



A decade of Service to Tribal Communities by AICRP on Palms



भा.कृ.अनु.प. - अखिल भारतीय समन्वित ताड़ अनुसंधान परियोजना
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ICAR-CENTRAL PLANTATION CROPS RESEARCH INSTITUTE
KASARAGOD, KERALA, INDIA - 671 124



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EXECUTIVE SUMMARY

Palm crops such as coconut, arecanut, palmyrah and oilpalm are very important plantation horticulture crops having significant bearing on the livelihood security of small and marginal farmers across the nation and plays major role in the economy and environment health of the nation. These crops which paves way for circular economy and hence rapid strides were made under Tribal Sub Plan (TSP) mission of the ICAR – All India Co-ordinated Research Project on Palmsto radiate the technologies in production of coconut, palmyrah etc. to the technologically deprived farmers of the nation. TSP mission was initiated during 2013 covering five states of the nation viz., Tamil Nadu, Andhra Pradesh, Chattisgarh, Maharashtra and Gujarat co-ordinated by Aliyarnagar, Pandiramamidi, Jagdalpur, Ratnagiri and Navsari centres of AICRP (Palms) respectively. Toda, Kurumba, Paniyan, Irular, Kanikkar, Palliyan, Gowlis, Kunbis, Halakki Vakkala, Kunbi and Irular are the common tribes of Tamil Nadu especially dwelling in the Western Ghats of the state. Trainings were conducted on planting of seedlings, soil health management, management of pest and disease complex in coconut. Inputs viz., coconut seedlings, vermicompost, biocontrol agents viz., *Bacillus subtilis*, *Trichoderma viride*, biofertilizers viz., *Azospirillum*, *Phosphobacteria* and VAM and farm implements – Crow bar, Garden Spade, Pick axe, Chatti were distributed to the beneficiaries. Capacity building programmes organized include production techniques and value addition in coconut which included coconut soap making, Virgin coconut Oil preparation, Vermicomposting of coconut fronds and wastes etc., A total of 587 tribal farmers derived benefit from the TSP mission. Aliyarnagar Centre portrayed success stories of unemployed tribal youth transforming as an assertive farmer and another farmer cherishing coconut palm as a pension for his retiring life. In Andhra Pradesh, the wide array of tribes are Bhagatha, Konda Dora, Khond, Konda Reddy, KondaKapu, Koya, Parang Proja, Valmiki, Kotia, Nooka Dora, Goudu, Mali and Gadaba. Demonstrations were made on establishment of vegetable nursery for tribal children, training on using tree climbers, palmyrah jaggery making and grafting techniques in cashew and mango. Inputs and implements like makkulu (tapping device), jiggery pajands, knives, cashew grafts, seedlings of coconut, vegetable and acid lime, sprayers, fish tail palm, fertilizers and pesticides were distributed. Capacity building programmes were conducted on production technologies of cashew, palmyrah, acid lime, mango and value addition of palmyrah products. Demonstrations were made on jaggery making from palmyrah and nursery grafting techniques. Introduction of BPP-8 cashew grafts among the tribal

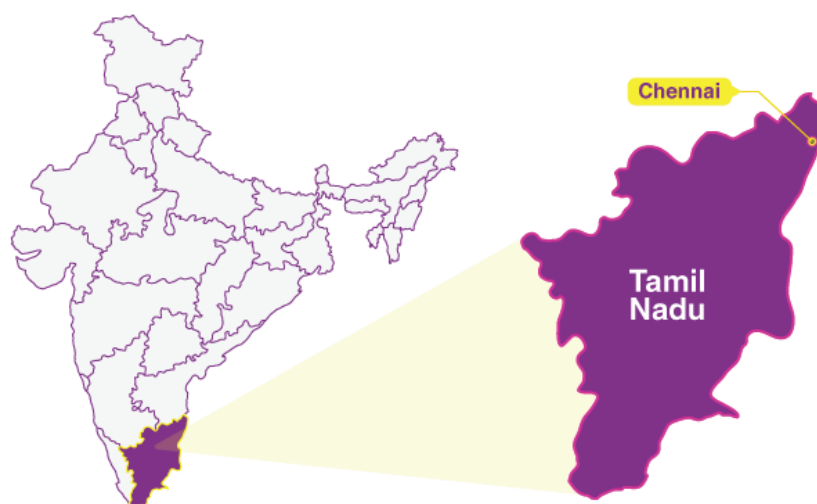
population instead of cashew seedlings is highlighted as the success of the TSP mission in Pandiramamidi centre.

In Maharashtra, majority of the tribal population is concentrated in the eastern forest districts of Chandrapur, Gadchiroli, Bhandara, Gondia, Nagpur, Amravati and Yavatmal, as well as the western hilly districts of Dhule, Nandurbar, Jalgaon, Nashik, Palghar and Thane. Distribution of inputs and imparting training for 3900 tribal farmers from nine blocks during 2013-14 to 2023-24 was undertaken at Ratnagiri centre of the state. Trainings were imparted on production techniques of coconut. The heavy infestation of black headed caterpillar which was 22.3 percent during 2016-17 in Palghar district got reduced to 0.36 per cent during 2023-24 due to continuous release of *Goniozus* and *Bracon* parasitoids at an average of 50 numbers per beneficiary every year under Tribal Sub Plan project. Jagdalpur centre of Chattisgarh state comes under the Bastar plateau of the state. Preparation of vermicompost tank, installation of yellow sticky trap for monitoring and management of Rugose Spiraling Whitefly in coconut, spraying Azadirachtin @1ml/litre water, green manuring with sesbania, sunnhemp and gliricidia were the demonstrations conducted from this centre. This centre was successful in infusing coconut based intercropping accommodating cinnamon, papaya and vegetables instead of monocropping which paved way for raising the farm income of the tribal population. Intercropping with vegetables has radiated to a great deal of tribal population. At Navsari centre, Gujarat, concerted efforts were taken to improve the livelihood security of the resource poor tribal farmers. Inputs like coconut seedlings, vermicompost, bio-fertilizers, Novel organic liquid nutrients, NPK, fungicides, insecticides, coco traps, plastic crates, spraying pumps, etc. were distributed to the 1639 tribal coconut growers of Navsari, Dang, Tapi, Valsad and Narmada districts of south Gujarat with the help of KVK's, NGOs and state departments. Total 16145 seedlings of coconut (WCT) was distributed during the year (2013-14 to 2016-17) to 493 (Average minimum 15 and maximum 50 seedlings to each) farmers of Navsari, Dang, Valsad and Narmada districts of south Gujarat. Other inputs like 390 numbers of plastic crates were distributed to 130 farmers of Tapi and Valsad districts whereas, 58 numbers of spray pumps was given to the tribal farmers of Dang, Valsad and Tapi districts during 2022-23 and 2023-24. Technologically deprived tribal coconut growers transforming as technocrats, livelihood security and improved standard of living are the remarkable imprints of Tribal Sub Plan Mission of ICAR – AICRP on Palms.

1. ALIYAR NAGAR CENTRE, TAMIL NADU

1.1. BACKGROUND INFORMATION ABOUT THE STATE

Tamil Nadu, with an area of 1.30 lakh km² located in the southern most tip of the nation is the eleventh largest Indian state by area and the sixth largest by population. Tamil Nadu is the home of the Tamil language, one of the longest surviving classical languages and which serves as its official language. The capital and largest city of the state is Chennai. Located on the south-eastern coast of the Indian peninsula, Tamil Nadu is straddled by the Western Ghats and Deccan Plateau in the west, the Eastern Ghats in the north, the Eastern Coastal Plains lining the Bay of Bengal in the east, the Gulf of Mannar and the Palk Strait to the south-east, the Laccadive Sea at the southern cape of the peninsula, with the river Kaveri bisecting the state. Politically, Tamil Nadu is bound by the Indian states of Kerala, Karnataka, and Andhra Pradesh, and the union territory of Puducherry. It shares an International maritime border with the Northern Province of Sri Lanka at Pamban Island.



Tamil Nadu State

With its diverse culture and architecture, long coastline, forests and mountains, Tamil Nadu is home to ancient relics, historic buildings, religious sites, beaches, hill stations, forts, waterfalls and World Heritage Site. The state's Tourism industry is the largest among the Indian states. Forests occupy an area of 22,643 km² constituting 17.4 % of the geographic area and three biosphere reserves, mangrove forests, five National Parks, 18 wildlife sanctuaries and 17 bird sanctuaries. Agriculture contributes 13% to the GSDP and is a major

employment generator in rural areas. As of 2022, the state had 6.34 million hectares under cultivation.

Rice is the staple food grain with the state being one of the largest producers in India with an output of 7.9 million tonnes in 2021-22. The Cauvery delta region is celebrated as the 'Rice Bowl of Tamil Nadu'. The state is a producer of spices and is the top producer of oil seeds, tapioca, cloves and flowers in India. The state accounts for 6.5% of fruit and 4.2% of vegetables production in the country. The state is a leading producer of banana and mango with more than 78% of the area under fruit cultivation. As of 2019, the state was the second largest producer in India of natural rubber and coconuts. Coconut is cultivated over an area of 4.72 lakh hectares with a total production of 5421.76 million nuts and productivity of 11470 nuts per ha as against the national productivity of 8985 nuts per ha. Tea is a popular crop in hill-stations with the state being a major producer of a unique flavoured Nilgiri tea. Palmyrah trees are commonly seen between agricultural fields in Tamil Nadu. "People used them to mark boundaries, given their long life of 120 years.

As per the 2011 census, Tamil Nadu had a population of 72.1 million and is the seventh most populous state in India. The combined Scheduled Tribes population of the State as per is 7.94 lakh representing 1.10% of the total population of the State (which is 721 lakh). Out of the 7.94 lakh Tribal, 50.50% constituted males and 49.50% constituted females.

1.2. TRIBAL POPULATION IN TAMIL NADU

Tribal Sub Plan scheme of the Ministry of Human Resource Development, Government of India was implemented under the Aegis of ICAR- All India Co-ordinated Research Project on Palms at Aliyarnagar Centre of the AICRP (Palms) scheme since 2018. The scheme is a vehicle for transferring the cutting edge research technologies to the technically deprived tribal sub population of the Western Ghats of Tamil Nadu. The Western Ghats is one of the largest hotspots of biodiversity in the world and is eulogized by UNESCO as the World Heritage Site. Toda, Kurumba, Paniyan, Irular, Kanikkar, Palliyan, Gowlis, Kunbis, Halakki Vakkala, Kunbi and Irular are the common tribes of the region and earn their living by collecting non-timber forest produce. Few of them have croplands and practice subsistence farming without integrating scientific technologies. Tribal Sub Plan scheme is a potent tool to reach out to the technologically deprived population of the Western Ghats of Tamil Nadu.



A moment of Relaxation in a small Tribal Settlement of Tamil Nadu

1.3. ALIYARNAGAR CENTRE – AN OVERVIEW

Aliyarnagar Centre is located near Western Ghats (10° N latitude and 77° E longitude), 20 kms south of Pollachi at an elevation of 260 m above MSL with an undulating topography. The average annual rainfall of the tract is 802 mm of which, nearly 300 mm is received during south west monsoon, 333 mm during north east monsoon and 169 mm during summer. The station owns 22 hectares of land, of which nearly 18.8 hectares is under cultivation. Parambikulam Aliyar Canal supplemented by one open well serve as source of irrigation. The soil type of the station is sandy clay loam (Typic / Fluventic Ustropept) belonging to Aliyar series.

Three groundnut varieties viz., ALR 1, ALR 2 and ALR 3 were released during 1987, 1994 and 1999 respectively which are being used as parents in evolving rust resistant groundnut varieties at national level. Also three coconut varieties viz., ALR (CN) 1 – resistant to stem bleeding disease, ALR (CN) 2 – drought tolerant and ALR (CN) 3 – suitable for tender coconut purpose, released during 2002, 2010 and 2012 respectively are highly popular in Tamil Nadu, Karnataka and Kerala. Since their release, more than 10,00,000 seedlings have been distributed to the farmers. Research encompasses Regenerative studies, Integrated Nutrient Management, Integrated Weed Management, Mixed / Intercropping in coconut, Integrated Farming System, Management of coconut pests and diseases, Development of technologies for bioresource constraints, screening of groundnut cultivars for rust and leaf spot, Identification of suitable cocoa clones for Tamil Nadu and standardization of agro techniques for the cultivation of intercrops viz., ginger and pepper

1.4. DEMONSTRATIONS CONDUCTED ON PLANTATION CROPS TECHNOLOGIES

- **Planting of coconut seedlings**

Appropriate planting of quality coconut seedlings holds great promise not only on the establishment but also on the long term productivity of the palms. Hence demonstration was conducted on the depth of excavation, filling the pits etc., with the following guidelines.

- ✓ Excavating pit to a depth of 3 feet length x 3 feet width x 3 feet height.
- ✓ Any dust formulation of insecticide is sprinkled for avoiding subterranean pests especially termites and root grubs.
- ✓ Filling the pit to a height of two feet (60 cm) with FYM, red earth and sand mixed in equal proportions.
- ✓ After removing the roots the seednuts dipped in 0.03% copper oxy chloride slurry.
- ✓ At the center of the pit, slightly dig the soil mixture and plant the seedling.
- ✓ Soil be pressed well around the seedling and be provided with shade using plaited coconut leaves or palmyrah leaves.
- ✓ The pits should be kept free from weeds after removing soil covering the collar region.
- ✓ As the seedlings grow and form stem, fill up the pits gradually by cutting the sides.

- **Irrigation Management and Fertilizer Application to the palms**

Nutrient management plays a key role in reaping the potential productivity of the palms. Hence demonstrations were conducted on application of 1.3 kg urea, 2.0 kg Single Super Phospahte and 3.0 kg Muriate of Potash, 50 kg farmyard manure, 3 kg neem cake in two equal splits at 1.8 m radius from the base of the trunk. Importance of controlled irrigation system in water saving was explained to them in the context of conserving water and enhancing water use efficiency.

- **Management of Rugose Spiraling Whitefly in coconut**

- ✓ Setting up of yellow light traps @ 2/ acre during night hours between 7.00 pm and 11.00 pm for monitoring and trapping of flying RSWF adults.

- ✓ Setting up of yellow sticky traps smeared with castor oil/ horticultural mineral oil to a height of 5.5' for monitoring and trapping the flying adult pest population @ 10/acre during daytime.
- ✓ Release of *Encarsia* parasitoids by stapling leaf bits containing the RSWF puparia (parasitized by *Encarsia*) under the coconut leaflets.
- **Management of Rhinoceros beetle in coconut**
- ✓ Manure pits were disturbed and the grubs of rhinoceros beetle were shown to the tribal people. Spraying of *Metarrhizium anisopliae* @ 250 ml per pit was demonstrated.
- ✓ Setting up of rhinolure @ one per ha, mixing 5 litres of water in 1 kg castor oil cake in mudpots and placing them in the fields , placing naphthalene balls @ 3 per tree were demonstrated.
- **Management of Red palm weevil in coconut**
- ✓ Setting up of attractant traps (mud pots) containing pine apple, well ripened bananas along with longitudinally split tender coconut stem/logs of green petiole of leaves to trap adult red palm weevils in large numbers.
- ✓ Plugging the bore holes with cement to prevent the entry of weevils

1.5. METHODOLOGIES ADOPTED

- Target group was identified with the help of the officials of the State Department of Agriculture / Horticulture, NGOs etc.,
- Preliminary visits were made to assess the place of dwelling, socio-economic aspects, cultivation practices, standard of living etc.,
- Copies of Aadhar cards were collected from them with the help of the Leader of the Tribal Group
- Meeting was convened on a common place or in farm land, inviting the Village President or the Forest official of the district.
- Lectures were delivered on the technologies that can escalate their income.
- Exhibitions were arranged highlighting the technologies like Soil Health Management, Pest and Disease Management etc.,

1.6. INPUTS DISTRIBUTED

- Quality Coconut Seedlings
- Vermicompost
- Biocontrol agents viz., *Bacillus subtilis*, *Trichoderma viride*
- Biofertilizers viz., *Azospirillum*, *Phosphobacteria* and VAM
- Farm implements – Crow bar, Garden Spade, Pick axe, Chatti

1.7. CAPACITY BUILDING

The beneficiaries of TSP mission were invited for capacity building programmes organized at Aliyarnagar centre like Value addition in coconut, Coconut soap making, Virgin coconut Oil preparation, Vermicomposting of coconut fronds and wastes etc.,

Table 1. Capacity building programmes conducted at Aliyarnagar Centre

Year	Places of Training under TSP	No. of beneficiaries
2019	Old Sarkarpathy	32 Nos.
2020	Nagaroothu – I, Nagaroothu – II, Thammampathy, Saralapathy, Gopalpathy	128 Nos.
2021	Narikalpathy, Muthaliyarpathy, Surilimettupathy, Ponnalammandurai	100 Nos.
2022	Puliyankandi, Thensangampalayam, Somanduraichittur, Nellithurai Mannam,	110 Nos.
2023	Narikalpathy, Muthaliyarpathy, Gopalpathy, Vepparai, KPM Colony, Narikalpathy,	167 Nos.
2024	Mannam (Aliyarnagar), Puliyankandi (Aliyarnagar)	50 Nos.

1.8. COCONUT DAY CELEBRATION

On Sep. 2, 2021, World Coconut Day with the focal theme “Coconut: Promoting Health, Creativity, and Resilience Amid and Beyond COVID-9 Pandemic” was celebrated involving the tribal population at Coconut Research Station, Aliyarnagar.



World Coconut Day Celebration

1.9. RESULTS OF DEMONSTRATIONS CONDUCTED

- Increased yield by 15 – 40 %
- Reduction in pest and diseases by 15 %
- Improved Standard of Living and constant money flow to the family
- Motivation to impart education to the children of the tribes as school teachers were also involved in the programme.

1.10. SUCCESS STORIES

1. Unemployed youth turned an assertive farmer

Mr.A.Eswaran is an unemployed youth dwelling in a tribal settlement in Ramanamudalipudur village of Anaimalai block of Tamil Nadu. He is an unemployed youth who does not have a regular income and was at the discrete of others for rendering employment. He owns two acres of coconut garden, planted with tall variety of coconut. Negligence farming and sceptical attitude towards technologies did not bring good dividends from coconut garden for the poor farmer. He was invited as one of the beneficiaries for the training on “Technical Intervention and Input Distribution for Improving the Socio-Economic status of Tribal coconut growers of Western Ghats of Tamil Nadu” organized at Thensangampalayam village during 2022. Lectures on Technologies for Improved Coconut Production Technologies triggered change in him and he applied the inputs distributed to him in the training. Within a span of one year he was able to witness improvement in the applied palms. So he extended input application to all the palms and was able to reap better returns from subsequent harvests. Being invigorated from the

positive paybacks, the tribal farmer integrated backyard poultry with 50 desi birds and two cows in coconut farming. Now he is no longer a labourer but a proud owner of Cow- Poultry – Coconut Integrated Garden. His total earning is Rs. 25,000 – Rs. 40,000 every month through Sustainable Coconut Integrated Farming System.

He speaks *“The meeting (he means ICAR – AICRP (Palms) sponsored TSP training) brought sea change in my life. User friendly technologies spelled out in the training and the inputs distributed seeded a great transformation which I never thought off. Even my wife is very happy coming to the farm and she helps me in rearing cows, makes broom sticks from the fronds which brings a constant money flow to my family. We enjoy refreshing milk, eggs from my own farm which was an abandoned site a few years back. I am able to give good education, nourishment and clothing to my children. The acquaintance I derived through the meeting make me frequently visit Aliyarnagar Centre for the purchase of coconut seedlings, vermicompost and biocontrol agents. I am now a contented farmer with happy living.”*



Tribal Farmer of Ramanamudalipudur village, Tamil Nadu amidst his coconut garden and Desi birds

2. Coconut – Pension for Retired Life

There is yet another story of a tribal farmer Mr. V. Selvaraj of Puliyangandi village of Anaimalai block. He was one of the beneficiaries of the Tribal Sub Plan of ICAR – AICRP – TSP mission of 2022. He owns three acres of land in which he cultivated millets and groundnut. Wild boar was a great menace in his field as it was adjacent to hillocks. He earned his bread and butter by working as labourer in the farms of others and was engaged himself as a helper for masonry work. As he is running old, he was desperate about his life when he could not be physically active anymore.

Having inspired by the technical inputs of Tribal Sub Plan Meet, he congregated confidence and decided to convert his farm into a coconut garden. He purchased ALR (CN)1 coconut seedlings from Aliyarnagar centre, planted it as per the advisory. As he no longer can work in the gardens of others, he has purchased few goats and rearing in his own coconut garden. Not the coconut seedlings are two years old and he is confident that they will pay rich dividends on his physical retirement.



Tribal Farmer of Puliyangandi village, Tamil Nadu with ray of hope standing in his newly plantation

GLIMPSES OF TRIBAL SUB PLAN - 2019



Delivering Technical lecture



Distribution of Coconut Seedlings



**Distribution of Biofertilizers,
Biocontrol agents and vermicompost**



Distribution of Agricultural tools



**Demonstration on Management of
Coconut Rugose Spiralling Whitefly**



**Demonstration on Planting method of Coconut
seedling**

GLIMPSES OF TRIBAL SUB PLAN - 2020



Delivering Technical lecture



Distribution of Biofertilizers, Biocontrol agents and vermicompost



Distribution of Agricultural tools to the beneficiaries



Demonstration on Management of Coconut Rugose Spiralling Whitefly



Demonstration of vermicompost application

GLIMPSES OF TRIBAL SUB PLAN - 2021



Delivering Technical lecture



Distribution of Coconut Seedlings



Distribution of Biofertilizers, Biocontrol agents and vermicompost to the beneficiaries



Demonstration of vermicompost and biocontrol application

GLIMPSES OF TRIBAL SUB PLAN - 2022



Delivering Technical lectures



Distribution of Coconut seedlings, Biofertilizers, Biocontrol agents and vermicompost to the beneficiaries

GLIMPSES OF TRIBAL SUB PLAN - 2023



Delivering Technical lectures



Distribution of Coconut seedlings, Biofertilizers, Biocontrol agents and vermicompost to the beneficiaries

GLIMPSES OF TRIBAL SUB PLAN - 2024



Delivering Technical lectures



Distribution of Coconut seedlings, Biofertilizers, Biocontrol agents and vermicompost to the beneficiaries

2. PANDIRIMAMIDI CENTRE, ANDHRA PRADESH

2.1. TRIBAL POPULATION IN ANDHRA PRADESH

Andhra Pradesh is the traditional home of nearly 33 tribal groups and most of these communities are found inhabiting in the border areas of Andhra Pradesh in the North and North-East. The Yenadis are one of the Scheduled tribes of India. They live in Andhra Pradesh in Nellore, Chittoor and Prakasam districts. The tribe is divided among three subgroups i.e Manchi Yanadi, Adavi Yanadi, and Challa Yanadi. Yenadis are the largest tribal group in Andhra Pradesh.



Yenadi Tribes of Andhra Pradesh

A particularly vulnerable tribal groups (PVTG) is a sub-classification of a Scheduled Tribe or section of a Scheduled Tribe that is considered more vulnerable than a regular Scheduled Tribe. There are 75 PVTGs in India, 12 in Andhra Pradesh. According to 2001 Census, the tribal population of Andhra Pradesh is 50.24 lakh which constitute about 6.6 percent of the total population of the state which covers 27,800 villages in Andhra Pradesh. As per 2011 census Scheduled Tribes population of the Alluri Setha Ramaraju district covers 82.67 %. Alluri Sitarama Raju district has a sex ratio of 1046 females per 1000 males and a literacy rate of 42.34%. The different groups of tribes are Bhagatha, Konda Dora, Khond, Konda Reddy, Konda Kapu, Koya, Parang Proja, Valmiki, Kotia, Nooka Dora,

Goudu, Mali and Gadaba. According to 2011 census, 70.27% of the population speak Telugu, 11.43% Odia, 7.63% Koya, 7.09% Kuvi and 2.02% Konda as their first language. The total geographical area of the district is 12.25 lakh hectares, of this 0.12 lakh alone is cultivable waste while 7.76 lakh hectares is forest area, which is of moist and dry deciduous type. The common species available in the forests are Guggilam, Tangedu, Sirimanu, Kamba, Yagisa, Nallamaddi, Gandra, Vepa etc. Bamboo shrubs are sparsely scattered. But forest area in the district has been showing a quiescent decline since 1955-56 perhaps due to podu practice, indiscriminate grazing and browsing.



Podu Cultivation by the primitive tribes of Vaishakapattinam

Coffee plantations have been raised in about 5433 acres in Chinthapalli, Minimuluru and Ananthagiri regions by different agencies and it also helpful in soil conservation. Coffee plantations are successful by the collaborative efforts of forest department, Coffee board, Girijan Corporation society and the I.T.D.A .

2.2. PANDIRAMAMIDI CENTRE - AN OVERVIEW

The AICRPon palms Pandirimamidi centre under Dr. YSR Horticultural University is located 3 km away from Rampachodavaram on Rajahmundry to Bhadrachalam sub high way. The station is situated at an elevation of 250 m from MSL with 17°25' North latitude and 81°45' East longitude. The station comes under Coastal Zone characterized by sub humid climatic condition with 28°C - 45°C and 15°C - 20°C maximum and minimum temperatures respectively. Generally 70% of the rainfall will be received from the south west monsoon and rest of the rainfall will be contributed by the north eastern monsoon and depressions

that occur in Bay of Bengal. The normal annual rainfall is around 1400 mm with a mean of 1250mm.

The research centre for AICRP on Palms for Palmyrah research is situated on the campus of Horticultural Research station, Pandirimamidi village of East Godavari District of Andhra Pradesh, in the tribal area of the district. The centre spreads across an area of 11.36 ha of land of which 3.93 ha is under palmyrah plantation. The cultivation is totally rainfed, as the centre is lacking irrigation facilities. The palmyrah germplasm collection was initiated at the centre in the year and a total of 272 accessions have been collected from various parts of the country and is under evaluation. The tribal sub plan scheme is functioning since 2020 for supporting the tribal people by imparting trainings and demonstrations to change their livelihood. As per the requirement from the tribal people during the “Grama sabha” i.e village meeting and survey, AICRP on Palms Pandirimamidi center introduced the coconut seedlings (Godavari Ganga, EC Tall), cashew grafts(BPP-8), mango grafts, lime seedlings (Petlur Selection-1) and Jafra seedlings and also need based trainings to promote the livelihood of the farmers and also created the awareness in tribal school children in plantation crops and other horticultural crops.

2.3. FUNDS RECEIVED (2020 – 2024)

Year	Budget Allotted (Rs.)
2020-21	1,80,000
2021-22	1,65,000
2022-23	3,78,000
2023-24	1,65,000

2.4. DEMONSTRATIONS CONDUCTED

S.No.	Demonstration Conducted	Tribal Settlement
1.	Vegetable Nursery for tribal children	R.Yerrampalem
2.	Training on Palm climbing with Joseph model	Tamarapalli
3.	Palmyrah Jaggery making to tribal women	Tamarapalli
4.	Grafting techniques in cashew and Mango	Tamarapalli

2.5. INPUTS DISTRIBUTED

Year	Particulars
2020-21	Mokkulu (Tapping device), Jaggery pans, knives Sunnam(Calcium hydroxide), Plant material(Cashew grafts)
2021-22	Plant material [Cashew grafts (BPP-8), Coconut seedlings(Godavari Ganga, EC tall)], Pans, knives, leaf seizing tools, Sprayers
2022-23	Kitchen garden (Vegetable seeds), Knives, cashew grafts (BPP-8), mango grafts, <i>Bixa orellina</i> (Annato) and lime seedlings (Petlur selection-1)
2023-24	Pesticides, Fertilisers (Micro nutrients), Knives, Mokkulu, Cashew grafts(BPP-8), Fishtail palm and coconut seedlings.

2.6. CAPACITY BUILDING PROGRAMMES

S.No.	Title of the Training	Place	Date
1.	Importance of Horticulture in livelihood of tribals in agency areas.	Jagarampalli (I.Polavaram panchayat), ASR district,AP	07.07.2021
2.	Production technology and Distribution of Lime seedlings” to the tribal farmer	Jagarampalli ASR district,AP	03.09.2021
3.	Awareness on Plantation crops and Importance of Kitchen garden	Ashram Girls High school, Irlapalli, ASR district,AP	07.01.2022
4.	Palmyra : Non-edible products - Preparation and promotion	AICRP on Palms Pandirimamidi center, ASR Dt.,Andhra Pradesh	11.03.2022
5.	Palmyra : Non-edible products - Preparation and promotion	AICRP on Palms Pandirimamidi center, ASR Dt.,Andhra Pradesh	12.05.2022
6.	Value added products from neera, fruit, nungu & tuber from Palmyrah	Suvarlavada, ASR Dt., Andhra Pradesh	03.06.2023
7.	Palmyra : Important edible and non-edible products promotion and its utilisation	AICRP on Palms Pandirimamidi center, ASR Dt.,Andhra Pradesh	12.08.2022
8.	Palmyrah products - Promotion and demonstration	Intuluru vagu Chintur, ASR district,Andhra Pradesh	23.11.2022
9.	Palmyra - Importance, promotion and its utilisation	AICRP on Palms Pandirimamidi center, ASR Dt.,Andhra Pradesh	08.07.2023

10.	Cashew production technology and Importance of Palmyrah	AICRP on Palms Pandirimamidi center, ASR Dt., Andhra Pradesh	20.07.2023
11.	Mango production technology	Bhimavaram, ASR Dt., Andhra Pradesh	02.08.2023
12.	Palmyrah promotion and utilization	Suddagommu, ASR Dt., Andhra Pradesh	11.09.2023
13.	Advances in lime production technology	Folkspeta, ASR Dt., Andhra Pradesh	20.09.2023
14.	Promotion of Fishtail palm in agency areas of ASR district	Aakur, Maredumilli, ASR Dt., Andhra Pradesh	10.12.2023
15.	Cashew production technology and Importance of Palmyrah	Tamarapalli, ASR Dt., Andhra Pradesh	13.02.2024

Jaggery making

Tribal farmers and more particularly women are much interested in jaggery making. Now they have gained acquaintance in preparing the jaggery and syrup. Previously palm neera was utilized in the form of toddy and the surplus was disposed off or used in preparation of crude alcohol by name “chiguru”. Now they are interested in making the Jaggery.

Nursery grafting techniques

Tribal farmers and women were engaging themselves as agricultural labourers in plains. But nursery grafting techniques have transformed them as entrepreneurs.

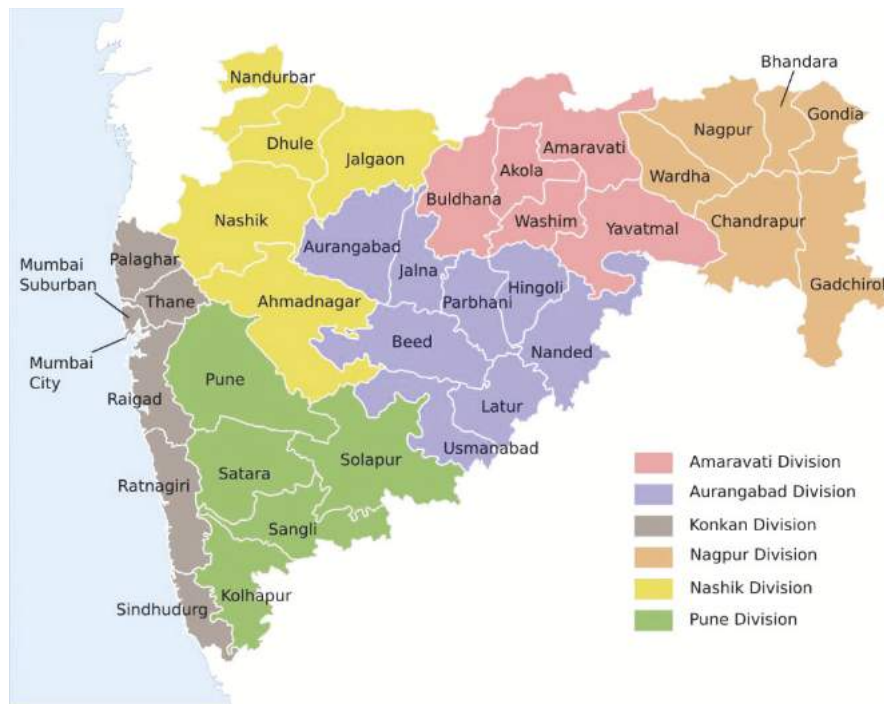
2.8. SUCCESS STORIES

Cashew was the major mandate crop for the tribal people of ASR district. Tribal farmers were planting the seedlings rather than grafts. The seedlings are more susceptible to an array of biotic and abiotic stresses. The economic yield is 3 bags per acre if the climate is congenial at flowering stage. The farmers were not reaping remunerative returns from the seedlings. But the BPP – 8 cashew variety supplied through Tribal Sub Plan resulted in high yielding grafts and the farmers were very happy with the early flowering, cluster bearing and bold sized nuts through which they would improve their income.

3. RATNAGIRI CENTRE, MAHARASHTRA

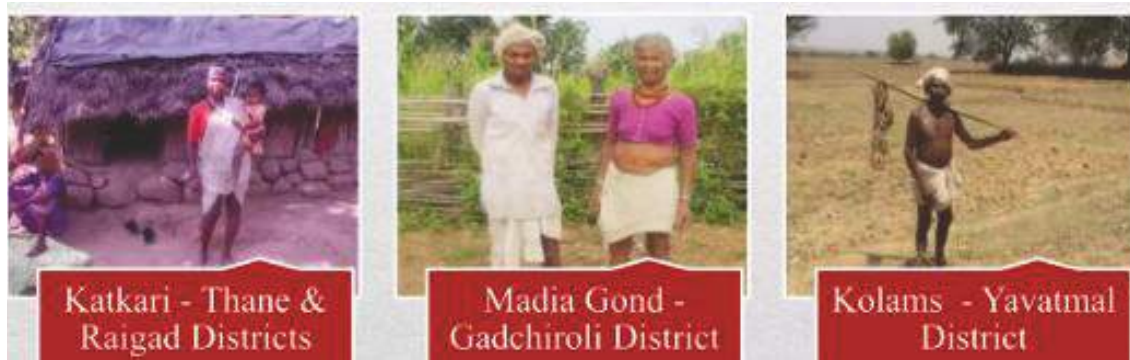
3.1. TRIBAL POPULATION IN MAHARASHTRA

Agriculture plays a pivotal role in the State's economy as nearly 70 per cent of the population in the State is dependent on the agriculture for their livelihood. Agriculture also supports the industrial units with the requisite raw materials and other stuff despite the food to the population. The agricultural economy in tribal areas of the state possesses some distinct characteristics from the general agriculture because of the difference in natural topography. The tribal tracts fall in the areas of extensive rainfall. The tribal lands are sloppy, undulatory and hilly areas with the lack of irrigation facilities. The typical topography has rendered the tribal agriculture less profitable. The development of agriculture, therefore, becomes pivotal for any change in the tribal economy.



The State of Maharashtra

There are 36 districts in the state of Maharashtra, with the majority of the tribal population concentrated in the eastern forest districts of Chandrapur, Gadchiroli, Bhandara, Gondia, Nagpur, Amravati and Yavatmal, as well as the western hilly districts of Dhule, Nandurbar, Jalgaon, Nashik, Palghar and Thane.



Tribes of Maharashtra

The main tribes in Maharashtra are Bhil, Gond-Madia, Katkari, Koli, Oraon and Warli. The majority of the tribes in Maharashtra still adhere to primitive values. People live in communities and travel in caravans from one place to another in search of work and livelihood. Tribal communities include the Katkari, Thakar, Konkana, Warli and Mahadev Koli, mainly found in the northern and central parts of Konkan. The Dubla and Dhodia tribes (37.39%) live in Palghar district of Konkan, Maharashtra. A small nomadic tribe called the Vanarmare is found in southern parts of Konkan, which was originally associated with the hunting of monkeys. In Maharashtra, total populations of tribal is 10510 thousand among the total 112374 thousand population (as per 2011 Census). There are seven districts in Konkan and among them, the most prominent district is Palghar which recorded 11.18 lakh tribal population over the 29.90 lakh of total population. By considering maximum tribal population and their agricultural needs in Palghar, Nandurbar and Ratnagiri, the AICRP (Palms) sponsored Tribal Sub Plan project has been implemented in Javhar, Mokhada, Dahanu etc blocks of Palghar, Navapur in Nandurbar and Mandangad in Ratnagiri districts.

Palghar was carved out of Thane district on 1st August 2014. It spreads between the west coast of the Arabian Sea and the Sahyadri Mountains rows that are east of the Northern district of Palghar. Total population of Palghar was about 3 million in 2011 with 37.4% of Palghar's population comprising of tribes. The district comprises of 8 taluks, namely Mokhada, Talasari, Vasai, Vikramgad, Jawhar, Palghar, Dahanu and Wada. There are large number of tribal villages and hamlets in the hilly forested regions and a number of tiny fishing villages. Warli, Katkari, Malhar koli are the tribal groups residing in Palghar district.

3.2. RATNIGIRI CENTRE

Distribution of inputs and imparting training for 3900 tribal farmers from nine blocks during 2013-14 to 2023-24 was undertaken under aegis of ICAR-AICRP (Palms)-TSP project, RCRS, Ratnagiri in collaboration with Agril. Dept., Palghar and BAIF organization. The project revealed that the farmers were very poor with low literacy and without any awareness of advance agricultural crops management practise resulting in poor yield and less benefit. In the present project, inputs distribution and different extension activities like training, workshop-cum-demonstration of advance agricultural practices etc. were carried out in the said area to improve the livelihoods of tribal.

3.3. DEMONSTRATIONS CONDUCTED

Method demonstrations on planting of coconut seedling was organized in Mokhada, Jawhar, Dahanu, Mandangad blocks during inputs distribution cum training programme for beneficiaries. It covered selection of seedlings, planting, fertilizer application and after care etc. Following demonstrations on planting of coconut seedlings in farmer field were given,

- Soil with a minimum depth of 1.2 meters and fairly good water holding capacity is preferred for coconut cultivation.
- A spacing of 7.5 × 7.5m is used to cultivate the palm and the pit size of 1×1×1 m³ filled up with soil, 10 kg farmyard manure and 2 kg single super phosphate.
- The seedling after planting is to be protected by providing shade artificially thatched shed net and by planting shade tree nearby like banana, glyricidia etc.
- Irrigation and after care – Plants are irrigated regularly during dry months for its proper growth. Provision of proper drainage to protect it from bud rot in initial years. The palms be frequently examined for any insect or fungal attacks.
- Management of exotic whiteflies- IPM based technology including spraying of neem oil and fixing yellow sticky trap was demonstrated.



Beneficiaries of TSP project in Palghar district

3.4. METHODOLOGIES ADOPTED

Coconut based multiple cropping system (cultivation of cinnamon, nutmeg and black pepper as an intercrop in coconut garden) and integrated farming were adopted by the tribal farmers. The agronomic feasibility and economic viability of adoption of coconut-based farming systems have been amply demonstrated in tribal farm. In spite of the benefits of coconut based farming system over the traditional monoculture, the extent of adoption of the same is very low mainly due to the overcrowding of palms. Interventions to promote coconut-based farming systems as part of enhancing agro-biodiversity in Konkan is highly relevant and significant.

On slopes and in areas of undulating terrain contour terracing or bunding was demonstrated. In low-lying areas mounds are formed at planting site to a height of at least 1m above water level. Seedlings were planted on field bunds. In loamy soils with low water table, a pit size of 1m x 1m x 1m was demonstrated. In laterite soils with underlying rocks, larger pits of size 1.2m x 1.2m x 1.2m and in sandy soils, the size of pits was demonstrated to be 0.75m x 0.75m x 0.75 m. Spacing and Systems of Planting spacing depends upon the planting system, soil type etc.

3.5. INPUTS DISTRIBUTED

Under Tribal Sub Plan (TSP) project, nine blocks i.e. Suryanagar, Chandranagar, Jamsar, Dhanoshi, Chok Manmohadi, Vanvasi, Dehere, Khodala, Mokhada, Waiganpada, Kalgipada in Palghar, Navapur in Nandurbar and Mandangad in Ratnagiri districts were selected in the Konkan region of Maharashtra State. In these targeted villages, the baseline information like land holdings, caste identity etc. was collected from Government offices and BAIF organization. Distributed 16625 nos. of coconut seedlings, 17179 nos. of cinnamon grafts, 6253 nos. of nutmeg grafts, 980 nos. of nutmeg cuttings, 8770 nos. of bioagents, 240 kg vermicompost and Amar Loranthus cutter 200 nos. amounting to Rs. 20,83,280/- to the 3900 tribal farmers beneficiaries during the period 2013-14 to 2023-24. Other extension activities like training and workshop-cum-demonstration on advance agricultural practices and group discussions were conducted in selected villages during implementation of the programme. Published leaflets on different topics and was distributed to the beneficiaries.

Table 2. Input distributed under Tribal Sub Plan in Ratnagiri Centre

S.N o.	Year	Districts	Block	Pada / Village	No. of Beneficiaries	Planting material supply per beneficiary
1	2013 - 14	Nandurbar	Navapur	KaranjiB.Pimpran, Mohanpada, Bhomadi, Pati, Borepada, Kamod, Bedki, Raipur, Raipur(Bhamarmal)Raipur (Borevihir), Pratappur, Borzar, Vadkalambi, Ubardi, Khadibardi	612	Coconut seedlings – 4Nos., Cinnamon grafts -5, Nutmeg grafts 2
2	2014 - 15	Palghar	Jawhar	Suryanagar Chandranagar Jamsar	639	Coconut seedlings -3 Nos., Cinnamon grafts-5 Nos., Nutmeg grafts-2 Nos.
3	2014 - 15	Palghar	Mokhada	Sayde Jogalwadi	788	Coconut seedlings- 2 Nos.,Cinnamon

						grafts- 6 Nos.,Nutmeg grafts - 2 Nos.
4	2015- 16	Palghar	Jawhar	Dhanoshi	539	Coconut seedlings - 5 Nos.,Cinnamon grafts -6 Nos.
5	2016- 17	Palghar	Jawhar	Chok Manmohadi Vanvasi	397	Coconut seedlings - 5 Nos.,Cinnamon grafts - 6 Nos.
6	2016- 17	Palghar	Jawhar	Dehere	465	Coconut seedlings -5 Nos.,Nutmeg grafts - 3 grafts
7	2020-21	Ratnagiri	Mandangad	Mandangad	60	Coconut seedlings- 18, Black pepper - 3Nutmeg graft- 3, Cinnamon graft- 3Vermicompost -4 kg, Reduviid bioagent -13, Bracon bioagent-70
8	2021-22	Palghar	Mokhada	Khodala	100	Coconut seedlings – 8, Black pepper - 3, Nutmeg graft -2, Cinnamon graft -1
9	2022-23	Palghar	Mokhada	Mokhada	100	Coconut seedlings-8, Nutmeg graft-2, Bracon/Reduvii d-10
10	2023-24	Palghar	Jawhar	Waiganpada	100	Coconut seedlings -7, Nutmeg graft - 2, Cinnamon graft -2, Black pepper- 5Bracon bioagents -100
11	2023-24	Palghar	Dahanu	Kalgipada	100	Coconut seedlings – 3, Cinnamon graft

						-1, Bracon bioagents -18, Amar loranthus cutter -2
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Input Distribution to the Tribals of Dahanu Settlement



Input Distribution to the Tribals of Jawhar Settlement



Inputs distribution to the tribal farmers at Mokhada

3.6. CAPACITY BUILDING

During 2013-14 to 2023-24 training programmes were organised by ICAR-AICRP (Palms)-RCRS, Bhatye, Ratnagiri with Agril. Dept. Palghar and BAIF organization at eight different places and more than 3900 tribal farmers participated in the said programmes.

Table 3. Capacity building programmes organized at Ratnagiri Centre

Sr.	Year	Dist	Taluk	Pada / Village	No. of Beneficiaries	No of Training organized	Planting material supply/beneficiary
1	2015- 16	Palghar	Jawhar	Dhanoshi	539	02	Distributed Pamphlets on coconut and cinnamon cultivation in Marathi
2	2016- 17	Palghar	Jawhar	Chok Manmohadi Vanvasi	397	01	Distributed research pamphlets on Coconut Production Technology and Intercropping (in Marathi). during planting time
3	2016- 17	Palghar	Jawhar	Dehere	465	01	Conducted two training programmes for 115 tribal farmers in Dehere village and one workshop. 65 tribal farmers were trained and the plantation technique of coconut was demonstrated
4	2020-21	Ratnagiri	Mandangad	Mandangad	60	01	Conducted

							training programmes and demonstrated the coconut plantation technique along with after care
5	2021-22	Palghar	Mokhada	Khodala	100	01	Conducted training programmes and demonstrated the coconut plantation technique along with after care
6	2023-24	Palghar	Jawhar	Waiganpada	100	01	Conducted training programmes and demonstrated the coconut plantation technique along with after care
7	2023-24	Palghar	Dahanu	Kalgipada	100	01	Conducted training programmes and demonstrated the coconut plantation technique along with after care
8	2023-24	Palghar	Dahanu	KVK, Kosbad Hill	100	01	Sustainable Coconut and Palmyra palm production

Advance scientific technologies on coconut cultivation, Spices intercropping in coconut garden and Integrated pests and diseases management were disseminated to the tribal of the specified areas. Also demonstrated the techniques on pits for coconut seedling

plantation, protection from heat, fertilizer application, irrigation, management, spices cutting, propagation and harvesting etc.



Training for the tribal farmers at Jawhar



Newspaper Clipping of the Training Programme

3.7 WORKSHOP CUM FARMERS' DAY

Under TSP project, ICAR-AICRP (Palms)-RCRS, Bhatye, Ratnagiri and Agril. Dept. Palghar jointly organised "Workshop-cum-Farmers day". In these extension activities, demonstrations of various technologies of INM, IPM and IDM were conducted particularly on coconut and spices. Seedlings of coconut and spices were also distributed to the farmers in the said workshop. The farmers were urged to adopt INM, IPM, IDM and scientific methods of cultivation. More emphasis was given on value addition of the coconut neera tapping with

available palms. The tribal farmers also interacted with the scientists of RCRS, Bhatye, Ratnagiri and learnt the techniques about sustainable management of crops, pest-diseases and systemized coconut management.

3.8. FRONTLINE DEMONSTRATIONS

Front Line Demonstration was carried out at Chok village of Palghar district under TSP on best intercropping model for getting additional return with coconut. It has already been proven that Intercropping module was most effective, economical with less pests infestation and higher marketable yield. Thus, this strategy is economically benefitting the farmers due to sustainable crop management with increased productivity and minimum risk or hazard to the human health and environment.



Tribal farmer with coconut palms



Tribal farmer with cinnamon plant

3.9. COCONUT DAY CELEBRATION

Coconut is the main crop in Konkan region of Maharashtra occupying 28,000 ha area in Sindhudurg, Ratnagiri, Palghar, Raigad and Thane district. Though, it is giving good income to the farmer in term of nuts and tender nut water, farmers are not taking care of their coconut gardens and not bestowing interest towards value addition. Hence, 'Coconut Production Technology' a district level workshop was organized with a view to communicate the relevant information about coconut especially value addition to the farmers for enhance their economic returns. This workshop was jointly organized by Regional Coconut Research Station, Bhatye and CDB Office Thane. The joint venture has focused on development of coconut hubs and lectures were delivered on 'By Products of Coconut Waste'.

Lectures were delivered on Pest Management in coconut and Neera Production Technology. About 100 farmers attended the programme.



Dr. V.V. Shinde highlighted the importance of Coconut Growers Association



Dr. Amiya Debnath, Deputy Director of CDB, Regional Office, Thane has focused on development of coconut hubs

3.10. RESULTS OF DEMONSTRATIONS CONDUCTED

Generally, in Konkan region, infestations of the black headed caterpillar pest reach serious proportions in Palghar than rest of the districts in the hot months of October - April. The heavy infestation of black headed caterpillar was 22.3 percent during 2016-17 in Palghar district. By considering severity of this pest, RCRS, Bhatye was continuously releasing *Goniozus* and *Bracon* parasitoids at an average of 50 numbers per beneficiary every year in different blocks of Palghar district under Tribal Sub Plan project. As a result, the population of coconut black headed caterpillar pest was reduced to 0.36 per cent during 2023-24.



Parasitoids release for the management of CBHC at Mokhada



Parasitoids release for the management of CBHC at Mokhada

3.11. SUCCESS STORIES

Scientists from AICRP centre, Bhatye, Ratnagiri have made a concerted effort in managing the pest menace in Palghar dist. of Maharashtra. In Nareshwadi, Palghar district, around 500 coconut palms aged 5-30 year were severely affected by black headed caterpillar. The pest damage was to the tune of 90 per cent and it reduced the productivity of palms to 30-40 nuts/palm. The scientists working in ICAR-AICRP on Palms centre RCRS, Bhatye visited the plantation and immediate interventions were taken up. Released around 1200 *Bracon* and 500 *Goniozus* parasitoids in the farmers field. Timely intervention and effective monitoring of the pest population resulted in reduction of the pest population within five months.

During 2017-18, black headed caterpillar outbreak was reported in 350 palms in an area of 2 hectare in Palghar. The damage was recorded to the tune of 100 per cent and 1000 parasitoids were released in the field by scientists from RCRS, Ratnagiri. The timely release of parasitoids helped in reducing further damage and the palms were recovered after the release of parasitoids. Community based release of parasitoids is a very effective, feasible and ecofriendly method of black headed caterpillar management. The ICAR-AICRP centre, RCRS, Ratnagiri is successful in identification of the pest problem and distribution of larval parasitoids in large numbers to the affected areas to contain the spread of the pest. Emergence of healthy new leaves in the pest-infested plantation after intervention is so convincing that most of the nearby farmers emulated the technology at the shortest period. Sustainability of the technology was visible by recovery of palms in the adjacent coconut plantations also. Pest infestation showed visible decline in a period of four months from an initial leaf damage. Subsequently complete recovery of palms was achieved in a period of 15 months and no further pest incidence was noticed in subsequent monitoring done indicating sustainability of the eco-friendly technology. The participating tribal farmers took forward the technology as positive spokesperson to nearby locations making the entire zone pest free with successful establishment of parasitoids.

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4. JAGDALPUR CENTRE, MAHARASHTRA

4.1. CHATTISGARH – AN OVERVIEW

Chhattisgarh lies within 17° 45' to 20° 34' N latitude and 80° 15' to 82° 15' E longitude with an altitude ranging from 550 to 850 meters above mean sea level (MSL). The region has a sub-tropical monsoon climate with three distinct seasons i.e. summer, monsoon and winter. The southwest monsoon starts from June and continues till middle of September, winter season spreads from October to February whereas; summer season extends from March to middle of June. Rainfall is the major source of ground water recharge in the area and receives maximum (85%) rainfall during the southwest monsoon season. The winter rainfall is meagre (10 - 15%). The zone receives high rainfall coupled with comparatively lower temperatures and higher humidity. The average annual rainfall (mean of 50 years) ranges from 1200 to 1600 mm mostly received from June to September with its peak in July and August. The maximum and minimum temperatures during peak summer and winter touch up to 43°C and 5°C, respectively.



Chhattisgarh State

Bastar is one of the most backward districts in the country. Jagdalpur comes under the Bastar Plateau of Chhattisgarh. Despite of the fact that the Bastar plateau is rich in natural resources with dense forests regardless of such natural wealth the livelihood pattern in Bastar continues to be dictated by tradition as even today. The soil of Bastar

region is majorly Entisol, Inceptisol and Alfisol wherein organic material like FYM or compost improves the water retention and storage capacity of soil with a pH range between 5.5 and 6.8. The agricultural practices followed by the tribals are mostly traditional. The usage of traditional agricultural implements has lowered the production of agriculture to a great extent. Forest-related work, including collection and sale of forest produce, supplements the meager agricultural income of the population. The suitability of land and agro-climatic condition is well suited for the horticultural crops.

4.2. TRIBAL SUB PLAN IN JAGDALPUR CENTRE

Village surveys were based purely on Participatory Rural Appraisal (PRA). For expanding the work of plantation of coconut in the tribal belt, the major challenges were to target area specific developments by altering the hidebound nature of the rural population as well as availing administrative support for the smooth functioning of the programme. Although coconut is a non-traditional crop in the region yet there is an immense scope of its expansion. According to Horticulture statistics (2022-23) the total area of coconut in the state is 1.667 ('000 ha) with a production of 1021.992 ('000 MT).

The substantiation for encouraging coconut plantations in the lands of tribal was based primarily on the livelihood and economic sustainability. Understanding the challenges of the tribal farmers and highlighting the opportunities to empower themselves as agri-entrepreneurs has been the major emphasis of the work. Coconut based multitier cropping pattern have been introduced to the tribal farmers through the tribal sub plan. The tribals were guided to utilize their baadi/homestead by raising vegetables and flower crops in between their coconut plantation rather than keeping it unused and barren. This in a way would help them suffice their own daily needs and then after marketing the rest of produce once the coconut comes to bearing. Hence with a view for the upliftment of the tribal community the formulation of TSP is a boon.

As coconut palm takes nearly 7-10 years to attain reproductive (fruiting) phase in Bastar, the farmers' response initially was too low towards this crop. Most of the farmers were tribals and financially not too sound while others were marginal, hence they need regular source of income from their field. With the advent of time the farmers were trained as to how they can utilize the vacant space between two consecutive trees in order they could yield a regular livelihood from other intercrops until regular yield from coconut is obtained. Initially the coconuts were taken up in the bunds of the field but as the farms started yielding

from their coconut trees they got interested in taking up coconut as a part of their cropping system. Now from the bunds, coconut plantation has moved to their cultivable land area. Meanwhile intercrops help in the generation of income until the fruiting of coconut. The AICRP on Palms demonstrates a variety of technologies, including intercropping fruits in coconut gardens, intercropping flowers, tubers and other vegetables in coconut gardens, and better technology for the production of coconut.

The management of coconut nurseries, green manuring, methods of applying fertilizers and manures and the management of insect pests and diseases are some of the major topics that are covered in the instruction that they receive. In addition to this, the farmers are informed on the better packaging and procedures that are used in the coconut sector. Vermicomposting of coconut leaves using *Eisenia foetida* was another demonstration that the progressive coconut farmers were able to witness. This is in addition to the demonstrations that were already presented to the coconut growers. Continuous trainings are being provided to farmers in order to educate them on the fundamentals of processing and to assist them in finding their way through the process of adding value to coconut products. Apart from this the coconut growers receive instruction and training for climbing coconut trees by the use of coconut climbers.

As an alternative to monocropping, the farmers are advised to practice multitier planting within the framework of a farming system based on coconut resources. It is possible to install mushroom hut technology in the coconut orchards at a low cost in order to generate additional money. For the benefit of farmers, the management of coconut waste by the converting it into manure is an excellent option for the coconut growers. Apart from this the coconut leaves can be used as a mulch in the field.

Some major demonstrations conducted at AICRP on Palms, Jagdalpur centre are:

- Intercropping fruit trees in coconut gardens
- Intercropping flowers, tubers and other vegetables in coconut gardens
- Coconut plantation waste management
- Low cost mushroom hut technology in the coconut orchards
- Different varieties of coconut crop
- Nursery management in coconut
- Pest management in coconut crop
- Installation of yellow stick trap

- Fertilizer management in coconut
- Package and practices in coconut
- Plant protection in coconut
- Vermicompost preparation from coconut leaves
- Improved package and practices in coconut
- Processing and post- harvest technology
- Climbing on coconut trees (FoCT)

4.3. METHODOLOGIES ADOPTED

Coconut based cropping system model for utilizing the space between the coconut trees by growing flowers, fruit trees and vegetables. Preparation of vermicompost tank, installation of yellow sticky trap for monitoring and management of Rugose Spiraling Whitefly in coconut, spraying Azadirachtin @1ml/litre water, green manuring with sesbania, sunn hemp and gliricidia.

4.4. INPUTS DISRIBUTED

A variety of agricultural farm inputs including coconut seedlings, vegetable seeds, fertilizers, fungicides, vermicompost and other agricultural farm inputs, are provided to coconut producers as part of the Tribal sub plan program during the training programmes that were conducted. In addition, trainings on FoCT are offered in the field of coconut research for forward-thinking farmers who cultivate coconut as a component crop on their farms or homesteads. The participants who complete the course that lasts for six days are provided with coconut climbers.

4.5. CAPACITY BUILDING PROGRAMMES

The capacity building programmes have the potential to improve the productivity, quality and sustainability of coconut production by enhancing the capabilities of coconut farmers and processors in the region. This, in turn, can lead to improved livelihoods and economic growth of the coconut growers. Many leaflets, folders and bulletins have been provided to the farmers regarding the complete package and practices of coconut alongwith radio and television talks. Regular on and off farm training programs, field dayS, world coconut day celebration, exposure visits, various demonstration programmes were conducted by the centre to guide the farmers on the following:

- Use of Good Agricultural Practices.
- Improving soil fertility
- Proper management of irrigation systems.
- Methods for removing the husk and shell from mature coconuts.
- Copra production.
- Value added products like coconut oil, milk, coconut sweets etc.
- Vermicomposting the coconut waste.
- Methods of coconut production that are resistant to climate change.



Demonstration Programmes





Capacity Building Programmes

4.6. WORLD COCONUT DAY CELEBRATION

World Coconut Day is celebrated annually on September 2nd, with the purpose of recognizing the significance of coconut and the numerous advantages they offer. Annually, a field day is held in the study field of the AICRP in order to commemorate the theme. The training is attended by a large number of coconut farmers, and they are given coconut seedlings to encourage their participation.

4.7. RESULTS OF DEMONSTRATIONS CONDUCTED

As a result of the demonstrations conducted during the trainings the farmers are adopting coconut based cropping system by raising fruit trees, flowers and vegetables as intercroops in the coconut plantation. Vermicompost tanks are also constructed in the farmers' field.



World Coconut Day Celebration

4.9. SUCCESS STORIES

- (i) **Shri Eshansh Singh Rathore:** He is a resident of Bakawand block in Bastar district of Chhattisgarh. He is one of the most progressive farmers who is concerned in raising vegetable and fruit crops in his field. He has around 2500 coconut seedlings intercropped with other fruit crops like guava, banana, mango, citrus fruits, dragon fruit, passion fruits and sulphur while vegetables like peas, tomato, brinjal, okra, leafy vegetables etc. are also being cultivated. This is the ninth year of coconut plantation and fruiting has already started in the field. He earned nearly one lakh from the coconut sale and around 5 lakhs from the intercrops. The farmer truly favours the plantation of intercrops in the coconut field. In the current year he has planted another 600 coconut seedlings in his field.



Field view of coconut in Bakawand, Bastar

- (ii) **Shri Shailesh Atami:** He is a progressive coconut growing farmer of Chhattisgarh. He owns his land in Kasoli, Dantewada in which he has grown around 600 coconut seedlings intercropped with banana and guava. The planting of coconut was done in the year 2017 and now he has started yielding nuts and other fruit crops from his field. He is earning around Rs. 1.2 lakh from coconut and around Rs. 2 lakh from banana, pineapple and guava. He opined that by growing of intercrops he has earned quite more than he would have earned by growing a monocrop. This year he will be planting 200 more coconut seedlings in field.



Field view of coconut in village Kasoli, Dantewada

(iii) Shri Somaru Ram: He is a progressive coconut growing farmer from village Chokar, Bastar. Shri Somaru was advised to plant intercrops in the coconut orchard together along with a drip irrigation system in order to increase production, efficiency, and sustainability in the old agricultural methods. He planted 150 coconut seedlings and is also growing vegetables like tomato, chilli, okra, pumpkin and bitter gourd as intercrop in the coconut orchard. His previous earnings from various vegetables were approximately 1.5 lakhs (around Rs 40,000/- from cole crops, Rs 25,000/- from chilli, Rs 25,000/-from bittergourd and Rs 50–60,000/- tomatoes). However, he now makes over two lakh rupees per annum from selling just coconuts. He sells tender nuts as well as matured nuts in the local market. Observing the financial gains, in the near future, 300 coconut seedlings will be planted by Shri Somaru Mourya. He has been advised to follow multitier cropping in his field by growing cinnamon, papaya and banana as intercrops in the coconut orchard along with vegetables and flowers as well. Moreover he has also been advised to construct a vermicompost unit in his field in order he could utilize the fallen leaves of coconut.



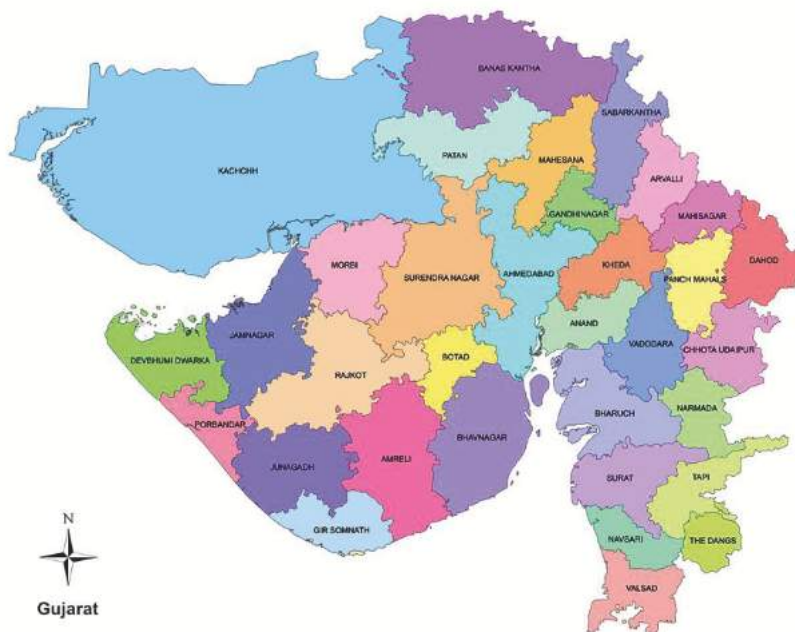
Field view of coconut in village Chokar, Jagdalpur

(iv) Shri Peelu Ram: He is a marginal farmer belonging to village Tahakapal in Bastar district of Chhattisgarh. He has planted 50 coconut seedlings in the year of 2015 and is raising marigold and vegetables crops viz., peas, radish and leafy vegetables as intercrop. Fruiting has initiated in some of the trees from the current year onwards. He opined that growing intercrops in the coconut orchard is quite remunerative. He is earning around 1.5 lakh annually from coconut along with the intercrops.

5. NAVSARI CENTRE, GUJARAT

5.1. BACKGROUND INFORMATION ABOUT STATE

The Mughal Emperor Akbar conquered Malwa and Gujarat in 1570s. The British East India Company set its first footsteps in Surat in 1818 and the State came in control of their rule. Gujarat was divided into princely states. After the Indian Independence in 1947, all of Gujarat except Saurashtra and Kutch became part of Bombay State until May 1, 1960, when the Government split Bombay state into the States of Maharashtra and Gujarat. Ahmedabad became the chief city of the new State and housed the State Government Offices. They remained there until they were transferred to Gandhinagar in 1970.



State of Gujarat

Gujarat has varying topographic features though a major part of the state was dominated by parched and dry region. The average rainfall in the state varies widely from 250 mm to 1500 mm across various zones. Out of 8 agro-climatic zones, five are arid to semi-arid in nature, while remaining three are dry sub-humid in nature. Deep black to medium black soils dominate the soil types in the state. Total geographical area of the state is about 196 lakhs hectares. Out of total geographical area, 99.66 lakh hectares are under net cultivable area which is 50% of total geographical area. Total gross cropped area is about 122.11 lakh hectares in the state. Total gross irrigated area is 56.14 lakhs ha which is

accounted for 45.97% of total crop area. Total operational land 2 holders in the state are 48.86 lakh, who possess the cultivable land with an average of 2.03 ha. per land holders. Out of total land holders, 37.16% marginal farmers, 29.25% small farmers, 22.10% Semi- medium farmers, 10.49% medium farmers & 1.00% large farmers. (Source: Agriculture Census, 2010-11). Major Agricultural produce of the state include cotton, groundnut (peanuts), dates, and sugar cane, milk & milk products. Gujarat is the dominant producer of tobacco, cotton, and groundnuts in India. Other major crops produced in state are rice, wheat, jowar, bajra, maize, pigeon pea and gram. Castor, Groundnut and Mustard are the important oilseed crops of the state. The state has notable achievement in production and productivity scenario in cotton, castor and groundnut. Horticulture production scenario gives the shining of increment. Area under cultivation of horticulture crops and production are continuously increasing in the state. “Gir Kesar Mango” and “Kutchi Date” have unique identity in the country. State is known for Cumin, Fennel and Isabgul production and productivity. State contributes more than 90% production of the country in Fennel. Farmers’ efforts make Gujarat proud in productivity of the onion and potato. State has highest productivity in country for onion (25 MT/ha.) and potato (28.81 MT/ha.). Farmer of the state has notable achievement in potato productivity i.e. 87 MT/ha., which is highest in the world. Gujarat state is 1st in the production of Cumin, Fennel and Date palm, 2nd in production of Banana, Papaya and lime. Productivity of Onion and Potato is highest in the country where productivity of Banana, pomegranate and sapota is 2nd highest in country. State enjoys monopoly in processing of Isabgul. The crop specific Centers of Excellence for the crops like Vegetables, Mango and Date palm have been planned and shall be established with the support of world best technologies with a view to increase the productivity and quality by capacity building of the farmers. Couple of good integrated pack houses, air cargo complex and Gama irradiation projects has been established by Gujarat Agro Industries Corporation. Onion dehydration industry of the state is biggest in the country.

As per the 2011 population census, the total population in the State was 604.39 lakh of which the tribal population, accounting for 14.75% of the total population, was 89.17 lakh. The effective literacy rate was 62.5% in ST population, far lower than the effective literacy of 78% in the total population of the State. Since 2001, literacy rate has improved for the tribal communities. In Gujarat, Scheduled Tribes mostly live in the areas along the State's eastern border. Gujarat accounts for 8.1% of the Scheduled Tribe population of the country. The

tribal population of Gujarat, numbering 89.17 lakh, constitute 14.8% of the state's population. They are concentrated in the eastern districts, from Mt. Abu on the Rajasthan border in the north to Dahanu district on the Maharashtra border in the south. The TSP area constitutes 18% of the state's geographical area. There are 11 major tribes in Gujarat; the largest Bhil, constituting 47.89% of the state's tribal population. The 5 Particularly Vulnerable Tribal Groups number about 1,44,593.



Dhodia Tribes of Gujarat

Seven districts of south Gujarat viz., Surat, Navsari, Bharuch, Valsad, Narmada, Tapi and Dang comes under the jurisdiction of Navsari Agricultural University, Navsari. As per the data, more than 50% of ST population comes under the Dangs (94.64%), Tapi (84.17%), Narmada (81.55%) and Valsad (52.92%) districts whereas, Navsari (48.10%), Surat (14.09%) and Bharuch (31.47%) having less than 50% of ST population.

District wise Population – 2011

NO.	DISTRICT	TOTAL POPULATION	ST POPULATION
1.	Ahmadabad	72,14,225	89,138
2.	Amreli	15,14,190	7,322
3.	Anand	20,92,745	24,824
4.	Banas Kantha	31,20,506	2,84,155
5.	Bharuch	15,51,019	4,88,194 (31.47%)
6.	Bhavnagar	28,80,365	9,110
7.	Dohad	21,27,086	15,80,850
8.	Gandhinagar	13,91,753	18,204
9.	Jamnagar	21,60,119	24,187

10.	Junagadh	27,43,082	55,571
11.	Kachchh	20,92,371	24,228
12.	Kheda	22,99,885	40,336
13.	Mahesana	20,35,064	9,392
14.	Narmada	5,90,297	4,81,392 (81.55%)
15.	Navsari	13,29,672	6,39,659 (48.10%)
16.	Panch Mahals	23,90,776	7,21,604
17.	Patan	13,43,734	13,303
18.	Porbandar	5,85,449	13,039
19.	Rajkot	38,04,558	24,017
20.	Sabar Kantha	24,28,589	5,42,156
21.	Surat	60,81,322	8,56,952 (14.09%)
22.	Surendranagar	17,56,268	21,453
23.	Tapi	8,07,022	6,79,320 (84.17%)
24.	The Dangs	2,28,291	2,16,073 (94.64%)
25.	Vadodara	41,65,626	11,49,901
26.	Valsad	17,05,678	9,02,794 (52.92%)
	Gujarat	6,04,39,692	89,17,174 (14.75%)

5.2. TSP IN NAVSARI CENTRE

The TSP scheme was started under AICRP (Palms), Regional Horticultural Research Station, ASPEE College of Horticulture, Navsari Agricultural University, Navsari during 2013-14 to 2016-17 and 2020-21 and still continuing. In the tribal areas, farmers were very poor with low literacy and without any awareness of advance agricultural crops management practice resultant poor yield and less benefit. In the present project, the impact of the farming inputs distribution and different extension activities like training, workshop-cum-demonstration of advance agricultural practices etc. were carried out in the said area to improve the livelihoods of tribal peoples.

5.3. DEMONSTRATIONS CONDUCTED

Under the TSP project, different types of extension works like front line demonstrations, farmers trainings, input distributions etc. were done periodically in Navsari, Valsad, Narmada, Tapi and Dang districts of south Gujarat. The details of demonstrations are given below:

Sr. No.	Event	Date	Number of farmers trained	Venue/Village
Year: 2013-14				
1	Plantation of coconut	04-07-13	74	FRS, Gandevi (Navsari)
2	Field demonstration on control of termites and fungal diseases in coconut during initial stage	31-08-13	39	Dungarda, Waghai (Dangs)
3	Application of fungicides and pesticides for control of diseases and pests in coconut	30-09-13	52	Baradpani, Waghai (Dang)
4	Application of fertilizers and manures in coconut	16-10-13	38	Bhinar, Vansda (Navsari)
5	Application of fungicides, pesticides and fertilizers in coconut	22-11-13	44	Zari, Vansda (Navsari)
Year: 2014-15				
1	Field demonstration on plantation of coconut	13-08-14	105	KVK, Dediapada (Narmada)
2	Application of fertilizers and manures in coconut	26-11-14	75	KVK, Dediapada (Narmada)
3	Application of fungicides, pesticides and fertilizers in coconut	21-01-15	30	Jamalapada, Waghai (Dang)
4	Application of fungicides, pesticides and fertilizers in coconut	04-02-15	78	KVK, Waghai (Dang)
5	Application of fungicides, pesticides and fertilizers in coconut	06-02-15	54	KVK, Ambheti (Valsad)
Year: 2015-16				
1	Field demonstration on plantation of coconut	24-08-15	90	KVK, Ambheti (Valsad)
2	Field demonstration on plantation of coconut	07-09-15	22	Jamlapada (Dang)
3	Field demonstration on plantation of coconut	29-09-15	105	Nargol (Valsad)
4	IPDM and use of bio-fertilizers in coconut	30-12-15	25	Umarsadi (Valsad)
5	IPDM and fertilizer management in coconut	31-12-15	85	KVK, Ambheti (Valsad)
6	IPDM, fertilizer management in coconut and demo on coconut climber	02-01-16	95	Nargol (Valsad)
7	IPDM and fertilizer management in coconut	04-01-16	22	Jamlapada (Dang)
Year: 2016-17				
1	Field demonstration on plantation of coconut	29-07-16	65	KVK, Ambheti (Valsad)
2	Field demonstration on plantation of coconut	03-08-16	48	Nargol (Valsad)
3	Field demonstration on IPDM and fertilizer management in coconut	27-02-17	41	KVK, Ambheti (Valsad)
Year: 2021-22				
1	Field demonstration on production of coconut planting materials (Nursery management)	18-08-21	42	RHRS, NAU (Navsari)

2	Value addition and making of articles from coconut fibre	02-09-21	60	KVK, NAU (Navsari)
Year: 2022-23				
1	Application of organics in coconut	16-08-23	113	RHRS, NAU (Navsari)
2	Use of organic nutrients and bio-fertilizers in coconut	16-03-23	75	KVK, Ambheti (Valsad)
Year: 2023-24				
1	Making of different articles form coconut fibre	02-09-23	60	KVK, Vyara (Tapi)
2	Planting of coconut plants	02-09-23	60	KVK, Vyara (Tapi)
3	Planting and care of coconut plant	05-09-23	42	KVK, Waghai (Dang)

5.4. METHODOLOGIES ADOPTED

The farmers of the south Gujarat are mostly adopted the technologies which was endorse, developed and recommended by AICRP (Palms), Navsari center. The different techniques like planting methods and distance, water and nutrients management, IPDM , intercropping of spices, vegetables and tuber crops under new and old coconut garden, production of vermicompost and vermiwash from dry coconut leaves, etc. were adopted by the farmers.

5.5. INPUTS DISTRIBUTED

Inputs like coconut seedlings, vermicompost, bio-fertilizers, Novel organic liquid nutrients, NPK, fungicides, insecticides, coco traps, plastic creates, spraying pumps, etc. were distributed to the ST farmers of Navsari, Dang, Tapi, Valsad and Narmada districts of south Gujarat with the help of KVK's, NGO's and state departments.

5.6. CAPACITY BUILDING

During the tenure, different training programmes were organized by ICAR-AICRP (Palms)-RHRS, NAU, Navsari with the help of KVK's, NGO's as well as state departments at different places and more than 3250 tribal farmers were participated in the distinct programmes. Advance scientific technologies particularly on coconut cultivation, spices intercropping in coconut garden and integrated pests and diseases management, value

addition and making different articles from coconut fiber were disseminated to the tribal of the specified areas. Also demonstrated the techniques for coconut seedling plantation, protection from heat, application of organic and inorganic fertilizers, irrigation and drought management practices, intercropping and harvesting with climbing device etc.

5.7. COCONUT DAY CELEBRATION

AICRP (Palms), Navsari center celebrate the World Coconut Day on every second September of year by conducting different awareness programmes like farmers training, kisan gosthi, meetings, demonstrations, hands on training for tribal women etc. The details of the celebration of programme is given below:

Sr. No.	Event	Date	Number of farmers trained
Year: 2016-17			
1	One day training programme on different aspects of coconut crop on the occasion of World Coconut Day	02-09-2016	110
Year: 2017-18			
1	Farmers training programme on Production technology and value addition of coconut	02-09-2018	25
Year: 2018-19			
1	Farmers training programme on Production technology and value addition of coconut	04-09-2018	50
Year: 2019-20			
1	Farmers training programme on Production technology and value addition of coconut	09-09-2019	175
2	Farmers training programme on Production technology and value addition of coconut	10-09-2019	125
Year: 2020-21			
1	Farmers training programme on Production technology and value addition in coconut (Online)	08-09-2020	85
Year: 2021-22			
2	Celebration of World Coconut Day by organizing training on 'Value addition and making of articles from coconut fibre'	02-09-2021	60
Year: 2022-23			
1	Celebration of World Coconut Day by organizing training programme on 'Production Technology and Value addition in Coconut'	02-09-2022	78
Year: 2023-24			
1	Celebration of World Coconut Day by organizing training programme on	02-09-2023	60

	'Production technology and value addition of coconut'		
2	Production technology of coconut	05-09-2023	46

5.7. RESULTS OF DEMONSTRATIONS CONDUCTED

In Year 2013-14 scientist of AICRP (Palms), NAU, Navsari survey of five districts and identify the enthusiastic farmers for plantation of coconut. For convincing to the farmers for coconut plantation with scientific technologies, AICRP (Palms), NAU, Navsari organized number of farmers meet, Kisan Goshthi and exposure visit of farmers at RHRS, ACH, NAU, Navsari and given demonstration of 16145 WCT coconut plants with inputs recommended dose of fertilizers, bio fertilizers, Novel organic liquid nutrients, fungicides, pesticides etc., 58 numbers of spray pumps as well as 390 plastic crates and timely field visit with scientific advise by scientist to farmers.

5.8. SUCCESS STORIES

Coconut is an old commercial plantation crop for Valsad and Navsari coastal districts but introduced as new commercial crop in Dang, Tapi and Narmada districts (non-traditional) of south Gujarat. Most of the farmers of all district comes under small category, because their land holding is very less (0.5 to 3 ha.) and they are planted the coconut plants on their farm border or field boundary. The main source of income of farmers from the five districts is Agriculture and Animal husbandry. Average annual income of farmers from different crops is Rs. 35000 to 1,20,000.

Total 16145 seedlings of coconut (WCT) was distributed during the year (2013-14 to 2016-17) to 493 (Average minimum 15 and maximum 50 seedlings to each) farmers of Navsari, Dang, Valsad and Narmada districts of south Gujarat. By using the different technologies, inputs (organic and inorganic nutrients, bio fertilizers, Novel organic liquid nutrients, fungicides, pesticides etc.) and timely field visit as well as continues contact by scientist, the farmers are getting good results and income through coconut crop in traditional as well non-traditional areas also. However, the other inputs like 390 numbers of plastic crates were distributed to 130 farmers of Tapi and Valsad districts whereas, 58 numbers of spray pumps (each one) was given to the tribal farmers of Dang, Valsad and Tapi districts during 2022-23 and 2023-24.

Coconut seedlings:

Those farmers are received the coconut seedlings and planted on field border during 2013 to 2015, the yield of that palms are started and they harvested an average of 40-

50 nuts per palm per year (non-traditional areas). Farmers are getting average 20-30 rupees per nut by selling personally to nearer hospitals, schools, road sides or local market. So, they earn approximate Rs. 800-1500 directly per palm per year.

Plastic Crates:

A versatile and essential tool for harvesting and agriculture. The quality of any goods depends on handling & transportation. Crates maintained quality after harvesting fruits and vegetables. Good quality of plastic crates having 20 kg capacity was distributed to the farmers during 2022-23 and 2023-24. Earlier the farmers are packed their produced in gunny bags or any cloths materials and sending to local market. But, after getting the plastic crates through project, they are stored and transport the vegetables and fruits in distinct market very safely and without any damage.

Overall benefits to farmers:

- Easy transportation without damage in goods.
- Simple to place graded fruits and vegetables.
- Easy to packing & help to send other state's markets.
- Ultimately reduced 20-25 per cent of loss of produce and increased 10-15 per cent of profit.

Spray Pump:

The Battery operated sprayer– a boon for farmers. The quality as well as quantity of produce is depend on spraying and protection of crop. The battery operated light weight plastic body spray pumps having 16 lit capacity was distributed to the farmers during 2022-23 and 2023-24. The conventionally used handle-lever spraying systems used to take up a lot of time and energy on the part of the farmers. Earlier the farmers are sprayed their crops by spray pumps but manually and on rent basis. But, the battery-powered sprayer has come as a saviour to all. Aided with technology, the rechargeable battery in the sprayer was what made it convenient for farmers to spray anything onto the crops.

Overall benefits to farmers:

- Spraying of approximate 500 lit of solution in a single charging
- Easy to use, offers convenience
- Flexibility in transportation
- Saving cost as well as time
- Control the pressure of the spray depending on the requirement (Saving of chemicals)

WORLD COCONUT DAY CELEBRATION



TRAINING PROGRAMMES FOR FARMERS



DISTRIBUTION OF INPUTS





DISTIBUTION OF IMPLEMENTS AND INPUTS



REVIEW AT FARMERS' FIELD



REPORT OF TRIBAL SUB-PLAN – NAVSARI CENTRE

**TSP programme under this scheme: Year of project initiation
YEAR-2013-14 TO 2023-24**

ICAR Share (100%)

Year	Amount earmarked of TSP (Rs.)	Financial Achievement (Rs.)	Physical achievements					Any other information
			Number of individual / families / colonies / villages benefited			Physical assets created	Type of assets created	
			Individuals	Families	Colonies			
2013-14	321000.00	321000.00	--	115	--	13	--	Distribution of inputs viz., coconut seedlings (WCT-5530 seedlings), fertilizers, pesticides/insecticides and organic manures etc. to the beneficial farmers of Navsari, Narmada and Valsad districts of South Gujarat under TSP
2014-15	650000.00	650000.00	--	121	--	07	--	Distribution of inputs viz., coconut seedlings (WCT-4325 seedlings), agro-chemicals, Vermicompost and NPK as well as bio-fertilizers to the beneficial farmers of Narmada and Valsad districts of South Gujarat under TSP
2015-16	700000.00	424080.00	--	193	--	13	--	Distribution of inputs viz., coconut seedlings (WCT-4090 seedlings), agro-chemicals, vermicompost and NPK as well as bio-fertilizers to the beneficial farmers of Dang and Valsad districts under TSP.
2016-17	272920.00	107805.00	--	64	--	07	--	Provide the inputs viz., coconut seedlings (WCT-2200 seedlings) to the beneficial farmers of tribal area.
2020-21	180000.00	169776.00	--	75	--	04	--	Distribution of different inputs (Organics, Inorganics and bio-fertilizers as well as spray pumps) to the ST farmers of Valsad district under TSP.
2021-22	175224.00	144516.00	--	75	--	03	--	Distribution of different inputs (Organics, and bio-fertilizers as well as spray pumps) to the ST farmers of Valsad district under TSP.
2022-23	284000.00	192950.00	--	75	--	04	--	Distribution of different inputs (Organics, plastic creates as well as spray pumps) to the

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