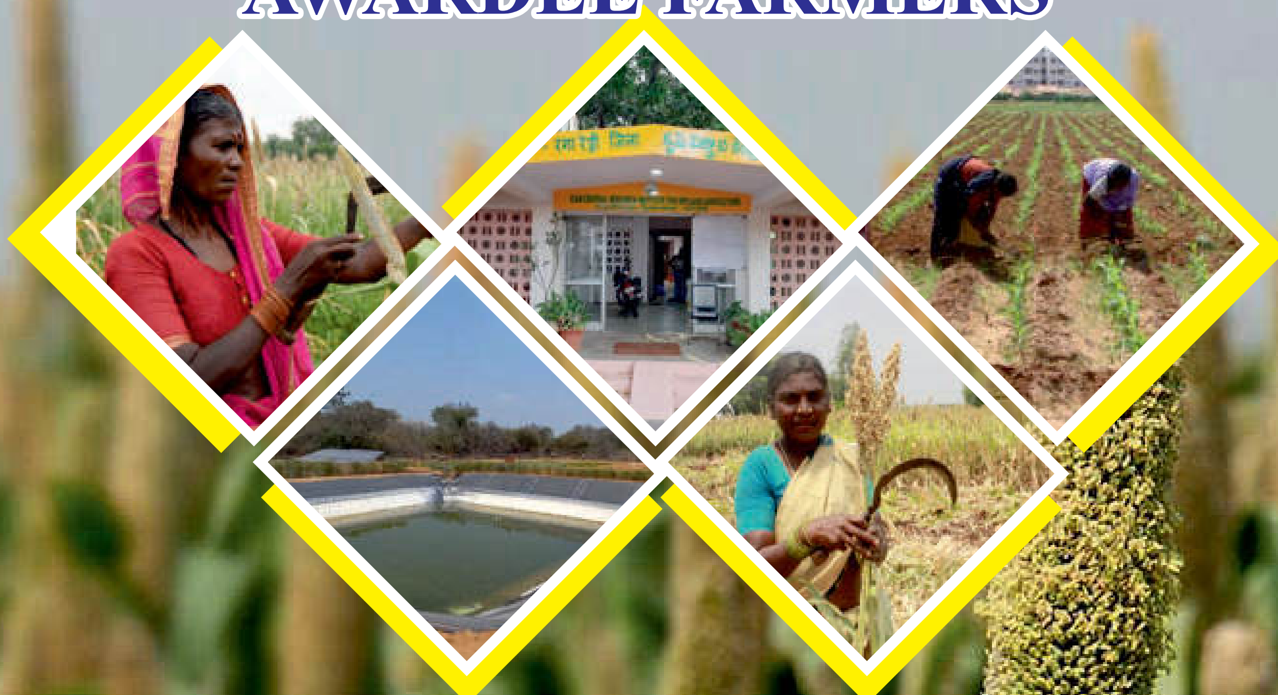
# SUCCESS STORIES OF ICAR - CRIDA AWARDEE FARMERS



Vinod Kumar Singh, JVNS Prasad, S K Bal, G Pratibha, G Ravindra Chary , M Prabhakar, G Nirmala, DBV Ramana, P K Pankaj, T V Prasad, Manoranjan Kumar, C N Anshida Beevi, Jagriti Rohit

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संतोषनगर, हैदराबाद - 500 059, तेलंगाना.
ICAR-Central Research Institute for Dryland Agriculture
Santoshnagar, Hyderabad-500059, Telangana.


CRIDA

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# FOREWORD


**डॉ. सुरेश कुमार चौधरी**

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26.02.2024

Dryland agriculture is indispensable for preserving agricultural biodiversity and ensuring food security within India, particularly in regions. characterized by limited water availability and variable rainfall patterns. The significance of rainfed agriculture to the nation's agricultural output cannot be overstressed, yet it encounters significant hurdles due to erratic precipitation, vulnerability to climate shifts, and the imperative for innovation to sustain yields.

The ICAR-Central Research Institute for Dryland Agriculture is at the forefront of conducting foundational and strategic research dedicated to the promotion of sustainable and climate-resilient agricultural practices within rainfed territories. This includes the creation and dissemination of technologies and methodologies tailored for cultivation in semi-arid landscapes. Furthermore, the institute coordinates collaborative research projects aimed at delivering bespoke solutions and methodologies for the advancement of dryland agriculture.

Innovations developed by the AICRP on Dryland Agriculture, in conjunction with climatic advisories from the AICRP on Agro-meteorology, have been widely adopted by the farming community. The implementation of climate- resilient agricultural technologies, facilitated through the TDC component of NICRA, has rendered substantial benefits to agriculturally vulnerable communities. Through CRIDA's extension activities, including Farmer FIRST, SC Sub Plan, Scheduled Tribe Component, and initiatives by Krishi Vigyan Kendras, farmers have been empowered to assume leadership roles within their communities across India. These initiatives have markedly influenced agricultural practices, attributing the successful adoption of dryland technologies to the dedication and expertise of scientists at dryland centres and KVKs, guided by CRIDA.

The CRIDA foundation day tradition of acknowledging farmers with 'best dryland farmer' and 'most innovative farmer' awards celebrates their effective application of advanced technologies. This bulletin showcases 75 exemplary success stories from across the nation, acknowledging the achievements of farmers and documenting the collective effort towards. championing climate-resilient agricultural innovations at the grassroots level. I extend my congratulations to the researchers, farmers, and stakeholders involved in this exemplary endeavour.

(S.K. Chaudhari)

# Contents

# INTRODUCTION

Dryland regions have significantly contributed to our nation's food supply, yielding 90% of pulses and 65% of oilseeds. However, dryland regions of India suffer with uncertain, ill-distributed and limited rainfall, occurrence of extensive climatic hazards like drought, flood etc, undulating soil surface, farmers practice extensive agriculture, prevalence of mono cropping, very low crop yield, etc.

The ICAR-Central Research Institute for Dryland Agriculture is responsible for undertaking fundamental and practical research to advance sustainable and climate-resilient agriculture in rainfed regions. This involves creating technology and methods appropriate for farming in arid regions. In addition, the institution organises network research activities to provide location-specific solutions and strategies for dryland agriculture. It also collaborates with national and international organisations to improve research and development in dryland agriculture. At present the institute is coordinating the mega project 'National Innovations in Climate Resilient Agriculture' partnering with 40 national research institutes to assess impact of climate change and climatic variability on Indian Agriculture and develop adaptation and mitigation strategies to reduce the impacts. It has prepared vulnerability atlas of Indian Agriculture to climate change. Apart from the strategic research program under NICRA, the Technology Demonstration component is undertaken in more than 150 villages across India to make them 'Climate Resilient Villages'. In addition, the crop contingency plans (district level) has also been developed with the help of State Agricultural Universities at CRIDA for 650 districts in the country helping the district/state administration to deploy alternative cropping strategies in times of adverse weather conditions.

Location specific technologies generated by the AICRP on dryland agriculture, along with agricultural weather advisories from the AICRP on agro-meteorology, have been widely embraced by farmers. The display of climate-resilient agricultural techniques through the Technology Demonstration Component of NICRA has a notably positive effect on at-risk farming communities. CRIDA's outreach activities, such as Farmer FIRST, SC Sub Plan, Scheduled Tribe Component, and ongoing projects through Krishi Vigyan Kendra, have helped many farmers to become leaders in farming communities across India. The programmes greatly influenced agriculture, with successful tales of dryland technology adoption attributed to the hard work and dedication of scientists at dryland centres and KVKs under the guidance of CRIDA.

During each CRIDA foundation day, farmers are honoured with medals for being the 'best dryland farmers' and 'most innovative farmers' for effectively implementing advanced technologies and showcasing this to fellow farmers. The successful or rewarded farmers are representing one or other units of CRIDA activities, like AICRPDA, AICRPAM, NICRA-TDC, SCSP, TSP, FFP, KVK duly vetted by respective ICAR-ATARI too. A systematic data sets were collected from these awardee farmers, analysed and presented in this bulletin. This bulletin contains 75 success stories from different regions of the country due to widespread activity of CRIDA throughout India, recognising the achievements of farmers. The success stories contain all relevant adoption of climate resilient technologies related to natural resource management, crops and cropping systems, livestock and fisheries and institutionalization. The detailed portray of these success stories will motivate others to work in similar lines to achieve greater heights in agriculture endeavour.

# AICRPDA

Rainwater Management and its Efficient Utilization for Enhancing Yield and Income

Adoption of Best Management Practices for Sustainable Rainfed Agriculture

Adoption of Risk Resilient Intercropping Systems

Small Water Harvesting Tank for increased Water Availability

Improved Crop Productivity with in-situ Rainwater Harvesting through Conservation Furrow

In situ Moisture Conservation by using the Tractor Drawn Compartment Bund Former

Best Management Practices in Intercropping Systems

Adoption of In-Situ Moisture Conservation Technologies along with Improved Varieties of different Dryland Crops

Adoption of Best Management Practices for improved yields of Dryland Crops

Mechanisation of Groundnut + redgram 8:1 with Ananta Groundnut Intercropping Planter

Adoption of Climate Resilient Practices

Adoption of Rainfed Integrated Farming System

Adoption of Rainfed Integrated Farming System for Higher Returns

Adoption of Broad Bed Furrow method of sowing of Soybean Intercropping system

Adoption of Crop Diversification as a Risk Minimizing Strategy for Drought Proofing

Adoption of New Drought Tolerant Variety of Soyabean

Deep Summer Ploughing for Moisture Conservation and Higher Yield

Adoption of Horticulture-Based Integrated Farming System

# Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Jatin Kapah Borah** |
| Age | : | 64 years |
| Education | : | Higher Secondary |
| Address | : | |
| Village | : | Jokaipeluwa |
| Taluk/Mandal | : | Bhipuria |
| District | : | Lakhimpur |
| State | : | Assam |
| Land Holding | : | 2.73 ha |


## Rainwater Management and its Efficient Utilization for Enhancing Yield and Income

### Description of innovation/ adopted climate resilient practices

- Utilized harvested rain water from farmpond for timely Sali paddy planting, averting water scarcity and enhancing crop yield.
- Implemented climate-resilient practices by selecting situation-specific rice varieties, reducing abiotic stress and ensuring adaptability to diverse land conditions

### Process of innovation/ adoption

- Rainwater management and efficient utilization
- Adaption of land situation specific variety (upland-short duration variety, medium land-short duration variety and low land-long duration with submergence tolerant variety)
- Adoption of double cropping system (Rice-potato, rice-toria)
- Crop diversification with fodder cultivation

### Practical utility of the adoption of technology

- Double cropping (rice followed by potato/rapeseed) in upland and medium land situations yielded main crop equivalent yield MCEY: 9600.0 kg/ha (Rice-Potato), 759.0 kg/ha (Rice-Rapeseed), optimizing land use and boosting productivity.
- Hybrid Napier (CO 4) cultivation as part of a fodder bank yielded 1012.1 kg/acre, enhancing livestock feed security and diversifying income.
- Supplemental irrigation in Potato (Kufri Pokhraj) yielded up to 11520.3 kg/acre, showcasing effective water management for higher crop yields.
- Submergence-tolerant rice variety Bahadur Sub-1 yielded 2062.5 kg/acre, ensuring consistent yields despite adverse environmental conditions.
- Double cropping and efficient irrigation lead to higher yields, boosting farm output and revenue.

# Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Suresh Chandra Jat** |
| Age | : | 39 years |
| Education | : | 8th pass |
| Address | : | |
| Village | : | Dagoliya Kheda |
| Taluk | : | Railmagra |
| District | : | Rajsamand |
| State | : | Rajasthan |
| Land Holding | : | 0.9 ha |

## Adoption of Best Management Practices for Sustainable Rainfed Agriculture

### Description of innovation/ adopted climate resilient practices

- Used vibro chisel plough to break plough pan, addressing subsoil issues from continuous ploughing.
- Implemented peripheral bunding and ridging post-initial interculture in maize and peanuts and also applied soluble NPK (18:18:18) at 1.0% rate during dry spell in maize crop's grain filling stage.
- Established agro-horti system with trench planting (0.5 m width, 1.0 m depth) at 5 m intervals for ber (Gola) and guava (Pant Prabhat), refilling trenches with 15 kg FYM and 0.250 kg SSP per running meter, and intercropping with groundnut/greengram during *kharif* and chickpea during *rabi*.

### Process of innovation/ adoption

- Farmer is innovative and has attended several training programmes on rainwater management, exposure visits to progressive farmers' fields and farmer field programme all of which have been organized by the Scientists of AICRPDA, Arjia,

### Practical utility of the adoption of technology

- Primary tillage with Vibro chisel plough resulted in 25% higher maize grain yield under dryland conditions, enhancing profitability.
- Foliar NPK application increased maize yield by 23.5% compared to farmer practice, enhancing economic returns.
- Ridging after the first interculture operation in maize led to a 27% higher maize grain yield compared to farmer practice (2075 kg/ha), contributing to increased revenue.
- Inter-space crops of Groundnut during *Kharif* and gram during *rabi* provided additional income, maximizing land use efficiency.
- Agri-horticultural integration between Ber and Guava fruit plants resulted in a higher net return of Rs. 226595 per ha per year compared to unmanaged pasture, highlighting economic benefits

## Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Mahade Rajaram Tople** |
| Age | : | 52 years |
| Education | : | Higher Secondary |
| Village | : | |
| Village | : | Warkhed |
| Taluk | : | Barshitakli |
| District | : | Akola |
| State | : | Maharastra |
| Land Holding | : | 1.8 ha |

## Adoption of Risk Resilient Intercropping Systems

### Description of innovation/ adopted climate resilient practices

- Implemented climate-resilient practices such as opening furrows at 30-35 DAS in soybean and cotton for moisture conservation, and sowing soybean on BBF to cope with dry spells.
- Adopted risk-resilient intercropping systems with early improved varieties of soybean, pigeonpea, and greengram, including soybean+pigeonpea (4:2) and cotton+greengram (1:1) combinations.
- Efficiently utilized energy through implements provided by the custom hiring center of NICRA, promoting sustainable agricultural practices.

### Process of innovation/ adoption

- Demonstrated technologies encompassed moisture conservation practices, real-time contingency measures, risk-resilient intercropping, improved soybean and pigeonpea varieties, and an energy-efficient custom hiring center.
- Farmer actively adopted and showcased these technologies to fellow villagers, supported by consistent interaction with AICRPDA scientists and participation in training sessions, fostering technology adoption in surrounding areas.

### Practical utility of the adoption of technology

- Sowing soybean on BBF ensures sustainable yield, mitigating risks in low rainfall and drought, yielding increased economic returns.
- Intercropping soybean+pigeonpea (4:2) boosted soybean equivalent yield by 27.93% compared to sole soybean, enhancing profitability.
- Using BBF planter in soybean crop covered 20-25 ha, reducing labour and time costs while maximizing yield.
- Intercropping cotton+greengram (1:1) across 80-90 ha facilitated diversification and risk mitigation, improving economic outcomes.

# Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Abhay Singh Solanki** |
| Age | : | 67 years |
| Education | : | 10th standard |
| Address | : | |
| Village | : | Ningnoti, Post- Panod |
| Taluk | : | Barshitakli |
| Block | : | Indore |
| District | : | Indore |
| State | : | Madhya Pradesh |
| Land Holding | : | 1.1 ha |

## Small Water Harvesting Tank for increased Water Availability

### Description of innovation/ adopted climate resilient practices

- Farm pond serves as a reservoir for runoff water, aiding in prolonged dry spell management and providing supplemental irrigation for *kharif* and *rabi* crops.
- Installation of water harvesting tanks ($15x11x4m^3$) at farmer's fields boosts crop productivity and farm income in soybean-based cropping systems.
- Water harvesting tank provision stimulates crop diversification, such as soybean-chickpea and soybean-wheat rotations, enhancing resilience and agricultural output.
- Availability of water ($630m^3$) further encourages crop diversification, and reinforcing the adoption of resilient cropping patterns.

### Process of innovation/ adoption

- A farm pond of size $630m^3$ was constructed in farmer's field by AICRPDA under the NICRA project, utilizing a portion (15m x 11m) of the farmer's 2.80-acre cultivated field with deep vertisols having minimal seepage and percolation.
- During the monsoon season, the tank filled up with runoff water to its full capacity, providing supplemental irrigation to maize during *kharif* and enabling conjunctive use of surface water and groundwater during *rabi*.
- The farmer utilized the tank not only for immediate water needs but also as a storage tank, employing a high discharge pump to lift water for nearby crop irrigation

### Practical utility of the adoption of technology

- Successful implementation of farm pond technology in NICRA villages led to the construction of 10 ponds by AICRPDA, demonstrating practical effectiveness and economic viability.
- Adoption of this technology by other farmers in the village mitigates water scarcity issues, reflecting its economic benefits and role in enhancing agricultural productivity.
- Around 10 self-financed water harvesting tanks have been constructed in the village, covering approximately 50 hectares of land and providing irrigation water during the *rabi* season, further illustrating its economic impact and sustainability.

## Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Beerappa Sangla** |
| Age | : | 39 years |
| Education | : | VI standard |
| Address | : | |
| Village | : | Vannedoddi |
| Mandal | : | Gooty |
| District | : | Ananthapuramu |
| State | : | Andhra Pradesh |
| Land Holding | : | 1.88 ha |

## Improved Crop Productivity with *in-situ* Rainwater Harvesting through Conservation Furrow

### Description of innovation/ adopted climate resilient practices

- In groundnut cultivation, intercultivation cum *in-situ* rainwater harvesting was implemented by forming conservation furrows using a tractor-drawn intercultivation implement (slim tyres).
- This implement, unlike traditional methods involving danthulu (small local blade harrow), facilitates the formation of conservation furrows, intercultivation, and earthing up of plants.
- Conservation furrows created in this process serve as on-farm reservoirs, effectively harvesting surface runoff and enhancing rainwater conservation for groundnut cultivation

### Process of innovation/ adoption

- Farmers are motivated through training programs, group discussions (capacity building), and on-farm demonstrations in farmers' fields to encourage technology adoption.
- Provision of tractor-drawn intercultivation implements to farmers has significantly improved the adoption rate of the technology.

### Practical utility of the adoption of technology

- Formation of conservation furrows in groundnut at 25-30 DAS increases rainwater conservation in the soil profile, ensuring continuous soil moisture availability in the root zone.
- Adoption of *in-situ* rainwater harvesting practice, especially in rainy deficit or drought years, led to a 25% increase in groundnut pod yield and a 29% increase in haulm yield compared to rainfed control, resulting in improved economic returns.
- In Vannedoddi and Bachupalli villages (Cluster villages of AICRPDA-NICRA) of Gooty mandal in Ananthapuramu district, 50 farmers adopted this practice on 25 hectares of land, demonstrating its scalability and potential economic benefits.

## Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Hamid Mahamad Kudale** |
| Age | : | 59 years |
| Education | : | V standard |
| Address | : | |
| Village | : | Mardi |
| Mandal | : | North Solapur |
| District | : | Solapur |
| State | : | Maharashtra |
| Land Holding | : | 3.4 ha |

## *In situ* Moisture Conservation by using the Tractor Drawn Compartment Bund Former

### Description of innovation/ adopted climate resilient practices

- *In-situ* moisture conservation was achieved using a tractor-drawn compartment bunds former.
- This practice is applied during *kharif*, followed by *rabi* sorghum cultivation, resulting in a 20% increase in *rabi* sorghum yield through *in-situ* harvested rainwater.
- Additionally, two protective irrigations applied to chickpea at 30-35 and 45-50 days after sowing increase yield by 40%, complemented by integrated nutrient management strategies including improved varieties, biofertilizer seed treatment, pheromone traps, and 1% $KNO_3$ foliar application.

### Process of innovation/ adoption

- Farmer adopted new varieties such as chick pea - (Phule Vikram,) sorghum – (Phule Suchitra, and Phule Revati) and implemented the recommended dose of fertilizer (RDF) application to crops was embraced.
- Agro advisory services were utilized to enhance agricultural practices and decision-making

### Practical utility of the innovation/adoption of technology

- Adoption of *in-situ* moisture conservation practice has increased sorghum yields by 16q/ha compared to the farmer practice of 10q/ha, resulting in improved economic returns.
- The *in-situ* moisture conservation technology has been adopted by 20 nearby farmers, covering approximately 50 hectares of land, indicating its scalability and economic impact.
- Adoption of Phule Vikram chickpea variety by 10 farmers on around 15 hectares boosted productivity and economic benefits..

## Farmer Details

| | |
|---|---|
| **Name** | **: Sri B Govindaraju** |
| Age | : 45 years |
| Education | : PUC |
| Address | : |
| Village | : Chikkaputtaynapalya |
| Taluk | : Nelamangala |
| District | : Bangalore Rural |
| State | : Karnataka |
| Land Holding | : 1.8 ha |

## Best Management Practices in Intercropping Systems

### Description of innovation/ adopted climate resilient practices

- Adoption of best management practices includes soil test-based fertilizer application and *in-situ* moisture conservation through conservation furrow between paired rows of pigeonpea in finger millet + pigeonpea (8:2) intercropping system.
- Maintenance of optimal spacing for finger millet (30 cm) and plant population through thinning/transplanting, intercultivation using hoe, and opening of moisture conservation furrow between paired rows of pigeonpea.
- Improved crop yields achieved through sowing long duration pigeonpea (BRG-1) at 90 cm × 30.0 cm and a short duration photo-insensitive cowpea variety (PKB-4) in 1:1 row proportion (additive series) while maintaining a distance of 90 cm between the rows of pigeonpea without compromising the main crop

### Process of innovation/ adoption

- Intensified cropping advised for finger millet + pigeonpea (8:2) in 1.0 acre, pigeonpea + cowpea (1:1) in 0.5 acre, and groundnut + pigeon pea (8:2) in 0.5 acre.
- Agroforestry trees such as like silver oak grown on bunds.
- Improved technology with *in-situ* moisture conservation practice, timely intercultural operations, and plant protection measures contributed to yield improvement

### Practical utility of the innovation/adoption of technology

- A net return of Rs. 44,836 from the crop component was achieved
- Maintaining two milching cows and cultivating fodder maize in a 0.5-acre area resulted in an additional average of 2.0 litres of milk per day and a net income of Rs. 43,200 from the dairy component.
- Adoption of moisture conservation furrows by 200 farmers in the village across 96.6 acres improved rainwater utilization and soil moisture levels, serving as insurance during stress periods.

## Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Umed Singh** |
| Age | : | 36 years |
| Education | : | SSC |
| Address | : | |
| Village | : | Balawas, Nalwa (PO) |
| Tehsil | : | Hisar |
| District | : | Hisar |
| State | : | Haryana |
| Land Holding | : | 4.8 ha |

# Adoption of *In-Situ* Moisture Conservation Technologies along with Improved Varieties of different Dryland Crops

## Description of innovation/ adopted climate resilient practices

- Adoption of *in-situ* moisture conservation technologies and improved varieties
- Thinning and transplanting practices in pearl millet during the *kharif* season
- Foliar spraying of NPK with $ZnSO_4$ at 0.50% concentration boosts yields in pearl millet and mustard under dryland conditions

## Process of innovation/ adoption

- With adoption of *in-situ* moisture conservation the farmer achieved 25-30% higher yield of different dryland crops.

## Practical utility of the innovation/adoption of technology

- Adoption of *in-situ* moisture conservation technologies and improved varieties leads to higher yields in dryland crops, resulting in increased economic returns.
- Thinning and transplanting practices in pearl millet during the *kharif* season enhance yields, contributing to improved economic viability.
- Foliar spraying of NPK with $ZnSO_4$ at 0.5% concentration boosts yields in pearl millet and mustard under dryland conditions, thereby increasing economic returns. Moreover, employing intercultural practices with a wheel hand hoe aids in moisture conservation across different dryland crops, further optimizing economic sustainability.

# Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Smt. R.Padma** |
| Age | : | 42 years |
| Education | : | SSC |
| Address | : | |
| Village | : | Kalenahalli |
| Tehsil | : | Urdigere |
| District | : | Tumukuru |
| State | : | Karnataka |
| Land Holding | : | 1.6 ha |

## Adoption of Best Management Practices for improved yields of Dryland Crops

### Description of innovation/ adopted climate resilient practices

- Adoption of *in-situ* moisture conservation furrows between paired rows of pigeonpea, spaced 60 cm apart, improved crop yields.
- Application of Pulse Magic special nutrient mixture developed by UAS-Raichur and introduced by AICRPDA-Bangalore center enhanced crop productivity.
- Usage of bullock-drawn seed drill for sowing finger millet + pigeonpea (8:2) intercropping system and Hi-min animal mineral mixture for enhancing cow milk yield contributed to agricultural improvement.

### Process of innovation/ adoption

- The farmer intensified cropping with finger millet + pigeonpea (8:2) in 1.0 acre, sowed finger millet using a bullock-drawn seed drill in 1 acre, and applied Pulse Magic in pigeonpea in 0.5-acre. Additionally, groundnut + pigeonpea was cultivated (8:2) in 0.5 acre and improved groundnut variety (K-1812) in another 0.5 acre, while also growing tamarind trees.
- Yield improvement was achieved through improved technology, including *in-situ* moisture conservation practices, timely intercultural operations, and effective plant protection measures

### Practical utility of the innovation/adoption of technology

- The farmer achieved a net return of Rs. 85,861 from the crop component.
- Maintaining three milking cows and cultivating fodder sorghum (CoFS-32) in 0.10 acres and Napier grass (CO-5) in 0.15 acres for fodder resulted in an additional average of 2.0 liters of milk per day, leading to a net income of Rs. 1,03,871 from the dairy component.
- Profit of Rs. 3500 was earned from the kitchen garden, comprising bottle gourd, ridge gourd, cucumber, and beans, grown in the leftover area. Adoption of line sowing in finger millet using seed drill technology by 20 farmers across 10.6 acres indicates economic benefits and scalability.

## Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Smt. Peddigani Bhulakshmi** |
| Age | : | 45 years |
| Education | : | VII Standard |
| Address | : | |
| Village | : | Niluvurayi |
| Taluk | : | Singanamala |
| Mandal | : | Narpala |
| District | : | Ananthapuram |
| State | : | Andhra Pradesh |
| Land Holding | : | 1 ha |

## Mechanisation of Groundnut + Redgram 8:1 with Ananta Groundnut Intercropping Planter

### Description of innovation/ adopted climate resilient practices

- The farmer adopted Ananta Groundnut Intercropping Planter, developed at the AICRPDA Centre in Ananthapuram, to mechanize groundnut sowing. In 2015, it was converted into a nine-row model, with one row designated for red gram as an intercrop and the remaining eight rows for groundnut as the main crop.
- The planter utilizes an inclined disc plate seed metering mechanism and a spring tyne cultivator frame for effective seed distribution and soil cultivation, priced at Rs. 70,000/-.

### Process of innovation/ adoption

- Farmers utilized one hopper/seed tube of a groundnut seed drill to maintain a 7:1 or 15:1 row proportion when sowing red gram as an intercrop with groundnut.
- Efforts were made by farmers to ensure a uniform 7:1 or 15:1 row proportion at corners and field bunds.
- An 8:1 intercropping planter was designed and tested in farmer fields to achieve uniform main crop and intercrop row proportions throughout the field, with acceptance limited to small and medium farmers.

### Practical utility of the innovation/adoption of technology

- Sowing groundnut + red gram with the 8:1 groundnut + redgram intercropping planter resulted in a 7.1% yield improvement over farmer's practice with the Kisan planter.
- This approach saved 15 to 20 kg of seed, leading to higher mean groundnut equivalent yield (715 kg/ha), net returns (Rs. 33,985/ha), and a B: C ratio of 2.81.
- Conversely, using the local Kisan planter resulted in lower groundnut equivalent yield (668 kg/ha), net returns (Rs. 24,930/ha), and a B:C ratio of 1.93.

# Farmer Details

| | | |
|---|---|---|
| **Name** | : | **Sri Arvind Kumar Pandey** |
| Age | : | 51 years |
| Education | : | Graduate |
| Address | : | |
| Village | : | Patouna, (Po)Padara, |
| Taluka | : | Raipur Karchuliyan |
| District | : | Rewa, |
| State | : | Madhya Pradesh |
| Land Holding | : | 0.68 ha |

## Adoption of Climate Resilient Practices

### Description of innovation/ adopted climate resilient practices

- Farmer adopted climate-resilient practices such as summer deep ploughing, ridge and furrow system, and minimum tillage.
- Adopted improved crop varieties and implements integrated farming systems with crops and large ruminants.
- Established a vermicomposting unit and adopted agri-horticultural systems for sustainable yields, serving as a lead farmer to motivate others in adopting advanced agricultural production technologies.

### Process of innovation/ adoption

- Through training and field demonstration of NICRA project, adopted innovations such as vermicomposting, INM, soil testing, and agri-horticultural system.

### Practical utility of the innovation/adoption of technology

- The adoption of improved technologies led to a 20-25% increase in yield, translating to higher income for the farmer.
- With more than 50 farmers in the same village and neighboring villages adopted climate resilient practices, resulting in collective economic benefit through enhanced productivity and income generation

## Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri I. Deivaraj** |
| Age | : | 40 years |
| Education | : | BA Tamil |
| Address | : | |
| Village | : | Vadakkupatti, |
| Taluk | : | Kovilpatti |
| District | : | Thoothukudi |
| State | : | Tamilnadu |
| Land Holding | : | 2 ha |

## Adoption of Rainfed Integrated Farming System

### Description of innovation/ adopted climate resilient practices

- The farmer adopted high-yielding improved varieties including maize hybrid (COH(M)6), blackgram (VBN 8), greengram (CO 8) and cotton (Private hybrid.)
- Implemented nutrient management practices such as soil test-based fertilizer application for maize and application of recommended dose of fertilizer (RDF) in cotton, greengram, and blackgram.
- Implemented conservation agriculture techniques including residue incorporation with disc plough and land configuration methods such as ridges and furrows for cotton and maize, along with compartment bunding for pulses. Additionally, engaged in rearing two improved crossbreed Jersey cows as part of the livestock module, alongside implementing other health practices

### Process of innovation/ adoption

- Adopted improved dryland technologies under rainfed integrated farming system.
- Interventions implemented in crop, fodder, natural resource, livestock, and horticulture modules.
- Achieved an annual income of Rs. 1,51,500 and cost savings in field and livestock production through proper resource utilization and recycling.

### Practical utility of the innovation/adoption of technology

- Adoption of new crop varieties resulted in significant yield increases: 25% in maize, 66% in blackgram, 60% in green gram, and 100% in cotton.
- These yield improvements directly contributed to enhanced economic returns for the farmer within the crop module.

## Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Netrananda Pradhan** |
| Age | : | 32 years |
| Education | : | MCA |
| Address | : | |
| Village | : | Jamujhory, (PO) Dutipada |
| Taluk | : | Khajuripada |
| District | : | Kandhamal |
| State | : | Odisha |
| Land Holding | : | 1.2 ha |

## Adoption of Rainfed Integrated Farming System for Higher Returns

### Description of innovation/ adopted climate resilient practices

- Pre-Rainfed Integrated Farming System (RIFS), the farmer cultivated traditional crops in 4.5-acre plot.
- Post-RIFS implementation in 2019, the farmer adopted innovations such as drought-tolerant rice variety Sahabhagi, *in-situ* moisture conservation practices, improved crop varieties, and maize-based intercropping.
- Inspired by the program, the farmer constructed a farm pond in collaboration with watershed department to collect rainwater during the *kharif* season, supporting fish farming and irrigation. The pond housed Rohu, Catla, and Pomphret fish species

### Process of innovation/ adoption

- The farmer utilized the farm pond to cultivate 1.5 acres of rice, 0.5 acres of maize-based intercropping, and 2.0 acres of vegetables including brinjal, tomato, beans, cauliflower, and cabbage during the *kharif* season, and another 2.0 acres during *rabi*.
- Additionally, the farmer cultivated improved varieties of sunflower.
- Drought-tolerant rice varieties and intercropping were identified as more profitable and served as key drought coping strategies..

### Practical utility of the innovation/adoption of technology

- Despite a prolonged dry spell lasting up to 25 days, drought-tolerant rice varieties, maize-based intercropping systems, enhanced crop varieties, mushroom cultivation, fish farming, and poultry rearing yielded the highest benefit-cost ratio in both years.
- During both the *kharif* and *rabi* seasons, the farmer earned a net profit of approximately Rs. 2,50,000/- from his 4.5-acre plot.
- The farmer has become a role model in his village and neighbouring areas, with other farmers embracing the technology due to its cost-saving potential, leading to increased net returns

## Farmer Details

| | | |
|---|---|---|
| **Name** | : | **Sri Lakshaman Vithal Dhotre** |
| Age | : | 40 years |
| Education | : | SSC |
| Address | : | |
| Village | : | Ujalamba, (PO) Umari |
| Tehsil | : | Parbhani |
| District | : | Parbhani |
| State | : | Maharashtra |
| Land Holding | : | 1.8 ha |

## Adoption of Broad Bed Furrow method of sowing of Soybean Intercropping system

### Description of innovation/ adopted climate resilient practices

- Soybean cultivation commenced using a 5-row Broad Bed Furrow (BBF) planter facilitated by the AICRPDA, Parbhani center.
- The BBF methodology demonstrated proficient rainwater management, alongside reduced cultivation costs attributed to its lower seed rate.
- Adoption of BBF technology yielded superior crop output, culminating in a noteworthy 22% enhancement in net income.

### Process of innovation/ adoption

- The soybean (MAUS-162) +pigeon pea (BDN-716) in ratio of 4:2 sown by the farmer.
- This intercropping system proved beneficial for increasing the system productivity, conserving moisture and low density of weeds.

### Practical utility of the innovation/adoption of technology

- Adoption of soybean + pigeon pea (MAUS-162 + BDN-716) resulted in a 33.33% increase in productivity per hectare, leading to higher crop yields and increased revenue.
- Implementing conservation furrows contributed to an additional 25% moisture conservation, reducing the need for irrigation and saving on water costs, thereby enhancing the economic viability of the crop.

## Farmer Details

| | | |
|---|---|---|
| **Name** | : | **Sri Sarasat Kanhar** |
| Age | : | 38 years |
| Education | : | Undermatriculate |
| Address | : | |
| Village | : | Sesakera, Phulbani (PO) |
| Taluk | : | Tudipaju |
| District | : | Kandhamal |
| State | : | Odisha |
| Land Holding | : | 2.8 ha |

## Adoption of Crop Diversification as a Risk Minimizing Strategy for Drought Proofing

### Description of adopted dryland technology resilient practices

- Before the NICRA project, the farmer practiced sole cropping of local paddy, maize, and some vegetables during the *kharif* season, lacking irrigation facilities on his farm. After the NICRA project initiation, the farmer embraced innovations such as like drought-tolerant rice variety Sahabhagi, *in-situ* moisture conservation practices, improved crop varieties, and maize-based intercropping systems
- With the assistance of an irrigation pump, the farmer arranged irrigation from a nearby perennial stream, enhancing water availability and enabling more diverse cropping practices.

### Process of innovation/ adoption

- The farmer manages a 5-acre rainfed cultivating land, with 2.0 acres dedicated to rice cultivation (varieties: Sahabhagi, Naveen, and Lalat), 0.75 acres to a maize-based intercropping system, and 2.25 acres to vegetable cultivation during kharif season, reduced to 1.5 acres during *rabi* season.
- Within the NICRA project, the farmer implemented various measures, including the utilization of drought-tolerant rice variety Sahabhagi, intercropping systems, real-time contingency plans, improved crop varieties, *in-situ* rainwater conservation practices, intercultural operations, weed control, tillage practices, conversion of unbunded uplands to bunded uplands, and adoption of need-based plant protection measures.

### Practical utility of the adoption of technology

- Adoption of drought-tolerant rice variety, maize-based intercropping, and improved crop varieties proved highly profitable despite prolonged dry spells.
- The farmer earned approximately Rs. 1,30,000/- net profit from his 5-acre land during both *kharif* and *rabi* seasons.
- Crop diversification through intercropping serves as a vital risk-minimizing strategy for drought-prone areas, offering better returns compared to sole cropping, especially during delayed monsoon onset.

## Farmer Details

| | | |
|---|---|---|
| **Name** | : | **Sri Jwalsingh Solanki** |
| Age | : | 36 years |
| Education | : | XII Standard |
| Address | : | |
| Village | : | Nignoti, (PO) Panod |
| Taluk | : | Indore |
| District | : | Indore |
| State | : | Madhya Pradesh |
| Land Holding | : | 1.25 ha |

## Adoption of New Drought Tolerant Variety of Soyabean

### Description of innovation/adopted climate resilient practices

- Introduction of the new drought-tolerant soybean variety (JS 2034) from DARP, College of Agriculture, Indore, with maturity period of 80-85 days and a yield potential of 24-25 q/ha. This variety is resistant to yellow mosaic, charcoal rot, and bacterial blight. Furthermore, the implementation of Dora practice aids in moisture conservation and yield improvement.
- Implementation of *ex situ* moisture conservation through a farm pond, where rainwater is harvested. The farmer utilized this harvested water for cultivating rabi potato with drip irrigation, resulting in higher productivity.

### Process of innovation/ adoption

- Demonstrations and training programs to encourage adoption of dryland technologies for sustainable and higher yields.
- Farmer adopted dryland technologies based on demonstrations, including *in-situ* moisture conservation (Dora), nutrient management (WS NPK), and drought-tolerant soybean variety (JS 20-34).
- A farm pond was constructed for *ex situ* moisture conservation, enabling the use of harvested water for drip irrigation in potato and other crops.

### Practical utility of the adoption of technology

- Adoption of *in-situ* moisture conservation techniques and a drought-tolerant soybean variety resulted in a 20% increase in yield compared to traditional farming practices, leading to higher economic returns.
- During the *rabi* season, the farmer opted for potato cultivation instead of gram and irrigated the potato crop using drip irrigation, achieving a yield of 9000 kg per acre. This efficient irrigation method not only increased productivity but also resulted in significant water savings, translating into economic benefits.

## Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Mohan Patel** |
| Age | : | 48 years |
| Education | : | Illiterate |
| Address | : | |
| Village | : | Danti |
| Taluk | : | Kotawa Pandeypur |
| District | : | Mirjapur |
| State | : | Uttar Pradesh |
| Land Holding | : | 0.8 ha |

## Deep Summer Ploughing for Moisture Conservation and Higher Yield

### Description of adopted dryland technology resilient practices

- Deep summer ploughing: Using a two-bottom mouldboard plough in the off-season allows for pre-monsoon water gathering and soil preparation for the upcoming rains. This practice reduces weed biomass by 15-20% and enhances soil friability up to 15-20 cm deep, with an operation cost of Rs. 1200.0 ha-1.
- Ridge furrow planting of pigeon pea: Implementing ridge furrow planting of pigeon pea alongside rice in the furrow on uplands and medium lands minimizes the risk of waterlogging and boosts rice crop yield.

### Process of innovation/ adoption

- Summer tillage operation: Farmers use a two-bottom M.B. plough during May and June to till the land to a depth of 20-25cm. This service is available for custom hire.
- Weed infestation reduction: Summer tillage is preferred by *kharif* vegetable growers for its effectiveness in reducing weed infestation. The prepared field, involving ploughing, harrowing, and planking, is used for ridge formation.
- Ridge preparation: Tractor-drawn three-bottom ridgers are employed to prepare ridges, with a cost ranging from Rs. 1500-1800 per hectare. Paddy seeds are manually spread in the furrows following pigeon pea sowing.

### Practical utility of the adoption of technology:

- Soil turning pre-monsoon facilitates water gathering, weed control, and runoff reduction, resulting in a 10-12% yield increase and 10% lower cultivation costs.
- Economic impact: Farmers benefit from runoff modulation, risk reduction, and disruption of the pest cycle.
- Embraced by 80% of vegetable growers in Varanasi and Mirzapur, indicating its effectiveness and economic viability.

## Farmer Details

Name : **Sri AKashirayagouda Nilappagouda Biradar**

Age : 66 years

Education : B A

Address :

Village : Hegadihal

Taluk : Vijayapura

District : Vijayapura

State : Karnataka

Land Holding : 4 ha

## Adoption of Horticulture-Based Integrated Farming System

### Description of adopted dryland technology resilient practices

- Utilized feeder channels to divert runoff from a 5 km nala to open wells equipped with multi-layered filters comprising sand, boulders, and charcoal. The wells were replenished thrice annually, supplying water for drip irrigation of horticultural crops.
- Implemented various systems including Jamun-based agri-horti-silvi, Cluster apple-based agri-horti, and Tamarind-based agri-horti systems. Additionally, integrated livestock management, coconut border plantation, and the use of biodigesters and solar systems for well water pumping were adopted.

### Process of adoption

- Farmer actively participated in exposure visits to progressive farmers' fields and attends training programs organized by KVKs and agricultural departments.
- Adopted innovative practices such as summer ploughing, improved varieties, and horticulture-based integrated farming systems to enhance productivity and income.
- Implemented dryland technologies such as mulching, foliar sprays. supplemental irrigation to mitigate dry spell impacts and achieve higher yields.

### Practical utility of the adoption of technology

- Adoption of recharging open wells and integrated farming systems, including field crops, horticulture, and livestock, along with improved dryland technology, triples farmers' income compared to those solely focusing on crops.
- Recharging open wells with diverted nala water conserves water resources and increases water availability for crop cultivation, contributing to higher yields and income.
- This integrated approach not only optimizes land use but also enhances the sustainability and profitability of agricultural operations.

# AICRPAM

## Farmer Details

**Name : Sri Soilen Gogoi**

| | | |
|---|---|---|
| Age | : | 47 years |
| Education | : | ITI pass |
| Address | : | |
| Village | : | Baruahgaon |
| Taluk | : | Kothalguri |
| District | : | Golaghat |
| State | : | Assam |
| Land Holding | : | 2.1 ha |

## Adoption of Agromet advisories

### Description of innovation/ adopted climate resilient practices

- Previously cultivated indigenous paddy varieties such as Chokua Bora, Kola Joha, and Mashuri.
- Adopted high-yielding variety (HYV) Ranjit after receiving information and advisories from various sources including KVKs, State Agriculture Department, and AICRPAM-NICRA.
- Utilizes weather-based advisories from sources such as IMD, GKMS, AIR, or directly from NICRA before undertaking agricultural and allied operation

### Process of innovation/ adoption

- Delaying transplanting of paddy seedlings by at least 3 days after puddling to avoid delays in crop establishment.
- Prevents secondary root formation from upper nodes and rotting of primary roots, which typically prolongs the crop's maturity period.
- Ensures easier establishment of the crop and reduces the total growing period, minimizing exposure to lower temperature regimes during flowering and grain filling stages.

### Practical utility of the innovation/adoption of technology

- Implementing the above knowledge in regular operations reduces the total crop growing period by 10-12 days, resulting in significant savings on input costs such as labour, water, and fertilizers.
- Yields are enhanced by at least 80 kg per bigha of land, translating to increased revenue from crop sales.
- Other fellow farmers, cultivating over 2 hectares of land, have replicated the same practice and achieved similar results, indicating potential economic gains across a larger farming community.

## Farmer Details

**Name : Sri Ram Prakash**

Age : 52 years

Education : VIII Standard

Address :

Village : Ludhaura,

Block : Maitha

District : Kanpur Dehat

State : Uttar Pradesh

Land Holding : 1.5 ha

## Adoption of Weather Based Suitable Crop Cultivation and Livestock Management Practices

### Description of innovation/ adopted climate resilient practices

- The biweekly Agromet Advisory bulletin offers weather-based recommendations for optimal crop cultivation and livestock management practices.
- Project staff and FIF personnel engage in direct personal contact with selected farmers in the NICRA-Village, ensuring tailored communication for precise decision-making in agricultural operations.
- WhatsApp groups and text messages serve as effective channels for disseminating information, enabling farmers to make informed choices regarding suitable sowing times, irrigation practices, pesticide applications, and livestock management strategies based on current weather conditions.

### Process of innovation/ adoption

- The farmer implements timely plant protection measures and adjusts irrigation schedules based on accurate forecasts of rainfall.
- The farmer followed insecticide spraying practices in alignment with weather predictions, ensuring effective pest control.
- Additionally, the farmer follows weather-based animal advisories to provide balanced feed, aiming to optimize milk production from his livestock.

### Practical utility of the innovation/adoption of technology

- The farmer's living standards have improved through crop cultivation alongside dairy farming, managing eight buffalo and a cow. This diversification contributes an additional income of Rs. 20,000 per month or Rs. 2,40,000 per year.
- By integrating agromet advisory bulletins into his farming practices, input costs has significantly reduced while maximizing profit returns from crop cultivation.
- The adoption of timely agricultural decisions guided by weather forecasts has led to increased efficiency and resource utilization, resulting in enhanced economic outcomes for the farmer.

## Farmer Details

| | |
|---|---|
| **Name** | **: Sri Palwinder Singh** |
| Age | : 46 years |
| Education | : Post graduate |
| Address | : |
| Village | : Bauranga Zer |
| Block | : Fathegarh Sahib |
| District | : Fathegarh Sahib |
| State | : PUNJAB |
| Land Holding | : 7 ha |

## Adoption and Dissemination of Weather-Related Information for Crop Productivity

### Description of innovation/ adopted climate resilient practices

- A mini-agromet observatory equipped with a Stevenson screen housing maximum and minimum thermometers and a rain gauge was provided to the farmer.
- Utilizing the collected rainfall and temperature data, the farmer adjusts his farming operations accordingly, ensuring optimal productivity based on weather conditions.
- The farmer actively contributes to the Ludhiana center of the AICRPAM-NICRA project by supplying temperature and rainfall data. Additionally, Agro Advisory Services and practices sustainable farming methods such as proper seed treatment and abstaining from burning paddy straw for nearly 20 years was followed.

### Process of innovation/ adoption

- The farmer leads in sharing weather-related information with fellow farmers, inspiring others to adopt successful agricultural practices.
- The farmer participates in 10 WhatsApp groups with over 1000 members, distributing Agromet advisories received through the NICRA project.
- Collaborating with like-minded farmers, he facilitates access to implements such as Happy Seeder and DSR drills, using Google Maps to optimize their usage and reduce time and fuel costs.

### Practical utility of the innovation/adoption of technology

- The farmer adheres to Agricultural Advisory Services (AAS) recommendations, ensuring all farm practices align with current weather conditions for optimal economic outcomes.
- Implementing proper seed treatment techniques safeguards seeds against diseases, reducing the risk of crop loss and minimizing the need for costly interventions.
- By utilizing methods such as the Happy Seeder for wheat crop sowing and abstaining from burning paddy straw for almost two decades, the farmer demonstrates a sustainable approach that not only preserves the environment but also saves on potential expenses associated with alternative practices.

# Farmer Details

**Name** : **Smt. C. Meenakshi**
Age : 58 years
Education : X Standard
Address :
Village : Perumalpatti,
Block : Usilampatti
District : Madurai
State : Tamil Nadu
Land Holding : 4.0 ha

# Adoption of Agromet Advisories for Sustaining the Production of Crop and Livestock Components

## Description of innovation/ adopted climate resilient practices

- Adoption of Agromet advisory for sustainable dry land farming system, encompassing dairy, poultry, and goat rearing, reflects the farmer's commitment to informed and efficient agricultural practices.
- Following Agricultural Advisory Services (AAS) guidelines, the farmer implements operations such as summer ploughing, timely sowing, and the use of improved and resistant crop varieties, ensuring resilience and productivity in challenging dry land conditions.
- Weather-based timely actions, including fertilization, weeding, and plant protection measures, are meticulously executed, optimizing resource utilization and minimizing crop losses, ultimately leading to profitable yields.

## Process of innovation/ adoption

- Adoption of Agro met advisory for sustaining the livestock components *viz*., cow, poultry and goat.
- The farmer inspired other farmers to follow Agromet advisories systematically to achieve the benefits

## Practical utility of the innovation/adoption of technology

- The dissemination of technology, including improved varieties, hybrids, Bt crops, and rainwater harvesting practices, reached 25 farmers in the nearby area, fostering potential economic gains through enhanced productivity and resource management.
- Exposed farmers embraced the innovative technologies, committing to their adoption in the upcoming seasons, indicative of the economic viability and benefits associated with these advancements.
- Through inspiration and advocacy, the farmer encouraged other farmers to systematically follow Agromet advisories, highlighting the economic advantages of aligning agricultural practices with weather forecasts for improved yields and profitability.

## Farmer Details

| | |
|---|---|
| **Name** | **: Sri Siva Sankara Reddy Bhanumukkala** |
| Age | : 48 years |
| Education | : ITI(Polytechnic) |
| Address | : |
| Village | : Yagantipalli |
| Mandal | : Banaganapalle |
| District | : Nandyal |
| State | : Andhra Pradesh |
| Land Holding | : 4.8 ha |

## Introduction of Short Duration Millets in response to Weather-Based Advisories

### Description of innovation/ adopted climate resilient practices

- Weather-based advisories and introduction of foxtail millet-bengal gram cropping system as intercrops in redgram (5:1).

### Process of innovation/ adoption

- Traditionally, the vertisols of Nandyal district in Andhra Pradesh are left fallow during the *kharif* season, with Bengal gram being planted as a *rabi* crop to utilize residual soil moisture.
- With awareness of weather forecasts, particularly extended range predictions from NICRA-AICRPAM, Ananthapuramu, the farmer recognized the opportunity to utilize predicted July rainfall for crop cultivation rather than leaving the land fallow.
- Consequently, the farmer innovatively cultivated foxtail millet, a short-duration crop intercropped with red gram, a long-duration crop, in a 5:1 ratio. Harvesting the foxtail millet in September, Bengal gram was then sown in October on the same land.
- This innovative approach led to increased farm income and crop productivity, showcasing the economic benefits of strategic crop planning based on weather forecasts and land utilization.

### Practical utility of the innovation/adoption of technology

- By leveraging monsoon rains in July for foxtail millet cultivation and utilizing October-November rains for Bengal gram, the farmer achieved a higher farm income of Rs. 61,000 per acre.
- Enhanced productivity was evident with foxtail millet grain yield reaching 600 kg per acre, Bengal gram at 300 kg per acre, and red gram at 500 kg per acre, indicating the economic viability of the approach.
- The success of this innovative farming method led to approximately 40-50 farmers adopting the practice, covering around 100 acres collectively, underscoring its potential for widespread economic benefit and agricultural sustainability.

## Farmer Details

**Name : Sri Haider Ali Mondal**

Age : 65 years

Education : Secondary

Address :

Village : Sarati,

Taluk : Chakdah

District : Nadia

State : Andhra Pradesh

Land Holding : 1.2 ha

# Adoption of Agromet Advisories for Horticulture Crops

## Description of innovation/ adopted climate resilient practices

- Planted bottle gourd in ridges, utilizing scaffolding to protect the crop from flood-like conditions caused by heavy rainfall in the low-lying area.
- Utilized residual moisture post-monsoon to plant papaya in the ridges and sowed coriander in October, effectively maximizing land use and increasing farm income.

## Process of innovation/ adoption

- Maximum utilization of soil moisture by cultivating vegetables in ridges.

## Practical utility of the innovation/adoption of technology

- Utilized scaffolding to protect bottle gourd crop during floods, enabling the farmer to earn Rs. 40,000 compared to other farmers who suffered complete crop loss.
- Implemented paddy straw mulching to conserve soil moisture, facilitating crop survival and enhancing yield.
- Adoption of these practices by other farmers resulted in improved crop resilience and better moisture utilization, contributing to increased farm productivity and income

## Farmer Details

**Name : Sri Bidhi Chand**
Age : 62 years
Education : Middle
Address :
Village : Patlandar
Tehsil : Sujanpur
District : Hamirpur
State : Himachal Pradesh
Land Holding : 1 ha

# Mushroom Production as a Source of Livelihood

## Description of innovation/ adopted climate resilient practices

- Utilized available space to cultivate button mushrooms, selling them in the local market for profit.
- Due to the absence of irrigation sources for crop diversification in the area, farmer opted for this venture, which can be sustained using domestic water supply.

## Process of innovation/ adoption

- Due to limited land for crop cultivation, the farmer diversified into mushroom cultivation.
- Underwent training to acquire skills and knowledge in mushroom production.
- Utilized his old house to grow mushrooms, becoming the first in his area to undertake this venture, thereby supplementing his income through sales in the local market.

## Practical utility of the innovation/adoption of technology

- Generating Rs. 1,00,000 per season from mushroom cultivation.
- Providing part-time employment to three individuals in this endeavor.
- Inspiring other farmers in the locality to start mushroom cultivation to enhance their income, following his successful example.

# Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Subhash Bhagwan Bhosale** |
| Age | : | 48 years |
| Education | : | B.Sc (Ag) |
| Address | : | |
| Village | : | Boramani |
| Taluk | : | South Solapur |
| District | : | Solapur |
| State | : | Maharashtra |
| Land Holding | : | 5 ha |

## Adoption of Daily Weather Forecast for Scheduling Spraying

### Description of innovation/ adopted climate resilient practices

- Opting for *kharif* soybean instead of tur crop to achieve increased yield and income in dryland agriculture.
- Cultivating *rabi* safflower to attain higher yields and income in dryland agriculture.
- Adhering strictly to weather-based agro-advisories from AICRPAM Solapur Centre for all cultural practices in crops, including spraying schedules for grapes and providing protective irrigation during dry spells.

### Process of innovation/ adoption

- Cultivating grapes specifically for wine production rather than table grapes or other purposes.
- Entering into prior agreements with companies such as Grower Zampa in Bengaluru to sell grapes, ensuring a guaranteed income and avoiding post-harvest losses.
- Generating a steady income through grape cultivation by focusing on a high-value market segment and minimizing risks associated with post-harvest handling.

### Practical utility of the innovation/adoption of technology

- Weather-based spraying schedules save Rs. 10,000 per acre annually on fungicides and insecticides, optimizing chemical usage in grape crops.
- Adhering strictly to daily weather forecasts ensures timely and effective pest and disease management across all crops, reducing crop damage and input costs.
- Implementing measures such as organic waste recycling, use of improved crop varieties, and groundwater recharge leads to overall sustainability, minimizing chemical usage and enhancing soil health.

## Farmer Details

| | |
|---|---|
| **Name** | **: Sri Gadageppa Siddalingappa Hiredesai** |
| Age | : 40 years |
| Education | : Higher Secondary |
| Address | : |
| Village | : Ukumnal |
| Taluk | : Vijayapura |
| District | : Vijayapura |
| State | : Karnataka |
| Land Holding | : 12 ha |

## Impact of Weather-Based Advisories on Crop Management Practices

### Description of innovation/ adopted climate resilient practices

- Weather-based advisories from the AICPAM center have significantly impacted major crop management decisions, including crop selection, choice of crop varieties, optimal sowing times, fertilizer application rates, and disease and pest control measures.
- The farmer effectively utilized weather-based advisories to manage pests and diseases, resulting in minimized losses and reduced pesticide usage costs.
- These advisories helped in decisions regarding mono or mixed cropping systems, providing valuable precautions based on weather predictions for enhanced agricultural practices and outcomes.

### Process of innovation/ adoption

- Battery-operated nipping machine used in pigeon pea cultivation post-sowing, based on soil moisture and rainfall forecasts, reduces labour needs.
- Nipping enhances branch and pod development, increasing yield by 15%, with 35-40 farmers adopting the same approach.
- Tractor-operated top dressing of fertilizer and inter-cultivation techniques optimize agricultural efficiency and productivity.

### Practical utility of the innovation/adoption of technology

- Dissemination of weather-based management techniques among farmers led to a reduction in weather-related losses and increased income.
- Sharing knowledge enhanced understanding of weather patterns and their agricultural implications.
- Collaborative learning fostered a supportive community network among farmers.

## Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Lakshmi Narayana Chekka** |
| Age | : | 58 years |
| Education | : | VIII standard |
| Address | : | |
| Village | : | Rekulakunta |
| Mandal | : | Bukkarayasamudram |
| District | : | Ananthapuramu |
| State | : | Andhra Pradesh |
| Land Holding | : | 2 ha |

## Adoption of Agromet Advisories for Dryland Agriculture

### Description of innovation/ adopted climate resilient practices

- Weather-based advisories influenced sowing and spraying in vegetable crops.

### Process of innovation/ adoption

- To mitigate the adverse effects of higher air temperatures during banana plantation saplings in March, covering the transplanted saplings with newspapers in an east-west direction was employed, resulting in increased establishment percentage in the main field, as advised by Agro-met advisories.
- Groundnut crop sowing was advanced to the second fortnight of June, receiving 88 mm of rainfall, based on Agro-met advisories. Plant protection measures were implemented to control thrips during no-rainy days in the second and third weeks of July, as recommended.
- Following groundnut harvesting, short-duration finger millet crop was promptly grown, in alignment with Agro-met advisories for optimal crop management

### Practical utility of the innovation/adoption of technology

- Following Agro-met advisories, farmer achieved a grain yield of 1.9 t/acre, resulting in a gross return of Rs. 76,800/- per acre, with a favorable benefit-cost ratio of 2.4:1.
- Approximately 60 farmers implemented the recommended sowing and plant protection measures outlined in Agro advisories, covering a total area of 200 acres.

## Farmer Details

| | |
|---|---|
| **Name** | **: Sri Balavadra Prasad Pati** |
| Age | : 69 years |
| Education | : Graduation |
| Address | : |
| Village | : Sathilo, (PO) Balipatna, |
| Taluk | : Balipatna |
| District | : Khordha |
| State | : Odisha |
| Land Holding | : 1.8 ha |

## Adoption of Agromet Advisory Services for Natural Farming

### Description of innovation/ adopted climate resilient practices

- Cultivation of the land with natural farming using straw mulch, recycling of crop residues particularly green gram and black gram and use of local scented rice varieties.

### Process of innovation/ adoption

- Practising natural farming in the entire land area by recycling crop residues of pulses and FYM, mulching in plantation crops such as coconut and banana, cultivation of local scented rice (Kalanamak and Gedi Basumati) and its marketing.

### Practical utility of the innovation/adoption of technology

- Selling of organic local scented rice at a higher price (double the price of normal rice) and enhanced income.
- Promotion of natural farming in the locality.

## Farmer Details

| | | |
|---|---|---|
| **Name** | : | **Sri Ashok Baburao Salgode** |
| Age | : | 51 years |
| Education | : | B Sc (Ag) |
| Address | : | |
| Village | : | Parbhani |
| Taluk | : | Parbhani |
| District | : | Parbhani |
| State | : | Maharashtra |
| Land Holding | : | 9.5 ha |

## Weather Forecasts to enhance Climate Resilience of Rainfed Agriculture

### Description of innovation/ adopted climate resilient practices

- Adoption of climate-resilient technologies such as BBF method for soybean cultivation, aiding in soil moisture preservation and water drainage.
- Utilized mulching to reduce evaporation, maintain soil moisture, suppress weeds, and improve fruit quality.
- Employed $KNO_3$ spray and protective irrigation based on Agromet advisory, ensuring crop sustainability.
- A new sugarcane planting method with 5 ft spacing between plants was introduced, reducing seed costs. Drip fertigation was adopted, conserving water and fertilizer while boosting productivity on the same land.

### Process of innovation/ adoption

- Installed a standard rain gauge in 2019 to monitor daily precipitation, aiding in field operation planning.
- Implemented planting of *rabi* and kharif crops based on Agromet advice bulletin, particularly during weeks with 75-100 mm of rainfall.
- Adopted technological interventions such as planting soybeans using the BBF technique, guided by weather forecasts. Additionally, utilized satellite products provided by AMFU Parbhani for summer, *rabi*, and *kharif* crop management.

### Practical utility of the innovation/adoption of technology

- Utilization of five to ten-day weather forecasts enabled timely actions to sustain crop yields, including plant protection, $KNO_3$ spray application during dry spells, mulching to prevent evaporation losses, and covering orchard plants with green netting to alter microclimate and produce high-quality fruit with favorable market returns.
- Implementation of drip fertigation technology resulted in significant water and fertilizer savings, contributing to increased productivity on the same land area.
- Adoption of sugarcane planting at a five-feet spacing reduced seed costs, further enhancing productivity and economic returns from the land.

## Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Anand Kumar Thakur** |
| Age | : | 61 years |
| Education | : | Graduation |
| Address | : | |
| Village | : | Patsara |
| Block | : | Bandra |
| District | : | Muzaffarpur |
| State | : | Bihar |
| Land Holding | : | 6 ha |

# Use of Weather-Based Farm Practices as Risk Management Strategy

## Description of innovation/ adopted climate resilient practices

- Utilization of weather-based farm practices based on RPCAU, Pusa advisories aids in risk management.
- Adoption of climate-resilient pulses and barley cultivation enhances resilience to changing climate conditions.
- Implementation of water harvesting structures supports climate-resilient agriculture, while adopting technologies such as the rice-wheat system from Agromet Pusa improves crop protection and yield. Additionally, innovative techniques are utilized to protect crops from wild animals, shared in agricultural forums.

## Process of innovation/ adoption

- Adopted new innovation and technologies received from training and extension services of RPCAU, Pusa and BAU, Sabour, Bhagalpur
- Promoting weather-based advisories among the large number of farmers of several districts

## Practical utility of the innovation/adoption of technology

- Utilizing weather-based Agromet advisories resulted in a 20-25% increase in yield and income while also conserving water and reducing labour. Additionally, techniques such as pond technology and water harvesting structures were adopted for water and crop conservation.
- The farmer effectively disseminated these improved technologies to more than 100 farmers across the village and five districts of Bihar

## Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri JOY. P. M.** |
| Age | : | 54 years |
| Education | : | Graduate |
| Address | : | |
| Village | : | Mulayam |
| Block | : | Ollukkara |
| District | : | Thrissur |
| State | : | Kerala |
| Land Holding | : | 4 ha |

# Agromet Advisories Adoption Fosters Sustainable Agriculture

## Description of innovation/ adopted climate resilient practices

- Mixed farming practices have emerged in response to erratic rainfall patterns in Kerala, enhancing agricultural resilience.
- Plant protection measures for vegetables align with Agromet advisory bulletins, ensuring timely pest management.
- Utilizing trap crops as part of an ecological engineering strategy helps mitigate pest issues in vegetable agriculture, promoting sustainable farming practices. Additionally, the use of liquid fertilizers fosters crop growth and development.

## Process of innovation/ adoption

- In Nadathara, Thrissur, a leading farmer catalyzes innovation and adoption, serving as a change agent within the community.
- Over 50 farmers are empowered through the dissemination of Agromet advisory bulletins, enabling informed decision-making.
- Mixed farming gains prominence as a flexible approach to address challenges posed by extreme weather events, particularly erratic rainfall patterns.

## Practical utility of the innovation/adoption of technology

- The lead farmer in Nadathara Panchayath disseminates Agromet advisory bulletins to over 50 farmers, facilitating informed decision-making.
- Despite recurrent challenges such as floods and droughts, the adoption of mixed farming techniques proves economically beneficial.
- Utilization of liquid fertilizers significantly boosts crop growth, offering a resilient solution amid unpredictable weather conditions and increases their income. Additionally, implementing ecological engineering methods for pest protection, guided by Agromet advisory bulletins, reduces input costs and ensures sustainable agricultural practices.

# TDC- NICRA

Resource Conservation with Happy Seeder

Drip Irrigation System and IFS model for efficient farm management

Stall-Fed Goat Farming: A Climate Resilient Practice

Value Addition in Dairy Farming for Additional Income

Roof Water Harvesting for Fish Rearing

Zero-tillage and *Jalkund*: Climate Resilient Practices for additional Income

Paddy Row Marker Facilitates right Adoption of SRI Method

*In-situ* Water Conservation Practices bringing Smile to the Farmer

Adoption of Improved Varieties to Mitigate Climatic Stress

Integrating Crop, Livestock and Poultry enterprises for Sustainable Income

Water Harvesting measures for Increasing Yield

Fodder Production and Improved Sheltering to Combat Climate Risks in Cattle

Quality Jute with NINFET SATHI powder

Enhanced Income with the Introduction of Improved Breeds

Polyhouse Technology for Assured Market Price

Good Management Practices in Piggery

Water Harvesting Structures Ensures Life-saving Irrigation and better yield

Efficient Resource Use with *In-situ* and *Ex-situ* Water Conservation

Rainwater Harvesting to Harvest one more Crop Season

Stall-Fed Technology in Sheep Rearing: A Climate Resilient Practice

Improved Varieties to Combat the Climate Aberrations in Rice

Rainwater Harvesting for enhancing yield

*Jalkund*: A Climate Resilient Strategy for Water Management

Laser Levelling and Residue Management for soil quality management

Drone: An Emerging Technology for Agricultural Operations

Efficient Water Management through *Jalkund*

Innovative Technology to Overcome Frost Damage in Crops

Rain Hose Irrigation in Groundnut for more Yield

# Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Gurpreet Singh Sidhu** |
| Age | : | 36 years |
| Education | : | $10^{th}$ Standard |
| Address | : | |
| Village | : | Mehraj (Kothe Rathrian) |
| Taluk/Mandal | : | Rampura Phul |
| District | : | Bathinda |
| State | : | Punjab |
| Land Holding | : | 22 ha |

## Resource conservation with Happy Seeder

### Description of innovation/ adopted climate resilient practices

- Adopted resource conservation technique by sowing wheat with happy seeder. Burning of straw was prevented with incorporation of chopped paddy straw into soil.
- Modified the Zero till drill machine by spending Rs 12,000/- for sowing Direct Seeding Rice.
- Successfully running custom hiring centre.

### Process of innovation/ adoption

- The farmer purchased the chopper cum spreader in the year 2011 and started incorporating chopped paddy straw in the soil.
- In 2016 he saw the happy seeder working in KVK Bathinda and purchased it.
- After the harvest of paddy, with combiner fitted with super straw management system (SMS), he sowed the wheat with happy seeder in the standing stubbles of rice.

### Practical utility of the innovation/adoption of technology

- Only 6-7 litres of diesel is required for sowing wheat crop in one acre with happy seeder while 25-30 litres required for traditional method.
- No emergence of weeds especially *Phalaris minor*, *Chenopodium album* etc. which saved money, labour and time.
- Wheat sown with happy seeder in the standing stubbles of rice resulted in an increase in yield up to 2.5-5 q/ha. The paddy straw in the soil which increased the number of beneficial microorganisms which increased the soil fertility and organic carbon.
- In this method of sowing there is no need of pre-irrigation and sowing can be done directly in the field after harvesting of paddy.

## Farmer Details

**Name** : **Sri Ishaq Ali Khan**
Age : 40 years
Education : 10th Standard
Address :
Village : Bharu
Taluk/Mandal : Mandawa
District : Jhunjhunu
State : Rajasthan
Land Holding : 1.19 ha

## Drip Irrigation System and Integrated Farming Systems model for efficient farm management

### Description of innovation/ adopted climate resilient practices

- Installed drip irrigation system in 1.98 acres area for organic vegetable production and sprinkler system in 0.49 acres of land.
- Rain water harvesting was done through farm pond (size: 22 x 10 x 5.5 feet) for irrigation. Adopted Integrated Farming System (IFS) model with Vegetables + crops + goat + poultry + dairy unit.

### Process of innovation/ adoption

- After the implementation of TDC-NICRA in 2011 by KVK, Jhunjhunu the farmer has installed drip irrigation system.
- To fulfill the nutrient requirements of crops, the farmer also established goat, poultry and dairy units.
- Vermicompost, waste decomposer and FYM are used for organic farming. Bio-pesticides are prepared at home by using locally available flora.

### Practical utility of the innovation/adoption of technology

- The farmer could get better quality produce and save irrigation water through drip irrigation system.
- The adoption of different resource conservation technologies has assured efficient utilization of different farm resources as well as regular income through IFS model.
- He could also fetch remunerative market price for his produce.

## Farmer Details

| | |
|---|---|
| **Name** | **: Sri Bhullan Singh** |
| Age | : 50 years |
| Education | : Intermediate |
| Address | : |
| Village | : Umarchha |
| Taluk/Mandal | : Chayal |
| District | : Kaushambi |
| State | : Uttar Pradesh |
| Land Holding | : 1.72 ha |

## Stall-fed Goat farming: A Climate Resilient Practice

### Description of innovation/ adopted climate resilient practices

- Adopted stall-fed goat farming technology.
- Started rearing of improved goat breed.

### Process of innovation/ adoption

- The farmer gained the skill on stall fed technology for goat farming from KVK.
- He started rearing of goat breed - Barbari under NICRA project.

### Practical utility of the innovation/adoption of technology

- Earlier the farmer was rearing local breeds. He could not get profit from them due to low growth, low milk yield, low survivability of lambs and higher rate of parasitic infestation.
- With stall-fed technology, performance was better in terms of increased adaptability under drought condition, low parasitic infection and increased survivability of lambs. This has also provided additional income in terms of selling of goats.

## Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Smt. Bandana Kumari** |
| Age | : | 38 years |
| Education | : | B.A. (B.Ed.) |
| Address | : | |
| Village | : | Merha |
| Taluk/Mandal | : | Katoriya |
| District | : | Banka |
| State | : | Bihar |
| Land Holding | : | 1.6 ha |

## Value addition in Dairy Farming for Additional Income

### Description of innovation/ adopted climate resilient practices

- Adopted rain water harvesting technology.
- Adopted dairy farming, fodder production and kitchen garden.

### Process of innovation/ adoption

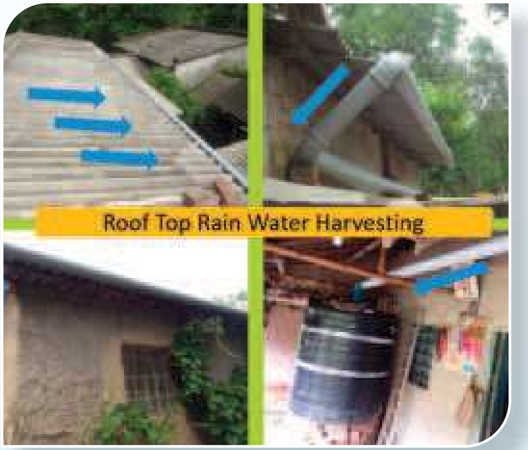
- The farmer was facing water scarcity from March-July which was affected both crop production and dairy farming.
- The rain water was harvested in the well and this helped to rear 10 dairy animals without facing water scarcity.
- The waste water from dairy was used for green fodder production and kitchen garden.

### Practical utility of the innovation/adoption of technology

- Produced 10 litre milk from dairy farming and earn Rs.250-300/day.
- Started value addition by paneer making and earned Rs.725-996/day. Net income from paneer making was Rs. 567 with extra income when the extract was marketed as chhas with Rs.429/-. She marketed the products through WhatsApp.
- Green fodder production in 1 acre land provided fodder throughout the year (Sorghum-CSV-33F). Kitchen garden was raised that provided green vegetables round the year.

## Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Gouranga Naskar** |
| Age | : | 38 years |
| Education | : | 10th Standard |
| Address | : | |
| Village | : | Bongheri |
| Taluk/Mandal | : | Chayal |
| District | : | South 24 Parganas |
| State | : | West Bengal |
| Land Holding | : | 0.67 ha |




## Roof Water Harvesting for Fish Rearing

### Description of innovation/ adopted climate resilient practices

- Adopted rainwater harvesting technology, flood tolerant paddy varieties along with vegetables throughout the year.
- Adopted climate resilient fishery and found the importance of Asian Catfish in combating the climatic vagaries unlike the common carps.

### Process of innovation/ adoption

- The farmer has attended training in breeding of catfish at KVK and established Asian Catfish hatchery at his home.
- Initially he failed due to non-availability of clean, fresh water for breeding and larval rearing. To address this, he has adopted an innovative approach with roof harvesting of rainwater, filtered and collected in a 1500 L capacity storage tank.

### Practical utility of the innovation/adoption of technology

- The storage tank was filled for three times during the rainy season that supported 3 breeding cycles of Asian catfish and Koi.
- The farmer produced 12000 Asian catfish and 12000 Koi fry and earned a net profit of Rs. 32,050/- within four months. In second year, the net profit rose to Rs. 60,550/-.
- The catfish breeding season was up to September. The last harvest of rainwater was sufficient for cooking till the end of December thereby the women members need not to go far distances for collecting water for cooking.

## Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Ram Bahadur Chettri** |
| Age | : | 78 years |
| Education | : | $3^{rd}$ Standard |
| Address | : | |
| Village | : | Lower Nandok |
| Taluk/Mandal | : | Nandok |
| District | : | East Sikkim |
| State | : | Sikkim |
| Land Holding | : | 0.94 ha |

## Zero-tillage and *Jalkund*: Climate Resilient Practices for Additional Income

### Description of innovation/ adopted climate resilient practices

- The farmer adopted zero-tillage technology.
- Constructed rain water harvesting structure ie) *jalkund* with a capacity of 30,000L under TDC-NICRA. The irrigation was done through sprinkler system from *jalkund*.
- HYVs of vegetables like cabbage (Rare Ball), cauliflower (White Excel) and Broccoli (Green Magic) were cultivated after rice/ maize harvesting.

### Process of innovation/ adoption

- Mono cropping was practiced by the farmer. After NICRA interventions, garden pea was sown just after the harvest of rice under zero-tillage.

### Practical utility of the innovation/adoption of technology

- Residual soil moisture was utilized for garden pea cultivation through zero-tillage.
- Garden pea cultivation enhanced the soil organic carbon by 2-4% after 3 years and improved the soil fertility status.
- Net return was Rs.54,036/acre with benefit cost ratio of 2.72 under rice-garden pea.
- The system assured additional income and increased cropping intensity (118%).

## Farmer Details

**Name** : **Sri Charan Debbarma**

Age : 67 years

Education : 5th Standard

Address :

Village : North Pulinpur ADC

Taluk/Mandal : Duski

District : Khowai

State : Tripura

Land Holding : 0.79 ha


## Paddy Row marker facilitates right adoption of SRI method

### Description of innovation/ adopted climate resilient practices

- Adopted mulching with paddy straw in bitter gourd.
- Developed a wooden device which helped in marking of land at 25x25 cm that facilitated the adoption of SRI (System of Rice Intensification).

### Process of innovation/ adoption

- The village is drought-prone that suffers from seasonal moisture stress hence, farmers could not grow any crop during the winter season. The farmer has introduced paddy straw mulching in bitter gourd with critical input support from KVK, Khowai.
- The farmer was facing difficulty for properly marking of paddy land before transplanting in the main field. To overcome this, he has developed the wooden marker which helped in proper transplanting of 2-leaf staged paddy seedling at a spacing of 25x25 cm.

### Practical utility of the innovation/adoption of technology

- Straw mulching helped to conserve soil moisture, maintaining soil temperature, control weed population and easy trailing of the bitter gourd vines on the ground.
- Mulching in bitter gourd has given a net return of Rs.2,53,600/- with a benefit cost ratio of 2.78.
- The planting paddy seedlings at a wider spacing help in better growth and spread of roots, more aeration in soil resulting in profuse growth of diverse soil microorganisms. This has resulted into a net return of Rs. 64320/- with a benefit cost ratio of 2.26.
- This innovative idea was also adopted by other farmers in the village and thereby adoption of SRI technology in a large scale.

## Farmer Details

**Name** : **Sri Sunil Baban Jagtap**

Age : 44 years

Education : B.A.

Address :

Village : Jalgaon Supe

Taluk/Mandal : Baramati

District : East Sikkim

State : Pune

Land Holding : 3 ha

## *In-situ* Water Conservation Practices bringing smile to the farmer

### Description of innovation/ adopted climate resilient practices

- *In-situ* water harvesting with compartment bunding, broad bed furrow, ridge and furrow method of planting.
- Adopted silage making initially through pit method and improved red gram variety BDN-711.

### Process of innovation/ adoption

- KVK, Baramati implemented NICRA project in 2011 and demonstrated various technologies such as silage making technology, drought tolerant varieties etc.
- *In-situ* moisture conservation though compartment bunding and cultivated sorghum varieties.

### Practical utility of the innovation/adoption of technology

- *In-situ* moisture conservation helped in increased grain yield and dry sorghum stubbles were used for silage making instead of green fodder in the summer.
- Increased the milk yield by 10% and the farmer got an additional income of Rs. 41,000/-
- Adoption of BDN-711 variety of red gram recorded double yields over the local variety.

# Farmer Details

**Name** **:Sri Darbari Lal Saket**
Age : 37 years
Education : $10^{th}$ Standard
Address :
Village : Motwa
Taluk/Mandal : Nandok
District : Satna
State : Madhya Pradesh
Land Holding : 2.4 ha

## Adoption of Improved Varieties to Mitigate Climatic stress

### Description of innovation/ adopted climate resilient practices

- Adopted drought tolerant varieties of Paddy (Sahahagi), Sesame short duration varirty (JTS-08), Blackgram (IPU 94-1), Pigeonpea (TT-401), Wheat (JW-3020), Barley (JB-1), Mustard (Pusa tarak) & Chickpea (JG-14).

### Process of innovation/ adoption

- Earlier the farmer was facing crop failure due to dry spell at the reproductive stage of the crop.

### Practical utility of the innovation/adoption of technology

- Adoption of drought tolerant and short duration varieties helped the farmer to overcome dry spell during the reproductive stage of the crop and thereby crop failure.

# Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Smt. S. Amutha** |
| Age | : | 42 years |
| Education | : | Nil |
| Address | : | |
| Village | : | Jambumadai |
| Taluk/Mandal | : | Mohanur |
| District | : | Namakkal |
| State | : | Tamil Nadu |
| Land Holding | : | 2 ha |

## Integrating Crop, Livestock and Poultry Enterprises for Sustainable Income

### Description of innovation/ adopted climate resilient practices

- Adopted a bunch of climate resilient practices such as micro irrigation techniques by rain hose irrigation, regular summer ploughing and compartmental bunding for *in-situ* moisture conservation
- Improved shelter with the installation of fogger in dairy shed to prevent the heat stress for animals, cultivation of drought tolerant fodder CoFS 29 and silage making.

### Process of innovation/ adoption

- Adoption of *in-situ* moisture conservation helped to increase the soil moisture and obtain higher yields by withstanding the dry spells.
- By installing rain hose, cultivated onion and groundnut using minimal water.

### Practical utility of the innovation/adoption of technology

- Reduced the usage of water by micro irrigation system.
- Effectively integrated dairy, goat and poultry enterprise with agriculture with a net income of Rs.4.69 lakhs/annum.
- Installation of fogger reduced the shed temperature by 4-5$^{0}$C.
- Multi-cut fodder variety helped in silage making and feed @ 7-10kg/day/milch animal in lean season for 30-45days. This helped to reduce the feed cost during dry season by purchasing green and dry fodder from outside.

## Farmer Details

| | | |
|---|---|---|
| **Name** | : | **Sri Basavaraja T.S.** |
| Age | : | 44 years |
| Education | : | PUC |
| Address | : | |
| Village | : | Siddanuru |
| Taluk/Mandal | : | Davangere |
| District | : | Davangere |
| State | : | Karnataka |
| Land Holding | : | 4 ha |

# Water Harvesting Measures for Increasing Yield

## Description of innovation/ adopted climate resilient practices

- Adopted *in-situ* water harvesting such as mulching with stubbles and mulching sheet for water melon, *ex-situ* water harvesting such as farm pond, trench-cum-bunds and planting of agro-forestry saplings all along the bunds
- Adopted improved varieties like BRG- 5, 2 in red gram, ML-365 in ragi, CoFS-31, 29 in fodder crops and also adopted staking and training in pomegranate.

## Process of innovation/ adoption

- During the summer season trenches were filled with agricultural waste materials and allowed to decompose in the trenches. The rain water harvested in these trenches was used for irrigating the saplings planted on the bunds.
- The fast-growing plants like Melia dubia, Fruit crops, Pongamia, Silver oak planted on these bunds.

## Practical utility of the innovation/adoption of technology

- Farm pond has assured critical irrigation for the maize crop and resulted into a net return of Rs.70,300/- with benefit-cost ratio of 2.53.
- Staking in pomegranate has saved Rs.80,100/- for 1000 plants by reducing the cost on staking.

# Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Rajendra Patel** |
| Age | : | 27 years |
| Education | : | Intermediate |
| Address | : | |
| Village | : | Lunawas Khara |
| Taluk/Mandal | : | Dhawa |
| District | : | Jodhpur |
| State | : | Rajasthan |
| Land Holding | : | 2 ha |

## Fodder Production and Improved Sheltering to Combat Climate Risks in Cattle

### Description of innovation/ adopted climate resilient practices

- Adopted short duration and drought tolerant high yielding varieties of sorghum (HHB-67, MPMH-17) and mung bean (IPM 02-3, IPM 205-7).
- Constructed low-cost model of E-W direction scientific housing with asbestos sheet and *Kheenp (Leptadenia pyrotechnica)* thatching underneath the roof.
- He has also cultivated Azolla.

### Process of innovation/ adoption

- The farmer had undergone training programmes organized by KVK, ICAR CAZRI, Jodhpur and other national agencies.
- Used the locally available natural resources like use of *Kheenp (Leptadenia pyrotechnica)* for the roof of cattle housing. This technology helps to control temperature in cattle housing system.

### Practical utility of the innovation/adoption of technology

- Adoption of improved drought tolerant variety helped to increase the income by Rs.16,000-18,000/annum with higher fodder production of 30-40% and 20-30% in sorghum and mung bean respectively.
- Improved housing protects the animals from heat and cold stress and reduced mortality rate by controlling enteritis and pneumonia, increased reproductive performance, hygienic milk production and low incidence of mastitis.
- Feeding of 1.5- 2.0 kg Azolla per buffalo helped to increase 8-10% milk production and reduction of inter calving period by 2-3 months. With this the farmer got an income of Rs. 3000-4000/- per large animal.
- He had an extra income of Rs. 5,000-6,000/- through sale of Azolla and vermicomposting.

## Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Sukumar Mandal** |
| Age | : | 58 years |
| Education | : | 1st Standard |
| Address | : | |
| Village | : | Paschim Narayanpur |
| Taluk/Mandal | : | Manikchak |
| District | : | Malda |
| State | : | West Bengal |
| Land Holding | : | 2.8 ha |

## Quality Jute with NINFET SATHI Powder

### Description of innovation/ adopted climate resilient practices

- Adopted Modern Jute Retting Technology-A cost effective and farmer friendly practice.

### Process of innovation/ adoption

- The farmer cultivates jute crop every year in about 2 acres of land. Due to the poor quality of jute fibre through traditional retting method his return was very low.
- To overcome this, Malda KVK demonstrated "NINFET SATHI Powder" which is cost effective.

### Practical utility of the innovation/adoption of technology

- NINFET SATHI powder is very efficient method of jute fibre retting with improved fibre quality, strength and fitness. About 5 kg of 'NINFET SATHI Powder' is required for retting of one acre jute.
- NINFET SATHI powder gives golden colour jute that can be compared with high quality Bangladesh jute.
- The average cost is Rs. 500-600 per acre for retting with 'NINFET SATHI Powder'. Through this modern technique the farmer's average profit increased by about Rs.4500-6000 per acre.

## Farmer Details

| | | |
|---|---|---|
| **Name** | : | **Sri Asharam Yadav** |
| Age | : | 52 years |
| Education | : | 5th standard |
| Address | : | |
| Village | : | Kanti |
| Taluk/Mandal | : | Tikamgarh |
| District | : | Tikamgarh |
| State | : | Madhya Pradesh |
| Land Holding | : | 2 ha |

किसान कल्याण तथा कृषि विकास विभाग, मध्य प्रदेश

# Enhanced Income with the Introduction of Improved Breeds

## Description of innovation/ adopted climate resilient practices

- Started rearing Murrha breed after TDC-NICRA interventions.
- Adopted new and improved varieties of soybean, black gram, sesame, wheat, mustard and chickpea with BBF, ridge and furrow method of sowing.

## Process of innovation/ adoption

- The breed improvement was done through convergence with animal husbandry department for breed upgradation of buffaloes in the village.
- District Dept. provided Bull buffaloes breed which has higher temperature tolerance, greater disease challenge, reduced heat stress etc. Now it is providing Bull service to buffaloes of many other adjacent farmers.

## Practical utility of the innovation/adoption of technology

- Murrah in Buffaloes, Sahiwal and Gir in cow breeds were having adaptation in Bundelkhand climatic situation. Increase in milk yield leading to opening of a milk collection centre in the village.
- Murrah buffalo bull serviced about 300 female buffalo in 2 years and 175 farmers benefited from 25 adjacent villages.
- Adoption of new and improved varieties gave more returns than traditional varieties.

# Farmer Details

**Name** : **SriA Subhash Vitthal Gadage**

Age : 45 years

Education : $10^{th}$ Standard

Address :

Village : Pimpri Lokai

Taluk/Mandal : Rahata

District : Ahmednagar

State : Maharashtra

Land Holding : 2.4 ha

# Polyhouse Technology for Assured Market Price

## Description of innovation/ adopted climate resilient practices

- Adopted protective cultivation with polyhouse
- Used acetyl stearyl fatty acid alcoholic emulsion as water evaporation retardant in farm pond.

## Process of innovation/ adoption

- Major climatic vulnerability of district is drought. To address this, constructed plastic lined farm pond of 3000 sq.mt. with drip system and started cultivation of short duration vegetables and used plastic mulching in open cultivated vegetables such as like tomato, cucumber and water melon.
- Erected 3000 sq.mt. polyhouse in June 2016 and cultivated crops such as colour capsicum, marigold, and cucumber. Established polyhouse growers' group for marketing by identifying marketing linkages at Mumbai and Nashik.

## Practical utility of the innovation/adoption of technology

- Irrigation water requirement is comparatively very less in polyhouse than open field crops.
- Group formation and well-established market linkages at metro cities, gave an average earning of Rs. 9-11 lakhs from 3000 sq. mt polyhouse.
- Water evaporation retardant is, non-toxic and biodegradable forming mono molecular layer and minimized the evaporation losses by 22-25%.
- It saves 4.5 lakh litres of water in 3000 sq. mt. farm pond and Rs. 50,000-60,000/- on water purchase during summer.

## Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Smt. Suhagini Marandi** |
| Age | : | 33 years |
| Education | : | 8th Standard |
| Address | : | |
| Village | : | Gauripur |
| Taluk/Mandal | : | Pauriahaat |
| District | : | Godda |
| State | : | Jharkhand |
| Land Holding | : | 1.2 ha |

## Good Management Practices in Piggery

### Description of innovation/ adopted climate resilient practices

- Adopted turmeric (var. Rajendra Sonia) based multilayer vegetable cropping system with bitter gourd and improved piggery production.

### Process of innovation/ adoption

- Demonstration of turmeric and bitter gourd at GVT- KVK, Godda motivated the farmer to replicate the model. Planting material of turmeric variety Rajendra Sonia and improved variety of bitter gourd was obtained from KVK under NICRA project.
- A *machan* like structure was erected with the help of bamboo, wire and threads over 6.5 feet height from the ground level over the main crop i.e. turmeric to spread the vines of bitter gourd.
- Earlier local breed of pig was reared with less income due to more diseases. Under NICRA project, awareness was created on feed management, housing management and disease management.
- Pig breed *Jharsuk* was provided.

### Practical utility of the innovation/adoption of technology

- Multilayer vegetable cropping ensures efficient utilization of inputs like land, fertilizer and water with more crop intensification.
- On an average 32 quintal turmeric and 59.2 quintal bitter gourd yield/acre was recorded.
- From piggery, the farmer could get a net income of Rs. 2000/pig from selling after attaining the weight of 40-42 kg.

# Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Smt. Kala Devi** |
| Age | : | 51 years |
| Education | : | Primary |
| Address | : | |
| Village | : | Choel |
| Taluk/Mandal | : | Kullu |
| District | : | Kullu |
| State | : | Himachal Pradesh |
| Land Holding | : | 0.64 ha |

## Water Harvesting Structure Ensures Life-Saving Irrigation and Better yield

### Description of innovation/ adopted climate resilient practices

- Constructed water storage tank
- Adopted crop diversification of cereals with high value cash crops such as tomato and cauliflower in k*harif* and garlic and pea in *rabi* season.

### Process of innovation/ adoption

- One community water storage tank was constructed in 2014 having 110 $m^3$ storage capacity under NICRA project.
- Inspired from this, water harvesting tank constructed, under Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) and micro irrigation system was also installed.
- Earlier farmers were growing only cereal crops i.e. maize and wheat due to erratic rainfall and dry spells.

### Practical utility of the innovation/adoption of technology

- The stored water in the tanks was utilized for life-saving irrigation at different stages during the dry spells.
- In tomato crop 4-5 life-saving irrigations and during *rabi* season in garlic and peas 3-4 were given through sprinkler method.
- The net returns and benefit cost ratio enhanced to Rs. 2,30,240/- and 3.38 from Rs. 97,450/- and 2.49 after the intervention.

# Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Shivaji Limbaji Jadhav** |
| Age | : | 58 years |
| Education | : | SSC |
| Address | : | |
| Village | : | Itta |
| Taluk/Mandal | : | Renapur |
| District | : | Latur |
| State | : | Maharashtra |
| Land Holding | : | 1.9 ha |

# Efficient Resource Use with *In-situ* and *Ex-situ* Water Conservation

## Description of innovation/ adopted climate resilient practices

- Adopted improved variety of soybean (KDS-726) and chickpea (Phule Vikram) by using BBF five rows technology during *kharif* and *rabi.*
- Adopted *ex-situ* water conservation by bore well recharge.
- Adopted drone technology for spraying of crops.

## Process of innovation/ adoption

- KVK conducted the farmer meeting in *pre-kharif* season and provided the information on improved varieties and improved production techniques.

### Practical utility of the innovation/adoption of technology

- The BBF technology has many advantages including *in-situ* conservation of rain water in furrow, better drainage of excess water and proper aeration in the seed bed to the root zone.
- BBF technology increased B:C ratio of 1.73. It reduces seed rate and 50% time saving for sowing over conventional method.

## Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Prakash Munia** |
| Age | : | 42 years |
| Education | : | 8th Standard |
| Address | : | |
| Village | : | Parwalia |
| Taluk/Mandal | : | Thandla |
| District | : | Jhabua |
| State | : | Madhya Pradesh |
| Land Holding | : | 3.2 ha |

## Rainwater harvesting to harvest one more crop season

### Description of innovation/ adopted climate resilient practices

- Adopting drip irrigation, ridge and furrow, summer deep ploughing and intercropping system with maize and cotton
- Upgraded to improved breeds of Barbari and Sirohi goats and using improved housing for Kadaknath as well as goat.

### Process of innovation/ adoption

- Earlier the farmer used to take maize, wheat and limited vegetable crops and during off season migrated to Gujrat for jobs.
- After initiation of NICRA project, well equipped with latest technologies of agriculture and animal husbandry practices.

### Practical utility of the innovation/adoption of technology

- Adoption of drip irrigation for vegetable and fruit crops with the help of harvested rain water helped to grow crops in *rabi* seasons also.
- Intercropping system with maize and cotton ensured additional income and increased crop intensification.

## Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Ramu Pucchakayala** |
| Age | : | 42 years |
| Education | : | SSC |
| Address | : | |
| Village | : | Peravali |
| Taluk/Mandal | : | Singanamala |
| District | : | Anantapuram |
| State | : | Andhra Pradesh |
| Land Holding | : | 11.9 ha |

# Stall-Fed Technology in Sheep Rearing: A Climate Resilient Practice

## Description of innovation/ adopted climate resilient practices

- Established a sheep unit after NICRA interventions with stall-feeding technique
- Involved in seed production activities of KVK Reddipalli under seed hub project.
- Having two open wells and a check dam for harvesting the rain water.
- The farmer is cultivating the horticultural crops completely through organic methods in which he is using the waste decomposer and fish emulsion.

## Process of innovation/ adoption

- In the year 2015, the farmer has undergone an exposure visit to Sri Venkateswara Veterinary University, Tirupati where he got attracted to sheep farming.
- Started sheep unit with the initial investment of Rs. 9 lakhs with 200 sheep and within 3 years it rose to 800. The farmer sells the sheep after it attains 30 kgs. Among the sheep, the major breed is Nellore.
- Maintaining 978 sheep/goat and 100 poultry birds at his farm.

## Practical utility of the innovation/adoption of technology

- Diversification with alternative income generating activities along with agriculture improved the profitability on an average, with a net return of Rs.10 lakh.
- Recently constructed two storied sheep cum poultry unit where the sheep manure can be collected easily and the insects or flies affecting will be utilized by birds and management of the birds and sheep can be maintained easily.

## Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Sanjay Chaudhary** |
| Age | : | 41 years |
| Education | : | Intermediate |
| Address | : | |
| Village | : | Kukurha |
| Taluk/Mandal | : | Itahri |
| District | : | Buxar |
| State | : | Bihar |
| Land Holding | : | 4.8 ha |

## Improved Varieties to Combat the Climate Aberrations in Rice

### Description of innovation/ adopted climate resilient practices

- Adopted drought tolerant paddy variety ie) Sahbhagi dhan and zero tillage drill sowing of wheat after paddy.

### Process of innovation/ adoption

- Mostly farmers of the village were growing long duration and semi-medium duration varieties that faced 35 to 45% reduction in yield due to dry spells since 2012-13 to 2019-2020.
- KVK, Buxar demonstrated stress/ drought tolerant and short duration (110-115 days) var. Sahbhagi Dhan and given front line demonstration on zero tillage for early sowing of wheat to avoid terminal heat stress in adopted village and adjoining areas in 2012.

### Practical utility of the innovation/adoption of technology

- Resulted a gross return and benefit cost ratio of Rs.59,675/- per ha and 2.49 respectively from the adoption of drought tolerant paddy variety.
- Adoption of zero tillage technology with high yielding wheat varieties gave increased productivity up to 12% and a cost saving of input by 16%.

## Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Keshava Reddy RK** |
| Age | : | 54 years |
| Education | : | 2nd PUC |
| Address | : | |
| Village | : | S. Raguttahalli |
| Taluk | : | Chinthamani |
| District | : | Chikkaballapura |
| State | : | Karnataka |
| Land Holding | : | 7.2 ha |

## Rainwater Harvesting for Enhancing Yield

### Description of innovation/ adopted climate resilient practices

- Two percolation ponds were constructed with a storage capacity of about 1220 $M^3$ and created trench-cum-bunds in 2 ha area which is about 620 $M^3$ capacity.

### Process of innovation/ adoption

- Under NICRA project, initiated conserving water by planting trees on community land, utilizing MGNREGA scheme to build trenches, nala bunds, percolation tanks, check dams and adopting drip irrigation.
- Replaced cultivation of water consuming crops like paddy with onion and tomato. Further, *in-situ* green manuring with horsegram, sunhemp was introduced in mango and cashew orchards to improve the soil fertility.

### Practical utility of the innovation/adoption of technology

- The percolation ponds, nala bunds, trench-cum-bunds helped the farmer for water efficient cropping pattern viz. finger millet varieties ML-365 and KMR-630, pigeon pea varieties BRG-2, BRG-4 and BRG-5 and pigeon pea as intercrop in groundnut and foxtail millet.
- The farmer got a substantial increase in profit from same area of land by adopting these innovative technologies.

# Farmer Details

**Name** : **Sri Lalnunzira**
Age : 42 years
Education : B.A.
Address :
Village : Chawnhu
Taluk/Mandal : Lawngtlai
District : Lawngtlai
State : Mizoram
Land Holding : 1 ha

## *Jalkund*: A Climate Resilient Strategy for Water Management

### Description of innovation/ adopted climate resilient practices

- Adopted a low-cost water harvesting structure ie) *Jalkund*
- Established a vermicomposting unit

### Process of innovation/ adoption

- Constructed *Jalkund* with a size of 5 x 4 x 1.5 m and capacity of 30,000 L.
- Low-cost vermicomposting unit was provided along with red wigglers (*Eisinia foetida*) to generate nutrient-rich compost by using alternating layers of biomass/crop residues and cow dung slurry.

### Practical utility of the innovation/adoption of technology

- Water harvested in *jalkund*, has assured irrigation for *rabi* crops with 3 critical irrigations, yielding 927 kg of tomato from an area of 0.5 ha. Resulted a net return of Rs.40,095/- with BCR of 3.58.
- The farmer has generated a total of 2.8 q of vermicompost and sold at a rate of Rs.50/kg. He earned a net income of Rs.13,600/- with BCR 2.8.

# Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Roshan Lal Maurya** |
| Age | : | 55 years |
| Education | : | Intermediate |
| Address | : | |
| Village | : | Chhachhamau |
| Taluk/Mandal | : | Kalakankar |
| District | : | Pratapgarh |
| State | : | Uttar Pradesh |
| Land Holding | : | 2.4 ha |

## Laser Levelling and Residue Management for Soil quality Management

### Description of innovation/ adopted climate resilient practices

- Adopted laser levelling and residue management to improve the soil quality.

### Process of innovation/ adoption

- The area was salt affected and only one crop paddy was taken by the farmer which had low productivity
- Introduced laser levelling and residue management along with salt tolerant variety of paddy, wheat, mustard and chick pea.
- Initially the field was levelled with laser guided leveler. The paddy straw was spread and water was kept for 30 days. During *kharif* season paddy variety CSR-36 was transplanted. After the harvest of paddy KRL-210/Mustard (Var. CS-58), /Chick pea (var. Karnal chana-1) was sown.

### Practical utility of the innovation/adoption of technology

- Paddy-fallow area was around 52-60 ha which has been converted into paddy-wheat/paddy-mustard/chickpea
- Gave an additional income of Rs.31,000/ha and created around 40-50 man-days in a year.

# Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Shankar Naskar** |
| Age | : | 36 years |
| Education | : | $10^{th}$ Standard |
| Address | : | |
| Village | : | Kaikhali |
| Taluk/Mandal | : | Kultali |
| District | : | South 24 Parganas |
| State | : | West Bengal |
| Land Holding | : | 0.46 ha |

# Drone: An Emerging Technology for Agricultural Operations

## Description of innovation/ adopted climate resilient practices

- Adopted several climate resilient technologies like rainwater harvesting through land shaping and use of stress tolerant varieties
- Diversified farming with fishery and livestock farming
- Used drone for spraying in green gram field

## Process of innovation/ adoption

- Least care is taken in greengram crop as most of the labourers migrate to cities after harvesting of paddy
- To address this, use of Kisan Drone for foliar application of neem oil (Azadirachtin) was done

## Practical utility of the innovation/adoption of technology

- The application of Kisan Drone can play an important role in saving of time and labour, uniform application of agro-chemical and coverage of large area
- Around 400 ml Azadirachtin was sprayed with 10 L water in one acre within 8 minutes. To cover the same area with manual spraying, it would require 5-6 hrs
- It was possible to spray 30 acres of green gram plots with the help of one Kisan Drone in one day

# Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Dhiren Subba** |
| Age | : | 32 years |
| Education | : | Intermediate |
| Address | : | |
| Village | : | Rabitar |
| Block | : | Sumbuk |
| District | : | Namchi South |
| State | : | Sikkim |
| Land Holding | : | 0.12 ha |

## Efficient Water Management through *Jalkund*

### Description of innovation/ adopted climate resilient practices

- Adopted *jalkund* for rainwater harvesting
- Constructed polyhouse for nursery raising

### Process of innovation/ adoption

- The farmer was unable to produce *rabi* crops due to non-availability of water
- Plastic for the construction of *jalkund* was distributed to 10 selected farmers of the village under NICRA

### Practical utility of the innovation/adoption of technology

- After the construction of *jalkund*, the farmer is able to produce off-season vegetables crops and average yield of tomato was 700-720kg.
- Annual income is increased to about Rs.70,000 -80,000/- from 40,000-50,000/-.

## Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Prem Singh** |
| Age | : | 61 years |
| Education | : | 8th Standard |
| Address | : | |
| Village | : | Kaleth |
| Block | : | Thauldhar |
| District | : | Tehri Garhwal |
| State | : | Uttarakhand |
| Land Holding | : | 0.98 ha |

# Innovative Technology to Overcome Frost Damage in Crops

## Description of innovation/ adopted climate resilient practices

- Growing of garlic crop near terraces with onion crop to avoid frost damage.

## Process of innovation/ adoption

- Earlier the farmer used to face huge crop loss due to frost damage which is prevalent in this region during *rabi* season.
- The farmer has grown improved onion cultivar of AFLR (Agri found Light Red) during *rabi* season which is generally damaged by frost. To avoid this, he has innovated a technique to grow garlic crop near terraces along with smokes/fumes to avoid frost.

## Practical utility of the innovation/adoption of technology

- The average yield fetched by adopting this innovative ITK and improved cultivar was around 245 q/ha which was earlier 166 q/ ha which led to an increase of around 32.2% yield increase.
- It also led to improvement in net return of around Rs.1,92,000/ha with benefit cost ratio of 3.6 which was earlier Rs.1,12,500/ha and 2.1 respectively.

## Farmer Details

| | |
|---|---|
| **Name** | **: Sri K. Doss** |
| Age | : 47 years |
| Education | : $10^{th}$ Standard |
| Address | : |
| Village | : Agoor |
| Taluk/Mandal | : Mailam |
| District | : Villupuram |
| State | : Tamil Nadu |
| Land Holding | : 1.4 ha |

# Rain Hose Irrigation in Groundnut for More Yield

## Description of innovation/ adopted climate resilient practices

- Adopted rain hose irrigation system in groundnut

## Process of innovation/ adoption

- Earlier, *kharif* and *summer* crops faced intermittent drought in this area. The farmer has installed the rain hose for groundnut crop in 0.5 acre with the spacing of 30x15 cm. The rain hose is flexible hose with pattern of drip holes which are made with nano punching technology to ensure uniform flow of water and is suitable for closely spaced crops, Pulses, groundnut, vegetable crops etc.

## Practical utility of the innovation/adoption of technology

- Rain hose is a low-cost irrigation system which is easy to install and maintain. In this, less water can be applied more frequently, better control of leaching that reduces nitrogen application and thus leading to maximum yield.
- Recorded a net return of Rs.28,300/acre with the benefit cost ratio of 2.56.
- The farmer had 75% of water saving with this method in groundnut cultivation. So, he extended to black gram and marigold crops.

# FFP

Crop Diversification with Floriculture Crossandra crop

Mechanical Weeder made with Scooter engine

Efficient Resource use by Adopting Micro Irrigation systems in Floriculture and Vegetables

Adoption of *Ex-situ* Water Harvesting through Farm Pond Technology

Adoption of Good Management Practices in Vegetables

# Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Srinivas Munnuru** |
| Age | : | 48 years |
| Education | : | 5th Standard |
| Address | : | |
| Village | : | Gongupally |
| Mandal | : | Pudur |
| District | : | Vikarabad |
| State | : | Telangana |
| Land Holding | : | 3.2 ha |

## Crop Diversification with Floriculture Crossandra Crop

### Description of innovation/ adopted climate resilient practices

- Diversification with floriculture
- Adopted drip irrigation system and ridge and furrow method.

### Process of innovation/ adoption

- Diversified the cropping system with flower crop crossandra and adopted integrated crop management practices such as timely sowing, weeding, fertilizer application, pesticide spraying and harvesting.
- Net income from crossandra alone was around Rs.13,00,000/-.
- Along with crossandra other crops such as cotton, paddy, pigeon pea, maize, chickpea cultivated and gained a net income of Rs.2.7 lakh.

### Practical utility of the innovation/adoption of technology

- Diversification of floriculture was more profitable with a benefit-cost ratio of 7.65 from 1-acre crossandra.
- Perennial nature of crossandra reduced the cost of cultivation and good keeping quality reduced the post-harvest losses. In market there is good demand for crossandra because of limited number of growers.

## Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Krishnaiah Thikkala** |
| Age | : | 34 years |
| Education | : | SSC |
| Address | : | |
| Village | : | Rakamcharla |
| Post | : | Peddaummenthol |
| Mandal | : | Pudur |
| District | : | Vikarabad |
| State | : | Telangana |
| Land Holding | : | 2 ha |

## Mechanical Weeder made with Scooter Engine

### Description of innovation/ adopted climate resilient practices

- Innovated a power tiller with scooter engine.

### Process of innovation/ adoption

- Used scooter engine for extra power attached to bullock drawn weeder and converted to mechanical weeder.
- It efficiently works in crops having 4 feet distance between rows.

### Practical utility of the innovation/adoption of technology

- It is useful to eradicate different types of weeds from root level. Innovation can reduce cost on manual weeding and thereby the cost of cultivation will also be reduced.
- For weeding 1 hectare, it requires 3 litres of petrol which costs around Rs.300/- in comparison to manual weeding which requires Rs.4000/-.
- This mechanical weeder utilized by about 50 farmers covering 175 acres

## Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Suresh Udandarao** |
| Age | : | 28 years |
| Education | : | BA |
| Address | : | |
| Village | : | Devanoniguda |
| Mandal | : | Pudur |
| District | : | Vikarabad |
| State | : | Telangana |
| Land Holding | : | 1.6 ha |

## Efficient Resource use by Adopting Micro irrigation Systems in Floriculture and Vegetables

### Description of innovation/ adopted climate resilient practices

- Adopted drip systems in vegetable cultivation.
- Started double crops of chilli and marigold in *kharif* and *rabi* season.

### Process of innovation/ adoption

- Drip systems saved water through wetting root zone and reducing water loss by evaporation.

### Practical utility of the innovation/adoption of technology

- Drip systems helped in water conservation by saving 50% of open well water and reduction of weed growth and thereby cost of cultivation to the extent of 30-40%.
- Earned a net returns Rs. 2,55,000/- from 4-acre land in one season.
- Double income by taking double crops of chilli and marigold in *kharif* and *rabi* season.

## Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Chennaiah Merugu** |
| Age | : | 30 years |
| Education | : | SSC |
| Address | : | |
| Village | : | Devanoniguda |
| Mandal | : | Pudur |
| District | : | Vikarabad |
| State | : | Telangana |
| Land Holding | : | 2 ha |

## Adoption of *Ex-situ* Water Harvesting through Farm Pond Technology

### Description of innovation/ adopted climate resilient practices

- Adopted *ex-situ* water harvesting technique with storage capacity of 900 $m^3$ water

### Process of innovation/ adoption

- Farm pond is constructed in 0.5 acres of land. Water from the farm pond used for life-saving irrigation for standing crops.
- Water used for supplemental irrigation for vegetables in *rabi* and field crops in *kharif* such as maize and pigeon pea during dry spells.

### Practical utility of the innovation/adoption of technology

- Significant increase in yield from the same land after adopting farm pond technology. In maize crop around 500-600 kgs of increased yield was recorded.
- Proper water harvesting techniques motivated interest among the farmers towards *ex-sit*u water harvesting technology such as farm pond.

## Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Venkatesh Thikkala** |
| Age | : | 35 years |
| Education | : | SSC |
| Address | : | |
| Village | : | Rakamcharla |
| Mandal | : | Pudur |
| District | : | Vikarabad |
| State | : | Telangana |
| Land Holding | : | 3.2 ha |

# Adoption of Good Management Practices in Vegetables

## Description of innovation/ adopted climate resilient practices

- Adoption of good mangement practices in vegetables such as micro irrigation system and staking of tomato crop.

## Process of innovation/ adoption

- Earlier farmer could not get good returns due to pest and disease infertation and poor yielding in tomato. The farmer practiced staking in tomato.
- Similarly, to overcome low yield in cucumber with flood irrigation, the farmer switched to drip irrigation.

## Practical utility of the innovation/adoption of technology

- Staking will reduce the incidence of various pest and diseases and provide ample amount of space and light, which helps in better growth and development. Staking resulted into 2-3t extra yield and an additional income of around Rs.25,000-30,000/-.
- In cucumber, yield is increased around 3t/acre. Hence, an additional income of around Rs.30,000/- by adopting drip irrigation compared to the flood irrigation.

# SCSP

Backyard poultry as income generating activity

Adoption of micro irrigation systems for higher water use efficiency

Use of yellow sticky traps as IPM practice to control sucking insect pests

Introduction of yellow sticky traps in chilli and groundnut crop with improved variety

Demonstration of Muriate of Potash in Maize

Sorghum based climate resilient cropping system

# TSP

Sorghum based climate resilient cropping system

## Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Smt. Ankitha Kamera** |
| Age | : | 30 years |
| Education | : | B. Sc. |
| Address | : | |
| Village | : | Mallampet |
| Mandal | : | Kotapally |
| District | : | Mancherial |
| State | : | Telangana |
| Land Holding | : | 1.42 ha |

## Backyard Poultry as Income Generating Activity

### Description of innovation/ adopted climate resilient practices

- Established backyard chick rearing center with improved breeds (Vanaraja/Srinidhi) with the support of SCSP.

### Process of innovation/ adoption

- Initially undergone training on backyard poultry at ICAR-CRIDA with hands on training on vaccination, preparation of feed, brooding of day-old chicks etc.
- Later started rearing of chicks for about 6 months before start of the chick rearing centre.

### Practical utility of the innovation/adoption of technology

- Increased the availability of eggs and meat, which helped in meeting protein demand.
- Provided subsidiary income to the rural women and thus empowerment of women in the society.
- This chick rearing center helped in meeting the local demand for improved chicks and also an agripreneurship model for sustainable livelihood security in rural areas.

## Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Rajesh Jumidi** |
| Age | : | 32 years |
| Education | : | Intermediate (MPC) |
| Address | : | |
| Village | : | Edagatta |
| Mandal | : | Kotapally |
| District | : | Mancherial |
| State | : | Telangana |
| Land Holding | : | 4.05 ha |

## Adoption of Micro Irrigation Systems for Higher Water Use Efficiency

### Description of innovation/ adopted climate resilient practices

- Diversified with cotton to chillies.
- Adopted sprinkler system for irrigation and used power weeder for intercultural and *in-situ* moisture conservation.

### Process of innovation/ adoption

- *In-situ* moisture conservation through intercultural operation by using power weeder, 30 days after transplanting of chillies used the power weeder for weeding.

### Practical utility of the innovation/adoption of technology

- The yield of green chillies improved with irrigation to 8,000 kg/acre, when compared to control without any irrigation 1,268kg/acre.
- Use of sprinklers reduced the number of irrigations from 10 to 7 and obtained a net return of Rs.44,800/- from chilli with benefit cost ratio of 4.48.
- Water saved in the borewell was used for irrigating other crops such as maize and paddy.

## Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Suresh Rajaiah Durgam** |
| Age | : | 29 years |
| Education | : | Intermediate |
| Address | : | |
| Village | : | Royalapally |
| Mandal | : | Kotapally |
| District | : | Mancherial |
| State | : | Telangana |
| Land Holding | : | 1.6 ha |

## Use of Yellow Sticky Traps as IPM Practice to control Sucking Pests

### Description of innovation/ adopted climate resilient practices

- Introduced yellow sticky traps for control of sucking insect pests such as aphids, jassids and thrips.

### Process of innovation/ adoption

- Farmers indiscriminately used pesticides for control of leaf sucking insects in chilli crop and about 15-20 sprayings are common.
- To reduce the load of leaf sucking insects and to minimize health hazards, cultural practices were promoted i.e., yellow sticky traps.

### Practical utility of the innovation/adoption of technology

- Resulted into a net additional return of Rs.20,000/- per acre by use of IPM practice.
- Chilli growers are convinced and are using yellow sticky traps on large scale.

## Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Kistaiah Chennaiah Kumari** |
| Age | : | 60 years |
| Education | : | 4th Standard |
| Address | : | |
| Village | : | Algaon |
| Mandal | : | Kotapally |
| District | : | Mancherial |
| State | : | Telangana |
| Land Holding | : | 1.6 ha |

## Introduction of Yellow Sticky Traps in Chilli and Groundnut Crop with Improved Variety

### Description of innovation/ adopted climate resilient practices

- Adopted improved variety of groundnut (K-6) in *rabi* season during 2022-23.
- Demonstration and installation of yellow sticky traps in chilli field for control of leaf sucking insects such as like aphids, jassids and thrips against the local blue sticky traps.

### Process of innovation/ adoption

- Sown groundnut for the first time in 1.5 acres. It is drought-resistant and can withstand inundation of fields due to untimely excess rainfall with a duration period of 100-115 days.
- Earlier indiscriminately used pesticides for control of leaf sucking insects in chilli crop. For this yellow sticky traps are introduced.

### Practical utility of the innovation/adoption of technology

- Good yield of 0.9 quintal. with a net income of Rs.45,000/- from one-acre groundnut cultivation
- Realized net additional return of Rs.20,000/- per acre by use of IPM practice by reducing 3 sprayings in a season.

## Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Vittal Laxman Chavan** |
| Age | : | 38 years |
| Education | : | Intermediate |
| Address | : | |
| Village | : | Chindanur |
| Taluk | : | Chincholi |
| District | : | Kalaburagi |
| State | : | Karnataka |
| Land Holding | : | 0.8 ha |

## Demonstration of Muriate of Potash in Maize

### Description of innovation/ adopted climate resilient practices

- Applied Muriate of Potash (MoP) for the first time in maize crop in *kharif* season during 2022-23.

### Process of innovation/ adoption

- The soil was deficient in potassium in this area. MoP was distributed to the farmer.

### Practical utility of the innovation/adoption of technology

- The farmer earned a net income of Rs.37,975/- from one-acre maize cultivation from Muriate of Potash (MoP) application.
- Due to impact in crop yield farmers from villages and other villages also demanding Muriate of Potash (MoP) in next season which is not easily available in the local market.

## Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Pandurangh Pollaram Poyam** |
| Age | : | 38 years |
| Education | : | Graduate |
| Address | : | |
| Village | : | Vaijapur |
| Mandal | : | Gudihathnoor |
| District | : | Adilabad |
| State | : | Telangana |
| Land Holding | : | 2.8 ha |

## Sorghum Based Climate Resilient Cropping System

### Description of innovation/ adopted climate resilient practices

- Use of sprinkler set for higher water use efficiency in turn increased the yield and quality of cotton.
- With crop diversification the farmer successfully made replacement of local variety to *rabi* sorghum variety (M 35-1).

### Process of innovation/ adoption

- Sorghum as a nutrient rich millet is an important crop during *rabi* season.
- Generally, farmer sows local variety of *rabi* sorghum resulting in low grain yield as well as fodder yield.
- Demonstration with of improved variety of *rabi* sorghum in 2 acres variety (M 35-1).

### Practical utility of the innovation/adoption of technology

- Crop grain yield increased from 4q/acre to 9q/acre; thus yield increased by 55 percent. The farmer realized a net return of Rs.40000/-,

# KVK

**Profitability with integrated farming systems and climate resilient practices**

**Women Empowerment in non-farm activity**

**Chrysanthemum inter-cropping with drumstick fetch high net returns**

**Adoption of climate resilient practices for resource use efficiency**

**Resourece use Efficiency enhanced with Climate Resillient practices**

## Farmer Details

| | | |
|---|---|---|
| **Name** | : | **Sri Venkata Ramulu Kashamalla** |
| Age | : | 60 years |
| Education | : | 7th Standard |
| Address | : | |
| Village | : | Chowderpally |
| Mandal | : | Yacharam |
| District | : | Rangareddy |
| State | : | Telangana |
| Land Holding | : | 1.99 ha |

## Profitability with Integrated Farming Systems and Climate Resilient Practices

### Description of innovation/ adopted climate resilient practices

- Adopted short duration varieties in cotton and pigeon pea, water conservation techniques such as conservation furrows, trench-cum-bunds, sprinkler irrigation, water stress relief measures like spraying of 13:0:45 foliar nutrient application.
- In vegetables broad bed and furrow method, drip irrigation with fertigation were adopted.
- Integrated backyard poultry with the existing farming system.

### Process of innovation/ adoption

- Backyard poultry was introduced with 20 Rajashri poultry birds for additional income generation.
- After realizing the additional income through sale of eggs and adult birds upscaled flock to more than 250 poultry birds in two batches and constructed a shelter house for rearing and started selling the eggs and adult birds.

### Practical utility of the innovation/adoption of technology

- Earned additional income through sale of eggs and adult birds with a net return of Rs.97,000/-.
- Through demonstrations and field days organized in his field, other farmers got motivated and adopted drip, mulching and fertigation practices and backyard poultry as IFS component in their farming activity, earning additional net returns.

## Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Smt. Ansuya Sapavath** |
| Age | : | 47 years |
| Education | : | 7th Standard |
| Address | : | |
| Village | : | Yellamma Thanda |
| Mandal | : | Manchal |
| District | : | Rangareddy |
| State | : | Telangana |
| Land Holding | : | 2.39 ha |

## Women Empowerment in Non-farm Activity

### Description of innovation/ adopted climate resilient practices

- Practicing conservation furrows, contours bunds as the lands are undulating.
- Adopted CRIDA planter for timely sowing.

### Process of innovation/ adoption

- Trained on embroidery works by KVK and further undergone special training in Banjara needle works and started her own Banjara needle works in entrepreneurship mode since past 10 years.
- Got license for Banjara Needle Hand works for Govt. purchase enlistment from The National Small Industries Corporation Ltd., Govt. of India.
- Textile products and handicrafts are being displayed in several exhibitions organized by State and Central Government Handicrafts Departments.

### Practical utility of the innovation/adoption of technology

- Became as a successful entrepreneur with Banjara textile products and recognition from the district and state.
- Influenced by her, other women famers in the surrounding villages started embroidery works for income generation.

## Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Subhash Reddy Malgari** |
| Age | : | 39 years |
| Education | : | Intermediate |
| Address | : | |
| Village | : | Phalgutta |
| Mandal | : | Chevella |
| District | : | Rangareddy |
| State | : | Telangana |
| Land Holding | : | 3.6 ha |

## Chrysanthemum Inter-cropping with Drumstick fetch High Net Returns

### Description of innovation/ adopted climate resilient practices

- Adopted good agricultural practices viz. raised bed, drip, fertigation, micronutrient foliar spray, use of bio-products, integrated pest and disease management.
- Raised bed chrysanthemum cultivation with drumstick as intercrop.

### Process of innovation/ adoption

- Farmer followed drip and soil test-based fertigation schedule for high water and fertilizer use efficiency, micro nutrient foliar sprays in critical periods, use of Azotobacter, PSB, KMB, ZSB, Trichoderma, Pseudomonas and Metarhizium.
- IPM and IDM practices using neem oil in different stages, sticky traps for sucking pest, trap crops, pheromone traps and foliar sprays of micronutrient.

### Practical utility of the innovation/adoption of technology

- Improved water and nutrient use efficiency (65%), reduced cost of fertilizers (25%) and saved cost on plant protection (30%).
- Crop planning with staggered planting from May to February. First flowering has come to harvest in September and continued up to March.
- All major festivals and seasonal/traditional functions come during this period and fetched 15-20% higher price.
- Assured average market price of Rs.100/kg from staggered planting and inter-cropping with drumstick got additional returns of Rs.1.25 lakhs/acre.

## Farmer Details

| | | |
|---|---|---|
| **Name** | : | **Sri Jangaiah Achana** |
| Age | : | 42 years |
| Education | : | Intermediate |
| Address | : | |
| Village | : | Gaddamalliahguda |
| Mandal | : | Yacharam |
| District | : | Rangaeddy |
| State | : | Telangana |
| Land Holding | : | 3.99 ha |

## Adoption of Climate Resilient Practices for Resource use Efficiency

### Description of innovation/ adopted climate resilient practices

- Watermelon cultivation with mulching and adopted drip irrigation.

### Process of innovation/ adoption

- Though paddy, groundnut and pulses cultivating regularly, he was not getting good income due to low productivity, increased cost on agriculture inputs and poor or no utilization of existing farm resources.
- After KVK interventions, he has followed raised bed system. The raised bed has been covered with silver-black coloured and 30-micron thickness mulching sheet.

### Practical utility of the innovation/adoption of technology

- Increase in yield by 30.86% with drip and mulch than without drip and mulch.
- Reduction in cost of cultivation by 14.50%.
- Recorded a gross income of Rs.2.66 lakhs/ha.
- By realizing the potential of the technology, the Department of Horticulture is giving subsidy on mulching sheets for the vegetables in general and watermelon in particular.
- Resource use efficiency enhanced with climate resilient practices

## Farmer Details

| | | |
|---|---|---|
| **Name** | **:** | **Sri Madhava Reddy Emireddy** |
| Age | : | 49 years |
| Education | : | B.Sc. B Ed |
| Address | : | |
| Village | : | Narrapally |
| Mandal | : | Ibrahimpatnam |
| District | : | Rangaeddy |
| State | : | Telangana |
| Land Holding | : | 2.8 ha |

## Resource Use Efficiency enhanced with Climate Resilient Practices

### Description of innovation/ adopted Climate resilient practices

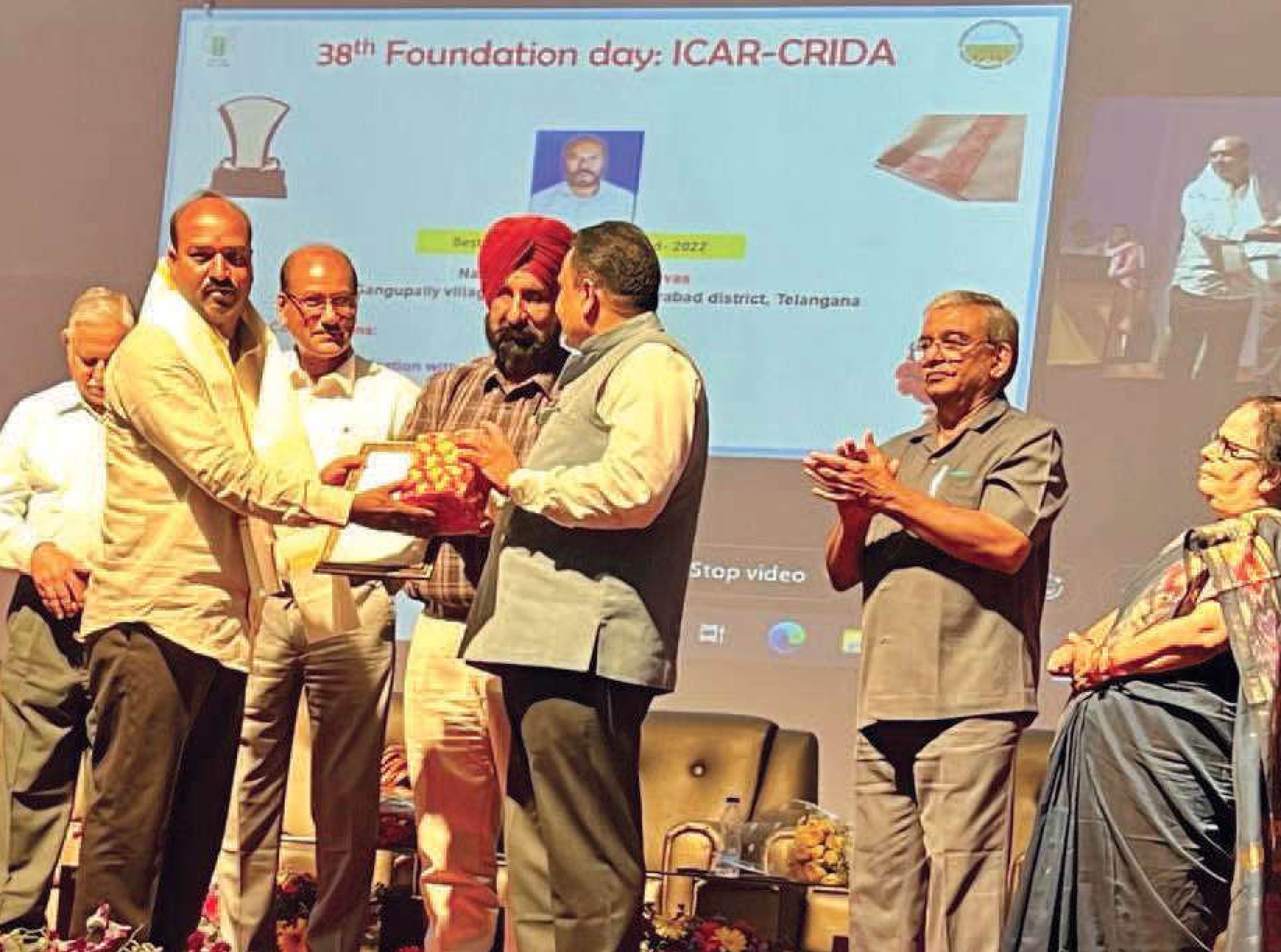
- Vegetables such as tomato and ridge gourd are grown on mulching sheet.
- Mulching sheet provides moisture conservation and control weed growth.
- Savings in water appear to be the main advantage and such savings are found to vary from 20% to as high as 75%
- The savings in water are more pronounced in semi-arid areas.

### Process of innovation/ adoption

- Trainings and demonstrations impacted the adoption of climate resilient technologies
- Soil test-based fertilizer application improved savings on chemical fertilizers, saving of water with rain water harvesting mechanisms, micro irrigation techniques- drip, sprinkler, micro sprinklers for vegetables. Micro nutrient spraying to vegetables, growing risk less crops (climate resilient).
- Improved marketing strategy, cropping pattern according to climate and market based, growing gliricidia and trap crops for insects on field bunds.

### Practical utility of the innovation/adoption of technology

- Innovative interventions inducted in the system of production and management and effects
- Perennial fodder promotion though innovative entrepreneurship mode. Watershed technology and rain water harvesting in field.
- Crop diversification as innovation for changing cropping pattern
- Own marketing model for vegetables with good returns
- Dissemination of agro-advisories to fellow farmers through mobile contacts


38th Foundation day: ICAR-CRIDA
district, Telangana
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