River, which retained the water level near the lift irrigation pump installed in the river. This helped to save the crop which was at grain filling stage and as well as at maturity stage. A pump set was placed on the flood prone area of the village for accelerated drainage of water from the field for cultivation and the drained water is used for cultivating 25 acres of fallow land which was left for fallow for around 30 years. This will inturn improve the water level in nearby wells. De silting of a farm pond in the upstream end of Padashekham was done up to the depth of 2m to increase the storage capacity of the pond which effectively expanded the pond's storage capabilities, enabling farmers to cultivate three crops annually. The water from the pond serves irrigation needs during the summer growing season and enhances the water levels necessary for paddy cultivation in the second season. As third crop in paddy fallows green gram, cowpea and sesamum were demonstrated as drought tolerant crops. UAV spraying of micronutrients was done in rice field as a climate smart technology which resulted in increase of crop yield.

Water scarcity was experienced in coconut gardens in some areas. Husk burial was demonstrated as a technology to improve the water holding capacity which improved the WUE and also the yield of the crop. Integrated nutrient management was done for yellowing of arecanut which reduced the yellowing symptoms, a major problem in arecanut in the area. Mineral mixtures were distributed for stress management in cattle, resulting in elevated milk production and reduced panting in animals. Fish rearing in homestead ponds, cultivation of fodder sorghum, and distribution of stress tolerant spices are the additional interventions adopted in NICRA village. A custom hiring centre is also established in NICRA village.





ICAR-KVK - PALAKKAD





ICAR-KVK PATHANAMTHITTA

Climate Resilient Strategies to Combat Challenges In Agriculture and Livestock Farming

1. WORKSHOP ON CLIMATE RESILIENT AGRICULTURAL TECHNOLOGIES

Pathanamthitta district in Kerala faces significant challenges in agriculture and livestock management due to climate change. The Issues includes irregular Rainfall and Droughts, flooding, pest and disease outbreaks, heat stress in livestock, water scarcity, lack of availability and quality of feed resources for livestock, leading to nutrition challenge and increased disease prevalence in livestock. To address these issues, a workshop on climate-resilient agricultural technologies was conducted on 5th June 2024 as part of World Environment Day celebration. The programme was inaugurated by Ms. Valsala K.K, President, Koipuram Block Panchayat. This workshop aimed to create awareness among farmers about adaptive strategies to cope with climate change, including rainwater harvesting, efficient irrigation, drought-resistant crops, integrated pest management, and sustainable livestock practices. The event intended to equip farmers with the knowledge and tools to enhance the resilience of their agriculture and livestock management practices against the impacts of climate change. The Lead speakers were Dr. Vinod Mathew, SMS (Agronomy) and Dr. Sency Mathew, SMS (Animal Science). The programme was attended by 112 Participants.



2. CLIMATE-RESILIENT TECHNIQUES FOR HEALTHY ANIMALS AND MILK ON WORLD MILK DAY

To mark the celebration of World Milk Day, KVK Pathanamthitta organized a special awareness campaign aimed at promoting climate-resilient techniques for ensuring the health and well-being of animals and the quality of milk on 10th June 2024 at Milk Society, Thelliyoor. This initiative was organised in collaboration with Dairy Development Department, Pathanamthitta. The event, brought together dairy farmers, stakeholders, and experts to discuss the importance of adopting sustainable practices in dairy farming. With the looming challenges posed by climate change, it has become imperative for the dairy industry to embrace techniques that not only mitigate environmental impact but also enhance resilience to changing climatic conditions.



ICAR-KVK - PATHANAMTHITTA





ICAR-KVK RAICHUR

Predominant Climate Change Situation Focused

CROP DIVERSIFICATION AS A CLIMATE RESILIENT TECHNOLOGY

Crop diversification isn't just a farming strategy; it's a catalyst for change. It propels farmers towards economic self-sufficiency, safeguards the environment, and fosters thriving communities. Crop diversification is an effort to increase crop diversity by temporal and spatial cropping system to enhance productivity, sustainability and maintain the ecological balance. It is recognized as one of the most feasible, cost-effective and rational ways of developing resilience to the changing climate.

Crop diversification in Dry land areas Climatic vulnerability in the village is affecting the livelihood support system of farm families every year. By making crop diversification with horticulture/forestry crops, the field can be drought proofed as Guava, Citrus, Mango, Banana, Custard apple, Teak, Jamun, Melia dubia and sandal wood trees can yield even during less rainfall years and can act as income security to the farmers under dryland conditions. Climatic change resulting in low rainfall for agriculture and less irrigation facilities and decreasing levels of groundwater has a great impact in the sustainability and production of agricultural crops. To overcome this problem, tree based crop diversification with forestry or horticulture species has been introduced as the tree need less water and

In this regard, ICAR-Krishi Vigyan Kendra, Raichur has guided a progressive farmer named Sri Suresh of H.Thimmapur village of Raichur district who was solely dependent on the agricultural crops for his income and livelihood. With the decrease in the rainfall and availability of irrigation he was willing to go for crop diversification in his field in order to cope up with the climatic conditions. He replaced some of his cropping area with horticultural crops like guava and jamun and also included forestry crops. Along with the crop diversification he also underwent training programmes on scientific bee-keeping as well as sheep and goat rearing at ICAR-Krishi Vigyan Kendra, Raichur and started his own stall based sheep and goat rearing unit which also got him additional income within a short span of time. Dr. Hemalatha K J, Scientist (Horticulture) guided him to take up good and climate resilient varieties of the horticultural crops and also aided him in getting market links for his crops. Dr. Shreevani G N, Scientist (Entomology) guided him regarding the eco-friendly management of pests and diseases which not only reduced the cost incurred for the management of the orchard but also resulted in getting more income. The less usage of the chemicals by following eco-friendly/integrated management of pests and diseases aids in environment friendly sustainable agriculture.





ICAR-KVK - RAICHUR



ರಾಷ್ಟ್ರೀಯ ಪ್ರಶಸ್ತಿ ಪುರಸ್ಕೃತ
ಐಸಿಆರ್-ಕೃಷಿ ವಿಜ್ಞಾನ ಕೇಂದ್ರ, ರಾಯಚೂರು
ICAR-KRISHI VIGYAN KENDRA, RAICHUR





ICAR-KVK RAMANAGARA

*Predominant
climate change
situation focused:*

Ramanagara has 70,000 ha of area under Ragi cultivation and MR-1 and MR-6 are the main Ragi variety sown in the month of June and July. But due to delay of monsoon in the month, farmers were not able to take up Ragi sowing.

CRT DEMONSTRATED BY KVK TO ADDRESS THE SITUATION: Ramanagara has 70,000 ha of area under Ragi cultivation and MR-1 and MR-6 are the main Ragi variety sown in the month of June and July. But due to delay of monsoon in the month, farmers were not able to take up Ragi sowing.

To address this issue ICAR KVK Ramanagara introduced climate resilient newly released short duration Ragi variety KMR-316 newly released by UAS, Bangalore as contingent crop and organized capacity building programme on “Improved production technology in Ragi Cultivation” at KVK adopted village Hakkinalu, Magadi taluk where Ragi variety KMR 316 was introduced for 50 farmers in the village.

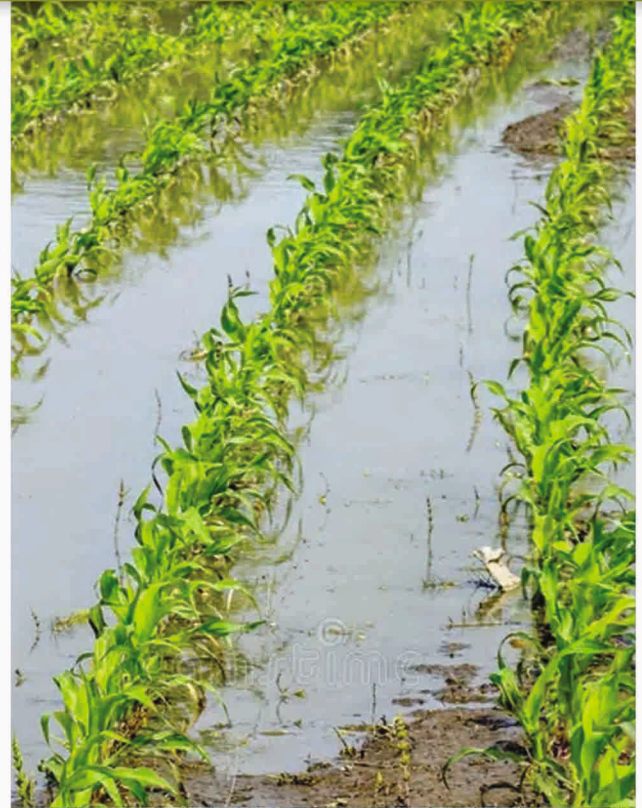
IMPACT : The variety was very much suitable for late Kharif with 105-110 days duration and resistant for Blast and the yield was much higher than the expected yield (14-16 q/acre).



ICAR-KVK - RAMANAGARA

ICAR-KVK RAMANAGARA ORGANISED KHARIF TECHNICAL CAMPAIGN-2024

ICAR-KVK Ramanagara organised Kharif Technical Campaign- 2024 at Chandurayanahalli, Magadi (T). The programme was inaugurated by lightening the lamp. Honorable Director of Extension, UAS(B), Dr. V.L. Madhuprasad presided over the program and said that the main objective of this program is to provide newly released technologies and seeds where the farmers are, and the program is successful only when the farmers adopt the information and technologies found here. Mr. Manja Naik, Professor (Entomology), UAS (B) said that University of agricultural Science Bangalore has developed a "Seed portal app" where the farmers can avail the seeds at their door step and also farmers should adopt integrated pest management to reduce the dependency on the chemical pesticides. Dr. Lata R. Kulkarni, Senior Scientist and Head in her introductory remarks said the purpose of organising Kharif Technical Campaign as a one roof programme where the University and all the development departments like Agriculture, Horticulture, Sericulture, Animal Husbandry, Forestry Departments can showcase their schemes and inputs. On this special occasion Mrs. Ambika, JDA, Dept. of Agriculture, Mr. Srinivas, AD (Sericulture), Dept. of Sericulture, Mr. Jayaram, AD (Sericulture), Dept. of Sericulture, Mr. Manjunath, RFO, Dept. of Forestry, Dr. Jayashree, AD, Dept. of Animal Husbandry, Mrs. Vijaya sawanur, ADA, Dept. of Agriculture and Mr. Mohamad Nazim ,AHO, Dept. of Horticulture explained about their concerned departmental schemes. In technical session Mrs. Preethu, D.C., Scientist (Soil Science) explained about Soil, Water and nutrient Management during Kharif season and about newly released seed varieties, Mr. Manja Naik, Professor (Entomology), UAS(B) explained about integrated pest and disease management, Dr. Deepa Pujar, Scientist (Horticulture) highlighted the Monsoon management in Mango and Coconut crops, Mrs. Uma Rani , K., Farm Manager explained and demonstrated Seed treatment methods, Farmers- Scientist interaction was also conducted. Also exhibition and sales of seeds, seedlings was organised. More than 200 farmers, farm women, Krishi Sakhi's, FPO-DHAN-SKDRDP members, DAESI students participated and were benefited.





ICAR-KVK SHIVAMOGGA

*Predominant climate
change situation focused:*
DELAYED RAINFALL

Shivamogga district in the central part of Karnataka state is predominantly facing the climate change situations like delayed rainfall, severe drought, followed by heavy rainfall conditions. ICAR-KVK Shivamogga is involved in the promotion of climate resilient agriculture techniques by transferring technologies to combat the above situations by introducing drought tolerant varieties, delayed sowing techniques with medium duration varieties, & transplanting techniques, drainage techniques during heavy rainfall or flood situations, etc.

CRT DEMONSTRATED BY KVK TO
ADDRESS THE SITUATION : TRANSPLANTING
TECHNIQUE OF REDGRAM

ADVANTAGES:

- Advanced sowing
- Drought resistance due to deep rooting
- Saving in seeds
- Easy to take up plant protection measures
- Increased branching envisages



ICAR-KVK - SHIVAMOGGA





**A WINDOW TO KVKS OF
ICAR-ATARI, ZONE XI, BENGALURU**
VOL-2, ISSUE 23, 01- 15TH, JUNE, 2024

**NICRA / PROMOTION OF
CLIMATE RESILIENT TECHNOLOGIES**



ICAR-KVK TRIVANDRUM

*Transformative adaptation
towards climate resilience
in Agriculture*

Dissemination of latest agricultural technologies and practices were promoted to farmers through ICAR KVK, Mitraniketan - Thiruvananthapuram. Latest climate-resilient practices and varieties were updated through seminars, on/off campus trainings, capacity building programmes and other extension activities.

Established demonstration plots to showcase climate-resilient technologies and practices at KVK. Constructed rainwater harvesting structure in our farm to collect and store water for agricultural use during summer season.

Effective water management by using spray, mist, sprinkler or drip irrigation systems were popularized to keep the water demand to a minimum. One month trainings were organized twice at KVK under Agriculture Skill Council of India. After successful completion of training a group of trainees stated 'DRIP DROPS', a startup company in Thiruvananthapuram district under the guidance of our KVK.

In order to improve biodiversity and resilience, awareness was also given for an integrated approach of planting trees and shrubs. Knowledge on integrated crop management (ICM) package on all crops was delivered to manage fertility, pests and diseases amicably.

Soil testing laboratory at our KVK started functioning since 2005 and providing soil health card from 2016 onwards to ensure productivity by improving the soil health and fertility. Soil health campaigns were organized at different places in our district to create awareness on soil health and soil test based nutrient management.

Technologies like organic farming, natural farming, and cover cropping, intercropping, integrated farming system were adopted by farmers to improve soil health and sustainability. Educated farmers through various platforms on importance of crop rotation, mulching, zero tillage to conserve moisture and reduce temperature fluctuations to protect their crops. Conversion of waste to wealth (Vermicompost, Biogas plant) was also promoted to increase soil health and renewable energy sources.

Last year being the international year of millets, KVK conducted trials, trainings, capacity building programmes and seminars on millet cultivation to farmers, students and teachers to popularize climate resilient millet crop. A booklet was also published on millets and its cultivation for the benefit of farmers.

By adopting these technologies and practices, KVK is actively involving to equip farmers to fight against the adverse effects of climate change to ensure food security and sustainability in agriculture production.





ICAR-KVK - TRIVANDRUM



Addressing the climate challenge presents a golden opportunity to promote prosperity, security and a brighter future for all





ICAR-KVK TUMKUR I

*Predominant climate
change situations focused :*

RESOURCE MANAGEMENT

MAJOR CRTS DEMONSTRATED BY KVK TO ADDRESS THE SITUATION AND IMPACT :

Demonstration of Nipping technique using Solar operated machine in Red gram under Rain fed Situation

ICAR – Krishi Vigyan Kendra, Tumkur – I initiated FLD on Nipping technique using Solar operated machine in Red gram under Rain fed Situation at Bandrehalli, Chikkanayakanahli taluk of Tumkur Dist.

Mr. Drashan M.E. Scientist (Agriculture Extension) Explained about the climate smart techniques to be adopted in rain fed land using drought and Disease resistance Redgram variety BRG-5. During this occasion seed treatment demonstration was also conducted using bio fertilizer. Inputs were distributed to beneficiary farmers.



ICAR-KVK - TUMKUR I



Climate change is the single greatest threat to a sustainable future





ICAR-KVK TUMKUR - II

*Predominant climate
change situation focused*

Durgada Nagenahalli, Tanganahalli and Chikkadoddavadi villages of Koratagere taluk in Tumakuru district was identified by ICAR-Krishi Vigyan Kendra (ICAR-IIHR, Bengaluru), Hirehalli, Tumakuru, Karnataka for implementation of Technology Demonstration Component under National Innovations in Climate Resilient Agriculture (NICRA) based on vulnerability of its agriculture to climatic variability. The village falls under Central Dry Agro climatic zone of Karnataka with an average annual rainfall of 697mm.

The villages are highly vulnerable to climatic variability like drought, dry spells and extreme temperature. The village has acute shortage of water and preponderance of waste and common land. Benchmark information of D.Nagenahalli village was collected from the Koratagere taluk office on land use pattern, area, production and productivity of different agricultural and horticultural crops, livestock composition and production, fishery production, awareness level of farmers about climate change, groundwater level and its use, income from agriculture. This data has been utilized for the preparation of technical programme of the scheme.



CRTS DEMONSTRATED BY KVK TO ADDRESS THE SITUATION THE TECHNOLOGIES SHORT LISTED ARE AS FOLLOWS :

A. SOIL MANAGEMENT THROUGH

- Trench cum bunding
- Tank silt application
- Tree based farming system

B. HARVESTING WATER AND ITS EFFICIENT USE THROUGH

- New farm ponds
- Check dams
- Recharge of bore wells
- Water storage structures
- Desilting and widening of catchment channels
- Blocking leakage of D.Nagenahalli tank
- Desilting and widening of defunct farm ponds
- Desilting and widening of check dams
- Micro irrigation

C.CROP INTERVENTIONS

- Drought tolerant Field crops and their varieties:
Finger Millet, Red gram , and Paddy
- Dryland Fruit crops: Mango, Amla, Tamarind, and Cashew
- Finger Millet + Red gram intercropping systems
- Ground nut + Red gram intercropping systems
- Finger Millet + Dolichos intercropping systems
- Agri-horti-silvi-pasture systems

3. IMPACT

> TRENCH CUM BUNDING

The trench cum bunding technology was adopted in low to medium slope regions where arable cropping is practiced in the NICRA project. This method served dual purpose: firstly the bunds built across the slope with appropriate sections arrested soil erosion and secondly the trenches served as water reservation pits that keep soil moisture intact for longer duration. About 130 ha area was brought under trench cum bunding involving about 180 farmers. As per the research estimates, in one hectare of land around 50,000 litres of water could be harvested in one filling by the trenches dugout. So, this accounts to be about 6.5 million litres of water, getting stored in situ in the farmers' fields during rainfall events.

Table1 : Higher Ground nut crop yield under trench cum bunding

ICAR-KVK - TUMKUR-II

TREATMENT	SEED YIELD (QTL/HA)	PERCENTAGE INCREASE IN YIELD	GROSS RETURNS (RS./HA)	NET RETURNS (RS./HA)
Trench cum bunding	15.3	27.5	15.3	15.3
without trench cum bunding	12.0		12.0	12.0

Farmer Sri Nagarajaiah had cultivated Groundnut in his 1 ha farm. The yield of Ground nut with trench cum bunding was 15.30qt/ha, compared to that of Ground nut without trench cum bunding (12qt/ha). The yield of the Groundnut increased to an extent of 27.50 in average (Table 1). The farmer benefitted with additional yield of 3.30 quintal and an additional income of Rs. 11,605/-.

> TANK SILT APPLICATION

Tank silt application helps to build soil fertility and water holding capacity. Around 300 tonnes of tank silt was applied in 20 ha of farmers' fields which benefited 35 farmers and yield of rain fed finger millets was increased by 32.6% on an average (Table) compared to control plot.





ICAR-KVK UDUPI

*Predominant climate
change situation focused*

Due to the presence of the Arabian Sea on the west side of the Udupi district, the coastal shore was continuously affected by the invasion of salt water, which caused the formation of a layer of salt on the soil surface and also damage to the crops in the area. As a result, the crops were unable to withstand the salt water, leading to a negative impact on the growth and yield of the existing paddy variety MO-4. Hence salt tolerant varieties are highly recommended for paddy cultivation in this zone. Presently no such variety is under cultivation in the region.

CRT DEMONSTRATED BY KVK TO ADDRESS THE SITUATION

Goa Dhan 4, a variety developed by Dr. Manohar, a pioneer plant breeder Coastal Saline Research Station in Ramnathapuram, Goa has been introduced through a front-line demonstration in Parampalli village, Brahmavar taluk of Udupi district. This particular rice variety is tolerant to saltwater and high-yielding. The variety is highly promising.

IMPACT : The crop growth was excellent, and the farmer has achieved a wonderful yield. The farmer observed that the crop can tolerate salt water up to the early 40 days of its cropping period. The plant can grow up to five feet in height, with a panicle length of up to 12cm and 150-170 grains/panicle. The plant remains greenish until the harvest. The yield was higher than the existing variety MO-4 with high acceptability by the local farmers. Several farmers have now shown interest in adapting the technology for the coming season.





ICAR-KVK - UDUPI





ICAR-KVK UTTARA KANNADA

*Predominant climate
change situations focused:*

ASSESSMENT OF SHORT DURATION PADDY VARIETY FOR UPLAND SITUATION

Paddy is a major staple food crop of Uttara Kananda district grown under rainfed situation. Under upland conditions many farmers are cultivating paddy variety MTU 1001 with drill sown method and UAS Dharwad released variety is MGD -101, both of 135 days duration. The paddy sown during 2nd to 3rd week of June is facing moisture stress during panicle stage due to early withdrawal of monsoon which is leading to chaffyness and low yield.

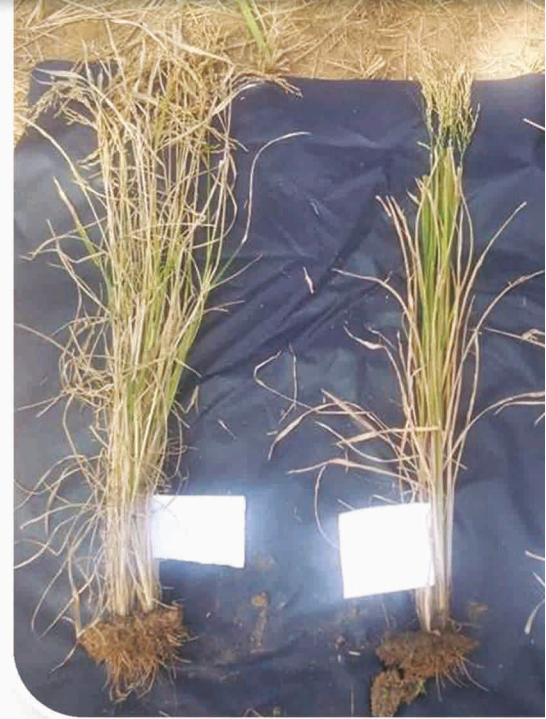
MAJOR CRTS DEMONSTRATED BY KVK TO ADDRESS THE SITUATION AND IMPACT

To address this situation, Sahabagidhan variety developed by ICAR-CRRI, Cuttack with 125 days duration is assessed under on farm trials (OFT) during Kharif season of 2019 and 2020. Pooled data of two years of on farm trial showed that Sahabagidhan paddy variety performed better than other two varieties wrt to plant height, number of tillers, panicle length, number grains per panicle, grain weight per panicle. The grain yield of Sahabagidhan paddy variety was 61.95 q/ha as compared to MTU-1001(49.10 q/ha) and MGD-101 (51.00 q/ha). The gross returns and net returns of Sahabagidhan variety were increased by 41.41% and 75.50% over MGD-101 and MTU 1001, respectively. There was reduced incidence of insect pests and diseases in tested variety. From the study, it is concluded that short duration paddy variety Sahabagidhan with 125 days escaped from moisture stress at panicle stage and recorded higher grain yield and returns with higher B:C ratio of 2.19.





ICAR-KVK - UTTARA KANNADA





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NICRA / PROMOTION OF CLIMATE RESILIENT TECHNOLOGIES



ICAR-KVK VIJAYPURA-I

Predominant Climate Change Situation Focused

Geographically Vijayapura district is situated in Northern Dry Zone-III and agriculture is the main occupation and 75 per cent of the district population depends on Agriculture. Vijayapur has rainfed region with shallow to medium black soil covering Vijayapura, Indi,Sindagi taluks. All the five taluks in the district have been identified as drought prone by irrigation commission. The occurrence and distribution of rainfall is highly erratic. The normal rainfall of the district is 578.0 mm received over 30-40 days in a year with intermittent long dry spells during Kharif and rabi season. Vijayapura district is known for dry land agriculture. The area under sorghum is reported to be 232476 ha followed by Bajra (55438 ha) Maize (72246 ha), Wheat (52074 ha). By looking in to the statistics of last 10 years of Vijayapur district indicates that there is a drought every 3rd year.



TECHNOLOGY DEMONSTRATED : COMPARTMENT BUNDING WITH BUND FORMER DURING KHARIF AND SOWING OF SORGHUM IN COMPARTMENTS DURING RABI

- Major Problem : Moisture stress, lodging and low yielding variety
- Thrust Area : Moisture conservation technology
- Interventions : Moisture conservation technology

IMPACT : This moisture conservation technology developed and promoted by KVK is now spread in an area of 800 ha and use of non-lodging and high yielding variety has reduced the cost of harvesting, increasing the yield, reducing the cost of production and increase in net returns.

OUTPUT : Lodging reduced upto 18.9% and increase in yield upto 7.8% with increase in net returns upto 3977/- per ha increase in moisture at root zone increased upto 20 per cent at harvest

Outcome: About 800 ha area in the district is under moisture conservation technology under the adopted villages of KVK, Average area increase in the district increased from 25 ha during 2019-20 to 800 ha during 2023-24.

Area Spread : 2019-20: 25 ha
2023-24: 800 ha

Additional Income : Rs.31.81 lakh

The cumulative total area under variety during 2014-15 to 2015-16 was 825 ha





ICAR-KVK - VIJAYPURA-I





ICAR-KVK VIJAYPURA-II

*Predominant Climate
Change Situation Focused*

ASSESSMENT OF AJWAIN VARIETIES FOR DELAYED MONSOON SITUATIONS



In response to the frequent delays in monsoon and subsequent failure of Kharif rainfall, which leads to moisture stress, low yields, and crop failure, to overcome ICAR-KVK Vijayapura-II conducted an on-farm testing (OFT) initiative. The thick soils of the region are known for their excellent moisture retention, make rainfed ajwain cultivation a viable alternative during delayed monsoon periods.

CRT DEMONSTRATION BY KVK:

From 2020 to 2022, KVK conducted 11 trials, organized two group discussions with 28 participants, conducted 10 technical field visits, and held four training programs. These activities took place in Bhairunagi village in Indi Taluka and Manankalagi village in Chadchan Taluka. The initiative introduced two new varieties of ajwain, AA-1 and A-93, developed by NRCSS, Ajmer, for both irrigated and rainfed conditions.

IMPACT OF THE INITIATIVE:

Yield Improvement: The AA-1 variety recorded the highest yield of 10.42 q/ha, followed by AA-93 with 9.45 q/ha, compared to the traditional Kadapa-FP variety, which yielded 8.25 q/ha.

ECONOMIC BENEFITS : The net income for AA-1 (T3) was Rs.1,28,080/ha, and for AA-93 (T2) it was Rs.1,11,366/ha, significantly higher than the check variety (T1: Kadapa) which yielded Rs 91,284/ha. The benefit-cost (B) ratio was also higher for AA-1 at 3.45, compared to 2.95 for the check variety.

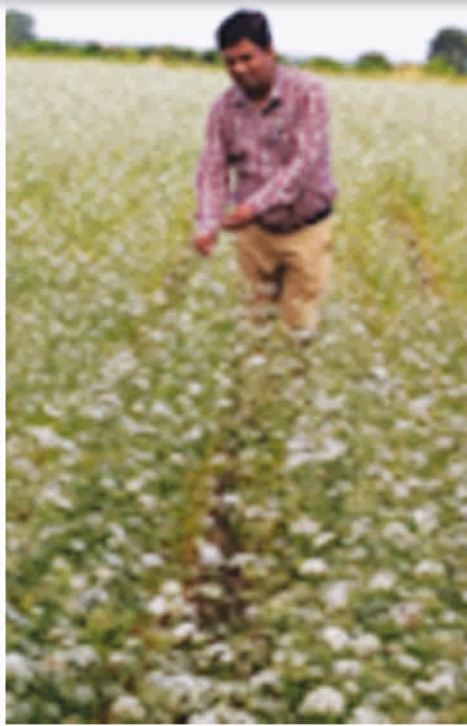
ENHANCED PRODUCTIVITY : Under the rainfed conditions of northern Karnataka, the AA-1 ajwain variety significantly enhanced productivity, providing a reliable crop alternative during delayed monsoon periods.

FARMER FEEDBACK : Farmers reported that AA-1 is early flowering, bold-seeded, has an attractive color, and is higher yielding than other varieties. The increased productivity and favorable market acceptability and price for AA-1 have convinced farmers of the technology's benefits.

Overall, the introduction of ajwain varieties AA-1 and A-93 under the CRT initiative has proven to be a successful strategy to mitigate the adverse effects of delayed monsoon on crop yields, thereby improving the livelihoods of farmers in the region.



ICAR-KVK - VIJAYPURA-II





ICAR-KVK WAYANAD

*Predominant Climate
Change Situation Focused*

1. ENHANCEMENT OF STORAGE CAPACITY USING SURFACE RUNOFF RAINWATER THROUGH ROADS

Severe drought condition during summer season have resulted in decline in cop production in Padichira village. This area receives the least amount of rainfall in the Wayanad district and harnessing every drop of rainwater is quite important.

INTERVENTION	YEAR	YIELD (Q/HA)	COST OF CULTIVATION (RS/HA)	NET RETURN (RS/HA)
Enhancement of storage capacity in Pepper field	2023-24 (normal year)	12.5	80118	4,23,918
Farmers practice		10.9	70218	3,54,318
Enhancement of storage capacity in Arecanut field	2023-24 (normal year)	9.54	107056	2,23,520
Farmers Practice		8.48	102055	1,97,215

2. DEMONSTRATION OF DRONE TECHNOLOGY IN RICE PREDOMINANT CLIMATE CHANGE SITUATION FOCUSED :

Rice being a water exhaustive crop, requires 500L of water for single application of nutrients in 1 Ha. Demonstration of drone technology help conserve water as it only requires 37.5 L to spray micro nutrients in 1 Ha in comparison to 500L. Climate vagaries affect the inter cultivation operations and delayed cultivation practices can drastically result in yield loss up to 25%.

IMPACT OF THE TECHNOLOGY :

INTERVENTION	YIELD (Q/HA)	COST OF CULTIVATION (RS/HA)	ROSS RETURNS (RS/HA)
Drone technology	46	72,500	1,45,000
Farmer's practice	41	68,000	1,05,000

DETAILS OF TECHNOLOGY DEMONSTRATED:

Demonstrations on enhancement of storage capacity using surface runoff rainwater through roads and construction of percolation ponds with a dimension of 4 m x 2 m x 1.5 m (l x b x h) can store 12000 L of water. Coconut husk lining is also provided at the bottom end to conserve water. Increase in the level of water table in open wells were witnessed. Water scarcity especially during summers have adversely affected the plantation crops like pepper, coffee and arecanut. Adoption of percolation ponds and constructing channels to drain surface runoff rainwater to their fields resulted in less water requirement of 2-3 irrigations compared to 4-5 in conventional. The technology has helped the farmers to achieve a yield improvement of 14.67% and 12.5%, additional income of Rs. 59700/ha and Rs.11896/ha in pepper and arecanut respectively.

IMPACT OF THE TECHNOLOGY:

Impact of enhancement of storage capacity using surface runoff rainwater through roads on pepper and arecanut in Padichira village of Wayanad district

DETAILS OF TECHNOLOGY DEMONSTRATED :

Demonstration of drone technology in rice saved 10-15% of irrigation water in rice. Micro nutrient Sampoorana spray@ 2 kg/acre was given at 30 and 50 days after transplanting and Bio control agent liquid pseudomonas@ 1L/acre was sprayed 20 and 45 days after transplanting through drone. Drone technology in addition helps in uniform spray, and saves man days. This in short is a water saving technology.

ICAR-KVK - WAYANAD

3. DEMONSTRATION OF WATER STORAGE STRUCTURE IN FALLOW LAND

PREDOMINANT CLIMATE CHANGE SITUATION FOCUSED:

Water scarcity during the second season has resulted in decline in rice production in Padichira village. The non availability of water at critical stage of the crop production is the main problem witnessed.

DETAILS OF TECHNOLOGY DEMONSTRATED:

Farm pond with a dimension of 15m x 11m x 3m can store 5 lakh litres of rain water was demonstrated at Padichira village as this area receives the least amount of rainfall in the Wayanad district and harnessing every drop of rainwater is quite important. Farmers used this water at critical stage of rice production and also cultivated vegetables and millets in the fallow period with the additional water stored in the pond. Hence, farm pond

4. IMPROVING WATER HOLDING CAPACITY IN COCONUT AND ARECANUT GARDENS THROUGH HUSK BURIAL

PREDOMINANT CLIMATE CHANGE SITUATION FOCUSED:

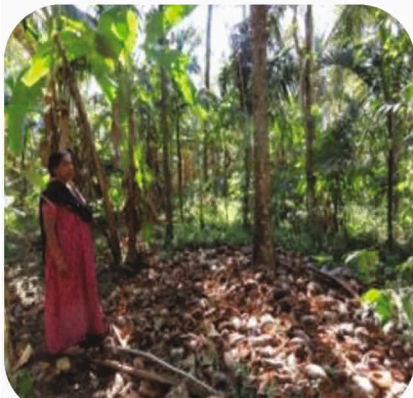
The coconut plantation faces dry spells and there is incidence of button shedding, breaking up of fronds and yellowing of leaves.

DETAILS OF TECHNOLOGY DEMONSTRATED:

Husk burial can be done in coconut basins or in the interspaces to overcome drought and button shedding. Heaping of husk with concave side facing upward can act as sponge, absorb and retain moisture about 6-10 times respectively to their own weight and slowly release to the coconut trees during dry periods.

IMPACT OF THE TECHNOLOGY :

INTERVENTION	YIELD (Q/HA)	COST OF CULTIVATION (RS/HA)	ROSS RETURNS (RS/HA)
Drone technology	46	72,500	1,45,000
Farmer's practice	41	68,000	1,05,000





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ICAR-KVK BAGALKOT

On the occasion of World Environment Day, ICAR- KVK Bagalkote staff Visited GMK PU College Badami on 05.06.2024 and Celebrated world Environment Day by planting the 100 seedlings of Tamrind, Jamun Casurina and Aonla and distributed 100-150 seedlings to students. Dr. S. B Patil Senior Scientist and Head KVK Bagalkote addressed to students regarding importance of healthy environment to human being. Dr. Siddappa Angadi Sr. Technical Officer KVK Bagalkote explained regarding Soil-Water-Plant relations to healthy environment. A total of 250 students participated and got benefited.

On the occasion of World Environment Day, KVK staff Celebrated World environment day by planting 150 seedlings of Tamerind, Jamun and Aonla at KVK Bagalkot premise. All staff of KVK Bagalkote actively participated in the event and planted seedlings





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ICAR-KVK BENGALURU RURAL

CELEBRATION OF WORLD ENVIRONMENT DAY 2024

ICAR – Krishi Vigyan Kendra, Hadonahalli, Bengaluru Rural District celebrated the World Environment Day 2024 with the theme of ‘Land Restoration, desertification and drought resilience’ on 05.06.2024 in collaboration with State Forest Department, Doddaballapura and MYTHRI Sarva Seva Samithi, Bengaluru at KVK campus.

The programme was inaugurated by Sri H. Appayanna, Progressive Farmer and Ex-Member, Zilla Panchayath, Bengaluru Rural and in his inaugural speech, he request KVK and Forest Department and NGOs to encourage the farmers by distributing and planting the tree saplings in large quantities to make the environment clean, green and safe.

Sri Nagaraju, H.A., President, Gramapanchayath, Hadonahalli elicited about the present situation of Environment and urged the gathering to plant the trees in the farm bunds, safe use and disposal of plastic and other unwanted material which is harmful to the environment. He also called for judicious use of water at all stages from household use to agriculture purpose. In his speech he also spoke about rain water harvesting and its effective utilization.

Sri Harish Babu, CEO, Mythri Sarva Seva Samithi briefed the genesis of ‘World Environmental Day’ and pointed out the roles and responsibilities of publics in protecting the environment.

Sri Sridhar, Assistant Conservator of Forest, Doddaballapura request the farmers to join hands with Forest department for the afforestation and rain water harvesting. Smt. Gowamma, Folk singer motivated the gathering through her singing about the environment related song.

Smt. Janaki, Deputy Director of Ground water Dept., Bangalore briefed about the role of check dams in conserving rain water.

Sri Gurudev, Environmentalist, Doddaballapura shared his experiences related to environmental pollution due to increasing urbanization and industrialization and highlighted the importance of indigenous technologies related to soil and under-ground water conservation. During the programme KVK felicitated the progressive farmers who were selected under ‘Doubling Farmers Income’.

Dr. Hanumantharaya, B.G., Senior Scientist & Head, ICAR – KVK, Hadonahalli presided the programme and highlighted the importance of celebrating Environmental Day.

Further, the dignitaries of the programme, staff of the KVK and NGO, students and farmers joined together and planted 50 Jack grafts, Mangostein and Rambhutan saplings at KVK premises. Later, KVK has distributed 500 saplings (Jack fruit, Mango and Mahagani saplings) to the 110 farmers participated in the event.

Smt. Pallavi, Senior Land Surveyor and Nodal Officer, Atal Bhu-Jal Yojana, Bengaluru Rural, Mr. Krishnegowda, Range Forest Officer, Doddaballapura and School children and farmers were participated and benefitted from the programme.





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ICAR-KVK DHARWAD

CELEBRATION OF WORLD ENVIRONMENT DAY

ICAR- KVK, Dharwad celebrated World Environment Day on 05.06.2024 by planting of Jamun plants, Mahagony, Amla, Champa, Bauhinia plants by Dr. P. L. Patil, Vice Chancellor, UAS, Dharwad and Dr. S. S. Angadi, Director of Extension, UAS, Dharwad along with staff of UAS, Dharwad and KVK, Dharwad in collaboration with District Legal Cell, Dharwad and State Department of Forest, Dharwad.



TREE PLANTATION CAMPAIGN

Tree plantation campaign was conducted by planting of 200 Tamarind grafted plants on 05.06.2024 by Dr. P. L. Patil, Hon'ble Vice Chancellor, UAS, Dharwad and Dr. S. S. Angadi, Director of Extension, UAS, Dharwad, Administrative Officer and Campus Head, Director of Student Welfare, Senior scientist and Head, ICAR-KVK, Dharwad and KVK staff and students participated in the program.

SOWING OPERATION UNDER CS AND HDPS IN COTTON



Sowing operations were carried out in farmer's field at Harobelawadi and Shanawad villages of Dharwad district with methods like closer spacing (CS) and HDPS in cotton cultivation under Special Project on Cotton on 06.06.2024 and 08.06.2024, respectively. Seeds were provided by Rasi Seeds Private Limited.

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ICAR-KVK KOPPAL

PROGRESSIVE FARMERS FELICITATION AND INTERACTION PROGRAMME

ICAR KVK Koppal organized one day programme on felicitation and interaction of DFI farmers in 10.6.2024 . The programme was inaugurated by Dr. Kavitha Y Ullikashi Scientist (Home Science) by watering water to the plant and explained the advantages different IFS technologies to increase the income of the farmers. Shri Narappa Senior technical assistant explained different water saving technologies in paddy crops. Dr.Jyothi Scientist (Horticulture) explained different new varieties in horticulture crops from different institutes.Smt.Radha.J Scientist (seed science and technology) explained different seed production programme. About 35 DFI farmers from different villages of Koppal district were felicitated in the programme. DFI farmers Smt. Saidab, Sri Kankappa , Sri Mahesh, , Smt Shekamma Vani and Sri Srinivas reddy were shared their success stories were shared with the farmers.



TRAINING PROGRAMME ON PROCESSING AND VALUE ADDITION TO PADDY

Rice is one of the most common staple foods that people usually consume around the world. Value addition enhances the profitability of rice production. By-products from the rice milling process have high amounts of nutrients when compared to white rice itself. ICAR KVK Gangavathi in association with Zilla panchayat Koppal organised two days training programme (12 and 14th June 2024) on processing and value addition to paddy. The programme was inaugurated by Smt Annapurna Block supervisor NRLM,Koppal by watering the plants .She explained that plenty of paddy are spoiled due to lack of storage and processing. It is estimated that post-harvest processing of paddy using traditional methods leads up to a 9-12% as primary losses. In order to overcome the processing losses, it needs to mechanize the traditional processing methods like harvesting, threshing, cleaning, grading and milling etc. Mechanization like introducing a combine harvester or mechanical thresher and high-quality rice mills may reduce the post-harvest losses. Additionally, the secondary losses of paddy which occurs after milling due to lack of storage, can reduce by adding the value to the rice by producing rice based new product. Shri Shyamsunder Supervisor NRLM described the government programmes available for farm women. Smt Radha J explained about organic paddy cultivation. Dr. Kavitha Y Ullikashi Scientist (home Science) explained about different processing of paddy. She also demonstrated different value added RTE products from the rice. About 35 farm women from paddy growing villages (Mallapura and sanapura) of koppal district were participated in the training programme.





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ICAR-KVK THRISSUR

CELEBRATING WORLD ENVIRONMENT DAY AT KVK THRISSUR

On June 5, 2024, KVK Thirissur celebrated World Environment Day with a series of activities aimed at raising awareness and promoting sustainable practices among farmers and the local community. This year's theme, "Land Restoration, Desertification, and Drought Resilience," resonated deeply with the region's agricultural challenges. The day began with an inaugural session where experts from various agricultural and environmental fields highlighted the critical need for land restoration and drought resilience strategies. Dr Payas OL, State Medicinal Plant Board gave an address on sustainable crop management practices and role of medicinal plants. Following the inaugural session, a tree planting drive was conducted, involving local farmers, students, and community members. Over 500 saplings of indigenous and drought-resistant species were planted across KVK's premises and nearby farmlands, symbolizing a commitment to restoring degraded lands. The celebration concluded with an interactive session where farmers shared their experiences and success stories in implementing sustainable practices. This exchange of knowledge and ideas reinforced the importance of community participation in environmental conservation. KVK Thirissur's World Environment Day celebration successfully highlighted the pressing issues of land degradation and drought, promoting a collective effort towards building a resilient and sustainable agricultural future.

ATMA-Sponsored Training on Jackfruit Processing at KVK Thirissur

On June 12, 2024, the Agricultural Technology Management Agency (ATMA) sponsored a specialized training session on jackfruit processing for farmers from Poomangalam Krishi Bhavan. The training was held at the Common Facilitation Centre of KVK Thirissur, reflecting a collaborative effort to enhance value addition and income generation for local farmers. The day-long training aimed to equip farmers with the necessary skills and knowledge to process jackfruit into various value-added products. This initiative aligns with ATMA's objective of promoting sustainable agricultural practices and empowering farmers through capacity building and technology dissemination. The training also covered essential aspects of food safety, hygiene, and quality control, emphasizing the importance of maintaining high standards to meet market demands. Additionally, marketing strategies and potential market linkages for jackfruit products were discussed, provid-



Yargol Dam





UNIVERSITY OF HORTICULTURAL SCIENCES, BAGALKOT



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