

# Attracting Youth in Agriculture

## Skill and Entrepreneurship Development through KVKs



**ICAR-Agricultural Technology Application Research  
Institute (ATARI)**

CRIDA campus, Santoshnagar, Hyderabad - 500 059, Telangana, India



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**Y.G. Prasad, J.V. Prasad, E. Karunasree, A. Srinivas,  
K. Sailaja, R.S. Dahatonde, S.D. Nalkar and A.K. Singh**



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***Compiled by :***

Dr. J.V. Prasad, Nodal Officer, ARYA & TSP, Zone V,  
ICAR-ATARI, Hyderabad

***Contributors :***

Scientists of Tribal Sub Plan KVKs in AP, Telangana & Maharashtra

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The Director

ICAR- Agricultural Technology Application Research Institute  
CRIDA Campus, Santoshnagar, Saidabad PO, Hyderabad - 500 059

Ph : 040-24006500, 24530300, 2453517, FAX : 040-24533543

Website : <http://zpd5hyd.nic.in>

Email : [director.atari\\_hyd@icar.gov.in](mailto:director.atari_hyd@icar.gov.in)

***Front cover:***

Entrepreneurship development activities of KVKs - value addition of millets, vermi-composting,, mushroom production and apiary

***Back Cover :***

Improved Jasmine production, backyard poultry, onion seed production and cashew grafted plants for early bearing

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## Executive Summary

ICAR-Agricultural Technology Application Research Institute (ATARI) formerly known as Zonal Project Directorate (ZPD), besides taking up technology assessment, demonstration and training activities through Krishi Vigyan Kendras (KVKs) in the three states of Andhra Pradesh, Telangana and Maharashtra, is also vested with the responsibility of imparting skill training in agriculture and allied fields for ensuring livelihood security and enhancing farm income which is envisaged to be doubled by 2022. The farmers not only require knowledge and understanding of intricacies of new technologies but also more skills to adopt the same in varied and complex field situation on their farms. ATARI, Hyderabad has undertaken several skill and entrepreneurship development activities in the tribal districts of Andhra Pradesh, Telangana and Maharashtra over the past 5 years under Tribal Sub Plan (TSP) which facilitated establishment of income generating assets and opportunities among tribal youth and ensured nutritional and livelihood security to the tribal youth in these districts.

Tribal sub plan has been implemented through Krishi Vigyan Kendras (KVKs) in zone V under the jurisdiction of ICAR-ATARI, Hyderabad since 2012-13 financial year. The scheme was initiated through only one KVK, Nandurbar of Maharashtra which is the only district in the zone with a tribal population exceeding 50% (65.53). Later the scheme was gradually extended to other districts in the zone with the addition of 3 (KVKs in 2014-15) Vizianagaram, Visakhapatnam and Thane), 9 KVKs in 2015-16 (Adilabad, Nalgonda, Khammam, Venkataramannagudem, Pandirimamidi, Darsi, Amaravati (G), Raigad and Nashik) and three KVKs in 2016-17 (Srikakulam, Warangal (Malyal) and Mehaboobnagar (Madanapuram)), the total number of KVKs implementing TSP reaching to 16. These KVKs were selected for the implementation of TSP on the basis of presence of predominant

tribal mandals/ blocks or villages in which the per cent tribal population ranges from 40-100 per cent.

The training that was imparted to tribal farmers by KVK, Nandurbar during 2012-13 led to establishment of 4 nursery units and 5 spiral grading units in the operational area and the farmers could produce 2 lakh seedlings of chillies during these years from their nursery. The introduction of beans and okra in the tribal belt through frontline demonstrations could fetch 20 tribal farmers an amount Rs. 2 lakhs adding to their annual family income. An increase of 18 and 22.78 per cent was achieved in the productivity of cotton and *rabi* jowar respectively in the demonstration plots compared to the farmers' practice. During 2012-13 to 2014-15 a total of 57 technologies were assessed by KVKs of the zone through 455 on-farm trials and 972 front line demonstrations were also conducted during the three years. 12000 tribal farmers were trained on various improved technologies in agriculture and allied sectors and 62000 tribal people participated in various extension activities undertaken by KVKs during these years. Seed material to an extent of 3.76 t and 4.40 lakh numbers of planting material was also supplied to the tribal farmers. Around 72000 farmers were benefited by 146 mobile advisories given on weather, market, crop/animal production and protection related information.

During 2015-16 TSP was implemented by 13 KVKs of the zone. Technologies were assessed through 50 on-farm trials and potential of proven technologies was showcased through 827 front line demonstrations during this year. A total of 7235 farmers were trained on various latest technologies in 230 training programmes undertaken by the KVKs. Planting material of 45000 numbers and 1.21 t of seed material was supplied by the KVKs to the tribal beneficiaries. 30 skill development training programmes were conducted by the KVKs during this year benefitting 1065 tribal people which led to establishment of 404 micro-enterprises by 887 tribal beneficiaries.

Under livestock interventions demonstrations were undertaken by KVKs on backyard poultry, goatery, hydroponic fodder production, silage making, mineral mixtures and improved fodder production benefitting 1519 tribal farmers during 2015-16. Various skill imparting training programmes conducted by KVKs benefitting 1210 tribal farmers led to establishment of micro-enterprises on backyard poultry ( 95), sheep (6), hydroponic units (2), apiculture (103), azonlla units (5) and black Bengal goat (30). Along with training, KVKs provided the necessary critical inputs too to the tribal youth to facilitate establishment of these micro-enterprises in the tribal areas with an aim to enhance their livelihood security.

The interventions of KVKs in the tribal districts of the zone had significant impact in terms of higher productivity of crops, live-stock enterprises, lower cost of production, remunerative prices to the produce, improved access to the markets and sustainable and higher family income to the clientele. Backyard poultry as a group activity, collective seed production through Self Help Groups (SHGs) and production of vermicompost and vermiwash by tribals as an alternative livelihood option in Nandurbar district, enhanced livelihood security through improved Jasmine production and collective marketing in Palghar district of Maharashtra, millet processing as a group approach for livelihood security of tribal women and integrated management of cashew orchards in West Godavari district of Andhra Pradesh are some examples of such interventions of KVKs in the zone.



## 1. Introduction

Indian Council of Agricultural Research redesignated the Zonal Project Directorate (ZPD) as Agricultural Technology Application Research Institute (ATARI) in 2015. The mandate of ATARI has been revised as coordination and monitoring of technology application and frontline extension programs through Krishi Vigyan Kendras (KVKs). The ATARI is also vested with the responsibility of strengthening of agricultural extension research and knowledge management in the states of Andhra Pradesh, Telangana and Maharashtra.

There are 85 KVKs in Zone-V which include 24 in Andhra Pradesh, 16 in Telangana and 45 in Maharashtra. The ICAR-ATARI, Hyderabad functions under the administrative control of Division of Agricultural Extension of ICAR headed by the Deputy Director General (Agricultural Extension). The ATARI is headed by the Director who is assisted by the Principal Scientists, Senior Scientists, technical, administrative and supporting staff. The requisite infrastructure for the smooth functioning of ATARI was developed in the premises of ICAR-Central Research Institute for Dryland Agriculture (CRIDA), Santoshnagar, Hyderabad.

Krishi Vigyan Kendra (KVK) is a science/ technology led, farmer centric institution, established with the purpose of providing knowledge and skill training to the farmers, rural youth and field-level extension workers. Vocational training in agriculture and allied fields through KVK has become the need of the hour for ensuring livelihood security and enhancing farm income which is envisaged to be doubled by 2022. The farmers not only require knowledge and understanding of intricacies of new technologies but also more skills to adopt the same in varied and complex field situation on their farms. In view of this, the role of KVK was further enhanced by adding the responsibility of on-farm

testing and front-line demonstrations of major agricultural technologies to dovetail the same with location specific environment. In order to equip the present day farmers to face the challenges of information explosion and to bridge the digital divide, KVKs were also given the other responsibility of acting as knowledge and resource centres of agricultural and allied technologies. The use of ICT by KVKs has been promoted through KMAS to provide necessary and timely information on weather, markets and solutions to various day to day problems faced by farmers.

Besides core mandated activities, KVKs undertake several special funded projects which have been contemplated with specific purposes. One such project is Attracting and Retaining Rural Youth in Agriculture (ARYA) that was initiated by ICAR during 2015 realizing the importance of rural youth in agricultural development especially from the point of view of food security of the country. ARYA project envisages to create interest and confidence among rural youth in agriculture and to make agriculture more profitable which would eventually retain youth in agriculture. Thus, ARYA aims to demonstrate a comprehensive model for the development of rural youth in general and agricultural youth in particular.

Agriculture and allied activities accounts for about 15.7% of country's GDP and is estimated to employ about 124.7 million people as cultivators and 106.8 million as agricultural labour (Census 2001). Besides this Agriculture Industry employs a large number of people in the Organized and the Unorganized sector. With the increase in population the demand for food and Agri-produce is increasing, but the supply is constant due to low agricultural productivity. This is predominantly due to improper Farm Management practices and loss in post harvest handling. There is a requirement for specific set of skills in the field of Agriculture and allied sectors. Considering the above factors,



Agriculture Skill Council of India, set up in January 2013 envisions to touch / upgrade skills of Cultivators, Agricultural Labours and Direct and Indirect labour engaged in Organised and Unorganized Agriculture and Allied industry. Being one of the stake holders in this process, ATARI, Hyderabad has undertaken several skill and entrepreneurship development activities in the tribal districts of Andhra Pradesh, Telangana and Maharashtra over the past 5 years which facilitated establishment of income generating assets and opportunities among tribal youth that ensured nutritional and livelihood security to the tribal youth in these districts. This document includes the achievements of various interventions of KVKs in zone V in tribal dominated districts to impart skill among tribal youth and to facilitate establishment of enterprise units for ensuring enhanced income and livelihood security.

## **2. Skill and Entrepreneurship Development of tribal youth**

The Tribal Sub Plan was initiated during fifth five year plan for socio-economic amelioration of the tribal communities. The basic objective of Tribal Sub-Plan is to channelize the flow of outlays and benefits from the general sectors in the Central Ministries/Departments for the development of Schedules Tribes at least in proportion to their population which is 8.2 per cent of the country's population as per 2001 census, both in physical and financial terms. The broad objectives of the TSP are as follows:

1. Substantial reduction in poverty and un-employment.
2. Creation of productive assets in favour of Scheduled Tribes to sustain the growth likely to accrue through development efforts.
3. Human resource development of the Scheduled Tribes by providing adequate educational and health services, and
4. Provision of physical and financial security against all types of exploitation and oppression.

Under TSP only those schemes / activities are included which ensure direct and measurable benefits to Individuals / families/ colonies belonging to STs in the villages, mandals, blocks and districts having more than 40% population of STs. Schemes to develop agriculture and allied activities like irrigation, animal husbandry, dairy development, vocational training and entrepreneurship development *etc.* that provide a source of livelihood to the ST Population are taken up under TSP.

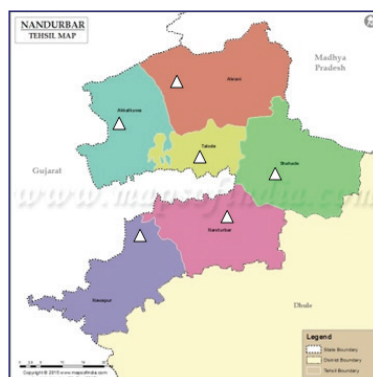
Tribal sub plan has been implemented through Krishi Vigyan Kendras (KVKs) in zone V under the jurisdiction of ICAR-ATARI, Hyderabad since 2012-13 financial year. The scheme was initiated through only one KVK, Nandurbar of Maharashtra which is the only district in the zone with a tribal population exceeding 50% (65.53). Later the scheme was gradually extended to other districts in the zone with the addition of 3 KVKS in 2014-15 Vizianagaram, Visakhapatnam

and Thane), 9 KVKs in 2015-16 (Adilabad, Nalgonda, Khammam, Venkataramannagudem, Pandirimamidi, Darsi, Amaravati (G), Raigad and Nashik) and three KVKs in 2016-17 (Srikakulam, Warangal (Malyal) and Mehaboobnagar (Madanapuram)), the total number of KVKs implementing TSP reaching to 16. These KVKs were selected for the implementation of TSP on the basis of presence of predominant tribal mandals/ blocks or villages in which the per cent tribal population ranges from 40-100 per cent. The details of mandals / Tehsils predominant in tribal population in each KVK district implementing TSP, per cent tribal population in them, the major tribes present and their occupational category are given in Tables 1-16.

## **2.1. Operational Districts**

### **2.1.1 Maharashtra**

**2.1.1.a Nandurbar :** Nandurbar is an administrative district in the northwest corner (Khandesh Region) of Maharashtra state in India. It was formed in 1998 after Dhule was bifurcated as two separate districts now known as Dhule and Nandurbar. The district occupies an area of 5035 km<sup>2</sup> and has a population of 1,311,709 of which 15.45% were urban (as of 2001). Nandurbar district is bounded to the south and south-east by Dhule district, to the west and north is the state of Gujarat, to the north and north-east is the state of Madhya Pradesh. The district is classified as Tribal district as ST population constitutes about 62.3% of the total population. The larger part of the geographical area is covered under forest area and ranges of Satpuda hills. The district comes under the transition zone 2 of western Maharashtra with well distributed rain fall ranging from 700 to 1200 mm. The zone is predominantly a *kharif* tract suitable for single rainfed crop. Principal crops grown in *kharif* and *rabi* are jowar, bajra, groundnut, wheat, sugarcane, urad, tur and ragi. All the six tehsils of the district are predominantly tribal with population ranging from 45 to 95%. The major tribes are Hindu Bhils, Pawara and Dhanka. The people are mainly engaged in farming or agriculture labour for livelihood.

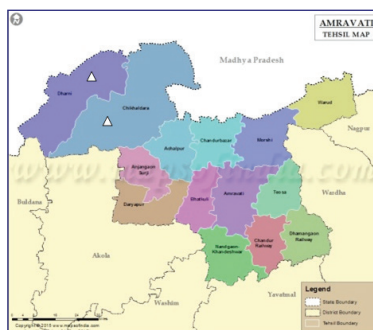


*Tribal dominated tehsils of Nandurbar district*

*Table 1 : Details of tribal dominated tehsils of Nandurbar district*

S. No	Name of the tehsil / block	% tribal population	Names of major tribes	Major occupation of the people
1	Akkalkuwa	85.25	Hindu Bhil, Pawara	Farming / Labour
2	Akrani	95.94	Hindu Bhil, Pawara	Farming
3	Taloda	77.44	Hind Bhil, Pawara	Farming / Labour
4	Shahada	54.20	Hindu Bhil, Dhanka	Farming / Labour
5	Nandurbar	45.57	Hindu Bhil	Farming
6	Navapur	85.52	Hindu Bhil	Farming / Labour

**2.1.1.b Amaravathi :** The district is bounded by Betul District of Madhya Pradesh state to the north, and by the Maharashtra districts of Nagpur to the north east, Wardha to the east, Yavatmal to the south, Washim to the southwest, and Akola and Buldhana districts to the west. The district falls under central Maharashtra agro-climatic zone with assured rainfall of 700-900 mm. Jowar is the predominant crop occupying 33% of gross cropped area. Other crops grown are cotton (22.55%), oilseeds (5.17%) and pulses (7.63%). *Kharif* jowar /bajra followed by gram/safflower is the major cropping



*Tribal dominated tehsils of Amaravati district*

pattern followed. Sugarcane and summer crops are taken depending on availability of irrigation. Of the 14 tehsils of the district, Dharni and Chikhaldara are predominantly tribal with around 80% of the population under major tribes like Gonds, Nihals, Mongias, Blais, Vanjaris and Gaolies. The tribes are mainly engaged in Agriculture or work as Agricultural labour for livelihood.

**Table 2: Details of tribal dominated tehsils of Amaravathi district**

S. No.	Name of the tehsil / block	% tribal population	Names of major tribes	Major occupation of people
1	Dharni	80.00	Gonds, Nihals Mongias, Balais, Vanjaris, Gaolies	Agriculture Labour
2	Chikhaldara	78.32	Gonds, Nihals, Mongias. Balais, Vanjaris, Gaolies	Agriculture Labour

**2.1.1.c Palghar :** Palghar is the 36<sup>th</sup> District of Maharashtra carved out of the old Thane district in 2014 and comprises of tehsils of Palghar, Vada, Vikramgad, Jawhar, Mokhada, Dahanu, Talasari and Vasai-Virar. The district is bounded by Thane and Nashik Districts on the east and northeast, and by Valsad District of Gujarat state and Union Territory of Dadra and Nagar Haveli on the north. The district is the northern most part of the Konkan lowlands of Maharashtra. From the steep slopes of the Sahyadri in the east, the land falls through a succession of plateaus in the north and centre of the district to the Ulhas valley in the south. The district comes under north konkan agro-climatic zone with very high rainfall zone and non-lateritic soils. Rice is the major crop followed by pulses, vegetables, oilseeds and fruit crops like banana and chicoo. The eight tehsils of the district have tribal population ranging from 7 to 92%. The major tribes are Warli, Malhar Koli, Konkana, Dhodi, Katkari and Thakur who are mainly engaged in farming and agricultural labour for their livelihood.



**Tribal dominated tehsils of Palghar district**

**Table 3 : Details of tribal dominated tehsils of Palghar district**

S. No.	Name of the tehsil / block	% tribal population	Names of major tribes	Major occupation of the people
1	Vasai	7.32	Warli, Malhar Koli, Kokana	Farming and labour
2	Palghar	30.56	Warli, Malhar Koli, Dhodi, Kokna, Katkari	Farming and labour
3	Wada	57.02	Warli, Katkari, Malhar Koli, Kokana, Dhodi	Farming and labour
4	Dahanu	69.11	Warli, Malhar Koli, Kokana, Dhodi, Katkari	Farming and labour
5	Talasari	90.61	Warli, Malhar Koli, Kokana, Dhodi, Katkari	Farming and labour
6	Jawhar	91.64	Warli, Malhar Koli, Kokana, Dhodi, Thakur, Katkari	Farming and labour
7	Vikramgad	91.82	Warli, Malhar Koli, Kokana, Dhodi, Katkari,	Farming and labour
8	Mokhada	92.08	Warli, Malhar Koli, Katkari, Kokana, Dhodi, Thakur	Farming and labour

**2.1.1.d Nashik :** Nashik District is located at Northwest part of the Maharashtra state, at 565 meters above mean sea level. Out of 15 blocks in the district, as many as 8 blocks viz., Surgana, Peth, Igatpuri, Kalwan, Baglan, Dindori, Trimbakeshwar and Nashik are tribal blocks. Though average rainfall of the District is between 2600 and 3000 mm, there is wide variation in the rainfall received at various blocks. Most of the rainfall is received from June to September. Bajra is an important crop of the District. However other crops like wheat, paddy and other cereals are also grown in various parts of the district. Paddy is mainly grown in Tribal belt i.e. Igatpuri, Peth and Surgana Blocks. Vegetables and Onion are the main cash crops over the last 30 years. After the establishment of sugar



**Tribal dominated tehsils of Nashik district**

factories, sugarcane has acquired important position in the agricultural economy of the district. Climate of the district is also suitable for allied activities such as dairy, poultry, sheep and goat rearing. In remote areas like Surgana block, many tribals are engaged in carpet weaving. The tribal population in the 7 blocks varies from 10 to 96% and the major tribe found is Hindu Mahadev Koli. The major occupation of the tribal people is farming and they migrate quite often to towns for earning wages as labourers.

**Table 4 : Details of tribal dominated tehsils of Nashik district**

S. No.	Name of the tehsil / block	% tribal	Names of major tribes	Major occupation of the people
1	Peinth/ Peth	96	Hindu Mahadev Koli	Farming & migrant labour
2	Triumbakeshwar	84	Hindu Mahadev Koli	Farming & migrant labour
3	Dindori	56	Hindu Mahadev Koli	Farming & migrant labour
4	Igatpuri	40	Hindu Mahadev Koli	Farming & migrant labour
5	Chandwad	20	Hindu Mahadev Koli	Farming & migrant labour
6	Niphad	19	Hindu Mahadev Koli	Farming & migrant labour
7	Nashik	10	Hindu Mahadev Koli	Farming & migrant labour

**2.1.1.e Raigad :** Raigad, formerly known as Kolaba district, is bounded by Mumbai Harbour to the northwest, Thane District to the north, Pune District to the east, Ratnagiri district to the south and the Arabian Sea to the west. The district falls under north konkan agro-climatic zone characterized by very high rainfall (2607 mm in 87 days) with lateritic soils. Rice is the major crop (40,600 lakh.ha) followed by pulses, vegetables, oil seeds and fruits (banana). Of the 15 tehsils of the district, 9 have sizeable tribal population ranging from 5.82 to 28.62. The major tribes found are Kathodi, Katkari and Mahadev Koli. The major livelihood options of these tribes are labour in brick kilns, collection of seasonal fruits and medicinal plants and harvesting fish from rivers and streams.



**Tribal dominated tehsils of Raigad district.**

**Table 5 : Details of tribal dominated tehsils of Raigad district**

S. No.	Name of the tehsil / block	% tribal population	Names of major tribes	Major occupation of the people
1	Pen	16.58	Kathodi, Katkari	Collection of seasonal fruits, farm labor, labour in brick kilns
2	Karjat	23.94	Kathodi, Katkari	Labor in brick kilns, collection of seasonal fruits and medicinal plants
3	Khalapur	14.84	Kathodi, Katkari	Labor in brick kilns, collection of seasonal fruits and medicinal plants
4	Roha	13.12	Kathodi, Katkari, Mahadev koli	Labor in brick kilns, collection of seasonal fruits and medicinal plants and harvesting fish from rivers and streams
5	Sudhagad	28.62	Kathodi, Katkari	Labor in brick kilns, collection of seasonal fruits and medicinal plants
6	Tala	11.30	Mahadev koli	Harvesting fish from rivers and creeks
7	Shrivardhan	11.41	Mahadev koli	Harvesting fish from rivers and creeks
8	Murud	18.30	Mahadev koli	Labor in brick kilns, collection of seasonal fruits and medicinal plants, harvesting fish from rivers and creeks
9	Alibag	5.82	Mahadev koli	Harvesting fish from rivers and creeks

## 2.1.2 Telangana

**2.1.2.a Adilabad :** Adilabad District is the northern most district of Telangana State. The geographical area of the district is 16105 km<sup>2</sup> and it was upgraded from sub-district in the year 1905. The district is bounded on the north, west, east by Maharashtra State (Yavatmal, Nanded and Chandrapur districts respectively) and on the South by Karimnagar and Nizamabad districts of Telangana State. The most



important river that flows in the district is the Godavari, which forms the southern boundary of the district. The total geographical area is 16.1 lakh ha. Out of the total geographical area 42.8% is occupied by forests and 38.3% is the net sown area. The rainfall of the district is influenced by the south-west and north East monsoon. The normal rainfall of the district is 1157mm. The crops are predominantly irrigated by groundwater accounting for 86.5% of the gross irrigated area. The principal agricultural crops of the district are cotton, jowar, soybean, red gram, maize, paddy and pulses. Under horticultural crops, mango is dominant in the eastern part of the district and commercial crops like turmeric and chillies are cultivated in irrigated areas. There are 9 mandals dominated by tribals and the population of the tribes ranges from 31 to 59 per cent in these mandals. The major tribe is Gonds who are mainly engaged in agriculture for livelihood.



*Tribal dominated mandals of Adilabad district*

*Table 6. Details of tribal dominated mandals of Adilabad district*

S. No.	Name of the Mandal / block	% tribal population	Names of major tribes	Major occupation of the people
1	Tamsi	31.83	Gonds	Agriculture
2	Adilabad	23.65	Gonds	Agriculture
3	Talamadugu	26.80	Gonds	Agriculture
4	Indervelly	57.25	Gonds	Agriculture
5	Gudihathnoor	36.72	Gonds	Agriculture
6	Jainoor	59.55	Gonds	Agriculture
7	Utnoor	51.98	Gonds	Agriculture
8	Nerdigonda	44.88	Gonds	Agriculture
9	Kaddam	19.21	Gonds	Agriculture

**2.1.2.b Warangal :** Warangal district is located in the northern region of Telangana. The district has a geographical area of 12846 square kilo meters and has 51 revenue mandals. The average annual rainfall of the district is 1048 mm received mostly during South West monsoon. Though the district has only an average of 4.57 per cent of ST population, there are 22 mandals which have sizeable tribal population ranging from 22 to 61 per cent. The major tribes found are Koya and Lambada and their main livelihood options are agriculture, animal husbandry and wage earning as daily labour.



*Tribal dominated mandals of Warangal district*

*Table 7. Details of tribal dominated mandals of Warangal district*

S. No.	Name of the mandal / block	% tribal population	Names of major tribes	Major occupation of the people
1.	Narmetta	23.2	Lambada	Agriculture, animal Husbandry and daily wage labour
2.	Eturnagaram	28.6	Koya	-do-
3.	Mangapet	23.9	Koya	-do-
4.	Tadvai	51.9	Koya	-do-
5.	Govindaraopet	25.9	Lambada	-do-
6.	Mulug	23.0	Koya	-do-
7.	Devaruppula	22.0	Lambada	-do-
8.	Kodakandla	24.5	Lambada	-do-
9.	Raiparthy	23.3	Lambada	-do-
10.	Khanapur	27.3	Lambada	-do-
11.	Kothaguda	61.6	Lambada	-do-
12.	Gudur	57.3	Lambada	-do-
13.	Chennaraopet	30.5	Lambada	-do-
14.	Nekkonda	28.5	Lambada	-do-

S. No.	Name of the mandal / block	% tribal population	Names of major tribes	Major occupation of the people
15.	Parvathagiri	29.1	Lambada	-do-
16.	Nellikudur	28.9	Lambada	-do-
17.	Kesamudram	31.5	Lambada	-do-
18.	Mahabubabad	32.9	Lambada	-do-
19.	Narsimhulapet	24.8	Lambada	-do-
20.	Maripeda	43.8	Lambada	-do-
21.	Kuravi	46.5	Lambada	-do-
22.	Dornakal	40.6	Lambada	-do-

**2.1.2.c Khammam :** Khammam is a district in the eastern region of Telangana. The district is bounded on the North by Chhattishgarh and Orissa states, on the East by East Godavari and West Godavari, on the South by Krishna and on the West by Nalgonda and Warangal districts. The central and eastern parts of the district are mainly hilly. The district is divided into four Revenue divisions with head quarters at (1) Khammam (2) Kothagudem (3) Paloncha (4) Bhadrachalam. The district comprises of 41 Revenue mandals and 41 mandal Parishads. The principal crops of the district are paddy, jowar, maize, pulses, groundnut, chillies, cotton and tobacco. The total cropped area in the district is 24 per cent of the geographical area of the district and 28 per cent of the cropped area is irrigated. The main sources of irrigation in the district is Nagarjuna Sagar left canal. In addition there are few medium and minor irrigation sources, tanks and wells in the district.



*Tribal dominated mandals of Khammam district*

The tribal population in the tribal dominant mandals ranges from 21 to 77 per cent. The predominant tribes are Koyas and Lambadas and they are engaged in Agriculture for livelihood.

**Table 8. Details of tribal dominated mandals of Khammam district**

S. No.	Name of the Mandal / block	% Tribal population	Names of major tribes	Major occupation of the people
1	Aswapuram	32.70	Koyas and Lambadas	Agriculture
2	Aswaraopeta	38.93	Koyas and Lambadas	Agriculture
3	Burgampahad	22.92	Koyas and Lambadas	Agriculture
4	Chandrugonda	30.07	Koyas and Lambadas	Agriculture
5	Cherla	55.61	Koyas and Lambadas	Agriculture
6	Dammapeta	47.36	Koyas and Lambadas	Agriculture
7	Dummugudem	69.47	Koyas and Lambadas	Agriculture
8	Gundala	77.53	Koyas and Lambadas	Agriculture
9	Kothagudem	21.74	Koyas and Lambadas	Agriculture
10	Mulkalapalle	61.55	Koyas and Lambadas	Agriculture
11	Palwancha	25.79	Koyas and Lambadas	Agriculture
12	Pinapaka	43.58	Koyas and Lambadas	Agriculture
13	Tekulapalle	77.53	Koyas and Lambadas	Agriculture
14	Venkatapuram	39.20	Koyas and Lambadas	Agriculture
15	Wazeed	49.61	Koyas and Lambadas	Agriculture
16	Yellandu	37.33	Koyas and Lambadas	Agriculture
17	Enkuru	35.71	Koyas and Lambadas	Agriculture
18	Julurpad	51.77	Koyas and Lambadas	Agriculture
19	Kamepalle	44.33	Koyas and Lambadas	Agriculture
20	Kusumanchi	27.55	Koyas and Lambadas	Agriculture
21	Raghunadhapalem	33.71	Koyas and Lambadas	Agriculture
22	Singareni	61.10	Koyas and Lambadas	Agriculture
23	Thirumalayapalem	24.98	Koyas and Lambadas	Agriculture
24	Bayyaram	50.18	Koyas and Lambadas	Agriculture
25	Garla	51.55	Koyas and Lambadas	Agriculture

**2.1.2.d Nalgonda :** Nalgonda is a district in the eastern region of Telangana state. It has a population of 3,483,648 of which 13.32% is urban as of 2011. The district is divided into three revenue divisions of Nalgonda, Miryalaguda and Devarakonda. These are sub-divided into 31 mandals and has 565 villages. The major sources of irrigation in the district are NSP left canal, tanks, kuntas and wells. The principal crops grown are paddy, jowar, maize, redgram, green gram and groundnut. Some of the mandals have sizeable tribal population where tribal population ranges from 12 to 50 per cent. The main tribes found are Lambadi who are mainly engaged in agriculture.



*Tribal dominated mandals of Nalgonda district*

**Table 9. Details of tribal dominated mandals of Nalgonda district**

S. No.	Name of the Mandal/ Block	% tribal population	Names of major tribes	Major occupation of the people
1	Bommalarmaram	26	Lambadi	Agriculture
2	M.Turkapalle	25	Lambadi	Agriculture
3	Chivvemla	35	Lambadi	Agriculture
4	Mothey	21	Lambadi	Agriculture
5	Narayanapur	22	Lambadi	Agriculture
6	Gundla Palle	28	Lambadi	Agriculture
7	Chandam Pet	50	Lambadi	Agriculture
8	Devarakonda	32	Lambadi	Agriculture
9	Pedda Adiserla Palle	31	Lambadi	Agriculture
10	Peddavoora	32	Lambadi	Agriculture
11	Thripuraram	25	Lambadi	Agriculture
12	Dameracherla	42	Lambadi	Agriculture
13	Mattam Palle	32	Lambadi	Agriculture

**2.1.2.e Mahaboobnagar :** Mahabubnagar is the southern district of Telangana state bordered with River Krishna in the south and surrounded by the Guntur and Kurnool district of AP to the south,

Nalgonda and Ranga Reddy Districts to the north and Gulbarga and Raichur districts of the state of Karnataka to the west. The district has a population of 40,53,028 as per the 2011 census which accounts for 11.52% of the total population of the State with 15.34% decadal growth. The tribal dominant mandals of the district have tribal population ranging from 6-27 per cent. The major tribe is Lambadi who are mainly engaged in agriculture for livelihood.



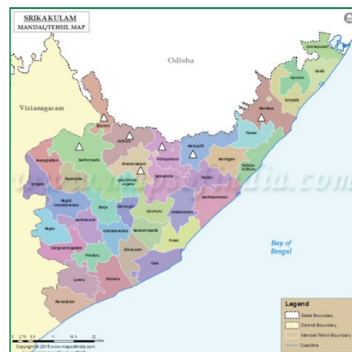
*Tribal dominated mandals of Mahaboobnagar District*

**Table 10. Details of tribal dominated mandals of Mehaboobnagar district**

S. No.	Name of the Mandal/ Block	% Tribal population	Names of major tribes	Major occupation of the people
1	Bomraspeta	27.17	Lambadi	Agriculture
2	Wanaparathi	17.45	Lambadi	Agriculture
3	Ghanpur	18.46	Lambadi	Agriculture
4	Maddur	12.66	Lambadi	Agriculture
5	Narayanpet	10.07	Lambadi	Agriculture
6	Peddemandadi	8.97	Lambadi	Agriculture
7	Doultabad	8.25	Lambadi	Agriculture
8	Kothakota	6.27	Lambadi	Agriculture

### 2.1.3 Andhra Pradesh

**2.1.3.a Srikakulam :** Srikakulam is one of the 9 coastal districts of Andhra Pradesh, located in the extreme north eastern direction of the state. The district has an average annual rainfall of 1164mm. It is divided into two main agro-ecological situations a. North coastal zone: The altitude ranges from 0-150 m above mean sea level, annual rainfall is 1100 mm, minimum temperature ranges from 10°-22°C and



*Tribal dominated mandals of Srikakulam District*

maximum temperatures ranges from 28° to 40°C. b. High altitude and tribal zone: The altitude ranges from 300-600m above mean sea level, rainfall is 1150-1200 mm, undulated topography, minimum temperature ranges from 10-22°C and maximum temperatures ranges from 32° to 40°C. The major crops grown are paddy, pulses, maize, cotton, sugar cane and groundnut. The main horticultural crops are cashew, mango and banana. The tribal population in some mandals ranges from 10 to 90 per cent. The major tribes found are Jatapu, Konda savara, Maliya Savara, Gadaba and Kapu savara. They are mainly dependent on agriculture, horticulture and collection of minor forest produce.

***Table 11. Details of tribal dominated mandals of Srikakulam district***

S. No.	Name of the Mandal / block	% tribal population	Names of major tribes	Major occupation of the people
1	Seethampeta	90.9	Jatapu, Konda Savara, Maliya Savara,	Agriculture, horticulture, agricultural labour, collection of minor forest produce
2	Bhamini	20.6	Jatapu, Konda Savara, Maliya Savara	Agriculture, horticulture, agricultural labour, collection of minor forest produce
3	Kothuru	13.3	Jatapu, Konda Savara, Maliya Savara	Agriculture, horticulture, agricultural labour, collection of minor forest produce
4	Pathapatnam	14.5	Gadaba, Jatapu, Konda savara, Kapu Savara	Agriculture, horticulture, agricultural labour, collection of minor forest produce
5	Meliaputti	28.3	Jatapu, Konda Savara, Maliya Savara	Agriculture, horticulture, agricultural labour, collection of minor forest produce
6	Mandasa	14.4	Jatapu, Konda Savara, Gadaba	Agriculture, horticulture, agricultural labour, collection of minor forest produce
7	Hiramandalam	10.8	Jatapu, Konda Savara, Maliya Savara	Agriculture, horticulture, agricultural labour, collection of minor forest produce

**2.1.3.b. Vizianagaram :** Vizianagaram district was formed on 1 June 1979, with some parts carved from the neighbouring districts of Srikakulam and Visakhapatnam. It is one among the north circars in coastal Andhra with 34 revenue mandals, 12 towns, 1524 villages and 22,45,103 population. It is bounded on the East by Srikakulam district, on the West and South by Visakhapatnam district, on the South-East by Bay of Bengal and North-West by Odisha State.



**Tribal dominated mandals of Vizianagaram district**

The district can be divided into two distinct natural physical divisions *i.e.*, plain and hilly regions. The hilly region is mostly covered with densely wooded forests and comes under agency tract of the district. The soils in the District are predominantly loamy with medium fertility. The major crops grown in the District are paddy, ragi, bajra, sugarcane, pulses, mestha, cotton, maize, korra, chillies, seasonal tobacco and groundnut. The average yields obtained in the district are low due to the erratic rainfall generally received in the district. There are eight mandals with sizeable tribal population ranging from 10 to 86 per cent. The major tribes found are Jatapu, Savara, Gadaba and Konda dora. They are mainly engaged in shift (podu) cultivation, collection of minor farm produce and also work as labour in agricultural activities.

**Table 12. Details of tribal dominated mandals of Vizianagaram district**

S. No.	Name of the Mandal/ Block	% tribal population	Names of major tribes	Major occupation
1	Kurupam	71.97	Jatapu, Savara	Podu cultivation, collection of minor forest produce
2	Gumma Laxmipuram	86.69	Jatapu, Savara	Podu cultivation
3	Komarada	36.26	Jatapu	Podu cultivation, collection of minor forest produce
4	Parvathipuram	10.19	Gadaba	Agriculture, podu, collection of forest produce



S. No.	Name of the Mandal/ Block	% tribal population	Names of major tribes	Major occupation
5	Jiyyammavalasa	20.47	Gadaba	Agriculture, podu, collection of forest produce
6	Makkuva	22.30	Konda dora	Agriculture and Fishing
7	Pachipenta	48.15	Gadaba, Konda dora	Podu, collection of minor forest produce, Agrl. Labourers
8	Salur	31.89	Gadaba, Konda dora	Podu, collection of minor forest produce, Agrl. Labourers

**2.1.3.c Visakhapatnam:** Visakhapatnam District is one of the North Eastern Coastal districts of Andhra Pradesh. It is bounded on the North partly by the Odisha State and partly by Vizianagaram District, on the South by East Godavari District, on the West by Odisha State and on the East by Bay of Bengal. The District presents two distinct Geographic divisions. The strip of the land along the coast and the interior is called the plains division and hilly area of the Eastern Ghats flanking it on the North and West is called the agency division. The Agency Division consists of the hilly regions covered by the Eastern Ghats with an altitude of about 900 metres dotted by several peaks exceeding 1200 metres. Red Loamy soils predominate with coverage of 69.9% of the villages



*Tribal dominated mandals of Visakhapatnam district*

of the district. The Soils are poor textured and easily drained. Paddy is the the principal food crop of the district followed by ragi, bajra and jowar and cash crops such as sugarcane, groundnut, sesamum, niger and chillies. Since there is no major irrigation system, only about 36% of the cropped area is irrigated under the Ayacut of the medium irrigation system and minor irrigation tanks. The rest of the cultivated

area is covered under dry crops depending upon the vagaries of the monsoon. There are 11 mandals in the hill areas where tribal population ranges from 80 to 96 per cent. The major tribes found are Nukadora, Kondadora, Vaalmiki, Bhagata and other primitive tribal groups (PTG) whose main livelihood option is agriculture.

**Table 13. Details of tribal dominated mandals of Visakhapatnam district**

S. No.	Name of the mandal / block	% tribal population	Names of major tribes	Major occupation
1	Ananthagiri	90.15	Nukadora, Kondadora, Vaalmiki, Bhagata, PTG	Agriculture
2	Arakuvalley	91.53	Konda dora, Vaalmiki, Kotiya, Bhagata, PTG	Agriculture
3	Dumbriguda	94.8	Konda dora, Kotiya Bhagata, Vaalmiki, Nukadora, PTG	Agriculture
4	Chintapalle	90.31	Valmiki, Kondadora, Bagata	Agriculture
5	Gangaraju Madugula	92.73	Kondadora, Vaalmiki, Bagata	Agriculture
6	Gudem Kotta Veedhi	89.84	Vaalmiki, Kondadora, Bagata	Agriculture
7	Hukumpeta	95.93	Kondadora, Kotiya, Bhagata, Nukadora, PTG	Agriculture
8	Koyyuru	81.38	Vaalmiki, Kondadora, Bagata	Agriculture
9	Munchangi Put	93.92	Bagata, Kotiya, Kondadora, Nukadora, Vaalmiki	Agriculture
10	Pedabayalu	96.23	Bagata, Kotiya, Kondadora, Nukadora, Vaalmiki	Agriculture
11	Paderu	82.55	Kotiya, Bagata, Vaalmiki, Kondadora, Nukadora, PTG	Agriculture

**2.1.3.d East Godavari :** East Godavari is one of the agriculturally potential districts of Andhra Pradesh and is broadly classified into four natural zones viz., Central Delta (16 Mandals), Eastern Delta (16 Mandals), Upland (19 Mandals) and Agency (13 Mandals). The mighty river Godavari passing through the district is the major source

of irrigation. The district has a total gross cropped area of 7.08 lakh ha with a net sown area of 4.2 lakh ha. Rice is the principal crop with an area of 2.2 lakh hectares during *kharif* 2016. The district stands in frontline for various horticultural crops including coconut, banana, guava, mango, cashew and vegetable crops. Besides agriculture, the district is having abundant cattle wealth, fodder and natural resources.

There are 11 tribal dominant mandals in the district with tribal population ranging from 53 to 93 per cent. The tribal people are mainly engaged in agriculture and horticulture.



*Tribal dominated mandals of East Godavari district*

*Table 14. Details of tribal dominated mandals of East Godavari district*

Sl. No.	Name of the Mandal / block	% tribal population	Names of major tribes	Major Occupation of the people
1	Rampachodavaram	79.0%	Konda Reddy & Konda Dora	Agriculture & Horticulture
2	Devipatnam	58.8%	Konda Reddy & Konda Dora	Agriculture & Horticulture
3	Maredumilli	93.29%	Konda Reddy & Konda Dora	Agriculture & Horticulture
4	Y.Ramavaram	91.59%	Konda Reddy & Konda Dora	Agriculture & Horticulture
5	Gangavaram	67.23%	Konda Reddy & Konda Dora	Agriculture & Horticulture
6	Addateegala	60.22%	Konda Reddy & Konda Dora	Agriculture & Horticulture
7	Rajavommangi	57.56%	Konda Reddy & Konda Dora	Agriculture & Horticulture
8	Etipaka	53.83%	Konda Reddy & Konda Dora	Agriculture & Horticulture
9	Kunavaram	55.64%	Konda Reddy & Konda Dora	Agriculture & Horticulture
10	Chituru	76.56%	Konda Reddy & Konda Dora	Agriculture & Horticulture
11	V.R.Puram	55.59%	Konda Reddy & Konda Dora	Agriculture & Horticulture

**2.1.3.e West Godavari :** West Godavari District is carved out of old Godavari District as it is the Western delta of the River Godavari with

Headquarters at Eluru and came into existence in the year 1925. The Soils in the District are made up of alluvial, black reger and red ferruginous besides a small belt of arenaceous sandy soils along coastal belt. The district receives its rainfall mostly and predominantly from South West and to some extent from North East monsoon as well. The average contribution of South west and North east monsoon is 784.0 mm and 246.0 mm respectively. The net area cultivated forms about 61.36% of the total geographical area of the district. Out of the net area sown, a large portion of the area is irrigated by the net work of irrigation canals. Major farming systems/enterprises include Paddy - Paddy - Fallow; Paddy - Maize - Fallow; Sugar Cane - Fallow; Coconut inter cropped with Cocoa; Horticulture crops intercropped with Vegetables; Vegetables-Vegetables-Vegetables; Turmeric-Fallow, and Cotton-fallow. There are six tribal dominated mandals in the district where tribal population ranges from 7 to 64 per cent. Major tribes found are Koya and Konda Reddy and their major occupation is agriculture.



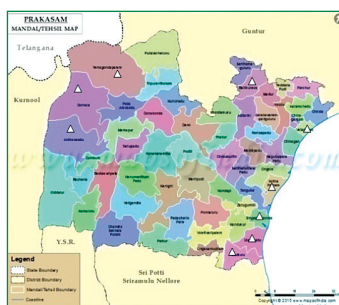
*Tribal dominated mandals of West Godavari district*

**Table 15. Details of tribal dominated mandals of West Godavari**

S. No.	Name of the Mandal	% tribal population	Names of major tribes	Major occupation
1	Jeelugumilli	29%	Koyas & Konda Reddy	Agriculture
2	Polavaram	27%	Koyas & Konda Reddy	Agriculture
3	Buttaiahgudem	63%	Koyas & Konda Reddy	Agriculture
4	T.Narasapuram	7.1%	Koyas & Konda Reddy	Agriculture
5	Velairpadu	64%	Koyas & Konda Reddy	Agriculture
6	Kukkunuru	29%	Koyas & Konda Reddy	Agriculture

**2.1.3.f Prakasam District :** It is located on the west coast of Bay of Bengal and is bounded by Guntur district on the north, Kurnool district on the west, Kadapa and Nellore districts on the south. A part of north west region also borders the Mahabubnagar district of Telangana. It is the 3rd largest district in the state with an area of 17,626 km<sup>2</sup> and had

a population of 3,392,764 as per 2011 census of India. The economy of the district is largely agrarian and the major crops grown here are rice, cotton, tobacco, jowar, red gram, green gram, black gram, maize, sugar cane, sesame and chillies. The district is divided into 3 revenue divisions, namely, Kandukur, Markapur and Ongole. These are sub-divided into 56 mandals which consists of 1081 villages and 13 towns. There are 9 mandals in the district with significant proportion of tribal population ranging from 7 to 17 per cent mainly in the western parts covering Nallamalai forest region. The major tribes found are Yanadi, Yeruka, Lambadi and Pamula. They are agricultural labourers or if landed engaged in agriculture as a source of livelihood.



*Tribal dominated mandals of Prakasam district*

**Table 16. Details of tribal dominated mandals in Prakasam district**

S. No.	Name of the Mandal / block	% tribal population	Names of major tribes	Major occupation of the people
1	Yerragondapalem	10.79	Yaanaadi, Yerukala, Lambada and Pamula	Agricultural labour and farming
2	Dornala	17.1	Yaanaadi, Yerukala, Lambada and Pamula	Agricultural labour and farming
3	Ballikurava	6.2	Yaanaadi, Yerukala, Lambada and Pamula	Agricultural labour and farming
4	Ardhaveedu	7.1	Yaanaadi, Yerukala, Lambada and Pamula	Agricultural labour and farming
5	Vetapalem	7.3	Yaanaadi, Yerukala, Lambada and Pamula	Agricultural labour and farming
6	Kothapatnam	10.4	Yaanaadi, Yerukala, Lambada and Pamula	Agricultural labour and farming
7	Singarayakonda	9.8	Yaanaadi, Yerukala, Lambada and Pamula	Agricultural labour and farming
8	Gudluru	10.8	Yaanaadi, Yerukala, Lambada and Pamula	Agricultural labour and farming
9	Ulavapadu	15.0	Yaanaadi, Yerukala, Lambada and Pamula	Agricultural labour and farming

### 3. Achievements of KVKs in Zone V under TSP during 2012-16

The tribal sub plan (TSP) was implemented mainly by KVK, Nandurbar of Maharashtra during 2012-13 and 2013-14 though three KVKs, Vizianagaram and Visakhapatnam of Andhra Pradesh and Thane of Maharashtra were added during the last of quarter of 2013-14 financial year. The achievements of this KVK during these two years are presented in Table 17. The training that was imparted to tribal farmers led to establishment of 4 nursery units and 5 spiral grading units in the operational area and the farmers could produce 2 lakh seedlings of chillies during these years from their nursery. The introduction of beans and okra in the tribal belt through frontline demonstrations could fetch 20 tribal farmers an amount Rs. 2 lakhs adding to their annual family income. An increase of 18 and 22.78 per cent was achieved in the productivity of cotton and *rabi* jowar respectively in the demonstration plots compared to the farmers' practice. The timely advice provided by the scientists of the KVK during diagnostic visits to the operational tribal areas resulted in the protection of cotton, papaya and chillies crops over 175 acres from pests and diseases. The soil testing service provided by the KVK brought about saving of 50 per cent in the use of potassium fertilizer by 250 tribal farmers which substantially reduced the cost of production.

**Table 17. Impact of activities of KVK, Nandurbar under TSP during 2012-13 and 2013-14**

S. No.	Nature of activity	No. of beneficiaries	Details of impact
1	Training	6112	<ul style="list-style-type: none"> <li>• Production of 2 lakh chilli seedlings by two farmers</li> <li>• 4 nursery units and 5 spiral grader units were established</li> </ul>
2	Frontline demonstrations	737	<ul style="list-style-type: none"> <li>• 20 farmers earned 2 lakhs by selling cluster bean and okra</li> <li>• 24 farmers got 18% yield increase in cotton</li> <li>• 33 farmers got 22.78% yield increase in <i>rabi</i> jowar and 18.38% yield increase in Bengal gram</li> </ul>

S. No.	Nature of activity	No. of beneficiaries	Details of impact
3	Diagnostic visits	1742	<ul style="list-style-type: none"> <li>Cotton, papaya and chillies crop on 175 acres was saved from pests and diseases</li> <li>18 farmers saved water melon crop from viral diseases and 22 farmers could save their bengalgram crop from pod borer</li> </ul>
4	Soil and water testing	1499	<ul style="list-style-type: none"> <li>250 farmers could save upto 50% on Potassium fertilizers because of soil testing</li> </ul>
5	Wheel hoe developed by KVK	58	<ul style="list-style-type: none"> <li>58 farmers made use of improved wheel hoe on their farms</li> </ul>

The achievements of KVKs implementing TSP between 2012-13 and 2014-15 are presented in Table 18. A total of 57 technologies were assessed through 455 on-farm trials and 972 front line demonstrations were also conducted during the three years. 12000 tribal farmers were trained on various improved technologies in agriculture and allied sectors and 62000 tribal people participated in various extension activities undertaken by KVKs during these years. Seed material to an extent of 3.76 t and 4.40 lakh numbers of planting material was also supplied to the tribal farmers. Around 72000 farmers were benefited by 146 mobile advisories given on weather, market, crop/animal production and protection related information.

***Table 18. Achievement of activities undertaken under TSP from 2012-13 to 2014-15***

S. No.	Activities	Achievement			
		2012-13	2013-14	2014-15	Total
1	On-farm testing ( Number of technologies )	18	19	20	57
2	No. of on-farm trials conducted	126	133	196	455
3	Frontline demonstrations ( Number)	278	349	345	972
4	Farmers trained ( lakhs)	0.03541	0.02344	0.062	0.12085
5	Extension personnel trained (lakhs)	0.00135	0.00263	0.006	0.0097
6	Participants in extension activities (lakhs)	0.30319	0.23589	0.087	0.6260
7	Production of seed (t)	0.55	1.21	2.00	3.76
8	Planting material produced (lakhs)	2.32	1.55	0.53	4.40
9	Soil, water, plant, manure samples tested (lakhs)	0.01009	0.00480	0.004	0.0189

S. No.	Activities	Achievement			
		2012-13	2013-14	2014-15	Total
10	Mobile agro-advisory (No. of messages)	34	52	60	146
11	Mobile agro-advisory to farmers (No. of farmers)	2183	34746	35000	71929

During 2015-16 TSP was implemented by 13 KVKs of the zone. Technologies were assessed through 50 on-farm trials and potential of proven technologies was showcased through 827 front line demonstrations during this year (Table 19). A total of 7235 farmers were trained on various latest technologies in 230 training programmes undertaken by the KVKs. Planting material of 45000 numbers and 1.21 t of seed material was supplied by the KVKs to the tribal beneficiaries. The State wise achievements of various KVKs during this financial year have been presented in Table 20. During 2015-16, 30 skill development training programmes were conducted by the KVKs under TSP benefitting 1065 tribal people which led to establishment of 404 micro-enterprises by 887 tribal beneficiaries. The details of skill development training programmes and micro-enterprises established have been given in Tables 21 and 22 respectively.

**Table 19. Summary of achievements undertaken by KVKs under TSP during 2015-16.**

S. No.	Activity	No. of activities	No. of beneficiaries 2015-16
1	On- farm trials conducted (Number)		50
2	Frontline demonstrations conducted (Number)		827
3	Farmers training	Number	230
		Participants	7235
4	Training of Rural Youth	Number	49
		Participants	1467
5	Training of Extension Personnel	Number	31
		Participants	548
6	Extension activities	Number	44
		Participants	5078
7	Production of seed (q)		121.25
8	Planting material produced (Number)		45000
9	Live-stock strains and finger lings produced (Number)		18720



S. No.	Activity	No. of activities	No. of beneficiaries 2015-16
10	Soil, water, plant, manures samples tested (Number)		3184
11	Mobile agro- advisory provided to farmers (Number )		1634
12	Micro-enterprises established	Number	404
		Beneficiaries	887
13	Skill development training programmes	Number	30
		Participants	1065

**Table 20. State Wise Achievements under TSP during the year 2015-16**

State	Amount earmarked for TSP during 2015-16 (Rs. in lakhs)	Achievement
Andhra Pradesh	66.2	<ul style="list-style-type: none"> <li>• A total of 5 KVKs implemented TSP in Andhra Pradesh</li> <li>• 27 demonstrations on crop and live stock production and protection aspects were given benefitting 2325 tribal farmers</li> <li>• 3 q of seed was provided benefitting 640 tribal farmers</li> <li>• 34 q of critical inputs like bio-fertilizers, bio-pesticides <i>etc.</i>, were supplied to 1546 tribal farmers.</li> <li>• 108 diagnostic visits were made to the tribal villages to identify problems and felt needs and to suggest corrective measures to 1715 tribal beneficiaries.</li> </ul>
		<ul style="list-style-type: none"> <li>• 1561 tribal farmers were sent 286 mobile advisories on various topics of agriculture and livestock management.</li> <li>• 2494 tribal farmers were trained on agriculture and livestock related aspects through 49 different training programmes</li> <li>• 640 tribal farmers, youth and women were imparted skill through 17 skill development training programmes</li> <li>• 220 micro-enterprises were established benefitting 558 tribal youth / women in areas like millet processing, sheep, vermicomposting, backyard poultry, azolla cultivation and growing of vegetable nurseries</li> </ul>
Telangana	38.2	<ul style="list-style-type: none"> <li>• A total of 3 KVKs implemented TSP in Telangana</li> </ul>

State	Amount earmarked for TSP during 2015-16 (Rs. in lakhs)	Achievement
		<ul style="list-style-type: none"> <li>• 11 demonstrations on crop and live stock production and protection aspects were given benefitting 880 tribal farmers</li> <li>• 377 tribal farmers were trained on agriculture and livestock related aspects through 10 different training programmes</li> <li>• 23 diagnostic visits were made in the tribal areas by the team of KVK scientists and gave technical advise to 256 tribal beneficiaries</li> <li>• 91 tribal farmers youth and women were imparted skill through 6 skill development training programmes</li> <li>• 91 micro-enterprises were established benefitting 189 tribal youth / women in areas like vermicomposting, backyard poultry, azolla cultivation and growing of vegetable nurseries</li> </ul>
Maharashtra	70.6	<ul style="list-style-type: none"> <li>• A total of 5 KVKs implemented TSP in Maharashtra</li> <li>• 77 demonstrations on crop and live stock production and protection aspects were given benefitting 5265 tribal farmers</li> <li>• 12 diagnostic visits were made to the tribal villages to identify problems and felt needs and to suggest corrective measures to 846 tribal beneficiaries.</li> <li>• 5000 tribal farmers were sent 78 mobile advisories on various topics of agriculture and livestock management.</li> <li>• 5965 tribal farmers were trained on agriculture and livestock related aspects through 174 different training programmes</li> <li>• 240 tribal farmers, youth and women were imparted skill through 7 skill development training programmes</li> <li>• 93 micro-enterprises were established benefitting 140 tribal youth / women in areas like apiary, mobile rice mill, custom hiring center and vermicompost units.</li> </ul>

**Table 20. Skill Development training programs conducted under TSP during the year 2015-16**

S. No.	Name of the KVK	Name of the training Programme	No. of beneficiaries
1	R.K. Bai, Vizianagaram, A.P	Capacity building to the women on primary millet processing	25
		Capacity building to the farmers on production methodology of vermi-composting	30
		Capacity building to the farmers on rearing of Vanaraja birds in tribal backyards and sheep rearing	100
		Capacity building to the tribal farmers on “Management of cashew orchards and tea mosquito management”	100
		Capacity building to the tribal farmers on “Backyard vegetable gardening and Boundary plantations”	50
		Capacity building for tribal youth on mushroom production technologies	35
		Capacity building for tribal youth on sustainable agriculture through organic farming	25
		Capacity building for tribal youth on ICT based agriculture	35
2	Visakhapatnam, A.P	Training on bakery products with millets	90
		Training on power weeder usage	30
		Training on dry sown paddy technology	30
3	V.R. Gudem, W. Godavari, A.P.	Training on Apiculture	20
		Training on millet based bakery	20
4	Pandirimamidi, E. Godavari, A.P	Value addition to millets – preparation of biscuits and malt	20
5	Darsi, Prakasam, A. P	Value addition to millets	42
6	Kampasagar, Nalgonda, T.S	Training programme on Cage culture of fish	30
		Training programme on Entrepreneurship development programme on bakery products	30
		Training programme on raising of commercial vegetable nursery under shade net	30
7	Adilabad, T.S	Tailoring and embroidery	50

S. No.	Name of the KVK	Name of the training Programme	No. of beneficiaries
8	Wyra, Khammam, T.S	Training programme on bakery products preparation	25
9	Nandurbar, M.R	Training on Bee Keeping	26
		Training on Poultry management	19
		Training on Nursery Management	25
		Use of Soybean in preparation of low cost recipes	32
		Training on Seeding raising Technology	35
10	Thane, M.R	Honey bee keeping and management	20
	<b>Total</b>	<b>30 Training Programmes</b>	<b>1065</b>

*Table 21. Details of micro-enterprises established by KVKs under TSP (2015-16)*

S. No.	Name of KVK	Nature of enterprise	No. of units	No. of beneficiaries
1	Adilabad, Telangana	PVC Vermi-units	15	15
2	Kampasagar, Nalgonda, Telangana	Backyard poultry (Rajasri)	60	100
		Commercial vegetable nursery	2	12
		Azolla Units	5	10
		Fiber butties	9	52
3	Vizianagaram, A.P	Millet processing units	2	15
		Vermicompost units	15	30
		Backyard poultry (Vanaraja)	20	100
		Sheep units	4	100
4	Visakhapatnam, A.P	Custom hiring center	1	20
		Bakery products with millets	3	90
		Mush room production	7	16
		Azolla units	25	25
		Hydroponic fodder	2	2
5	V.R.Gudem, West Godavari, A.P	Apiary units	100	20
		Millet based bakery units	2	20
6	Pandirimamidi, East Godavari, A.P	Black Bengal goat units	30	30
		Apiary units	3	30
		Millet processing units	2	20
		Leaf plate making units	2	20
		Rubber processing units	2	20

S. No.	Name of KVK	Nature of enterprise	No. of units	No. of beneficiaries
7	Nandurbar, Maharashtra	Rice mill	7	7
		Dal mill	2	2
		Vermicompost units	12	12
		Light traps	5	15
		Nursery units	2	20
		Poultry units	15	15
8	Thane, Maharashtra	Apiary units	20	20
		Custom hiring center	1	11
		Mobile rice mill	1	10
		Vermicompost units	3	3
9	Amaravathi (G), Maharashtra	Vermicompost units	25	25
<b>Total</b>			<b>404</b>	<b>887</b>

Under livestock interventions demonstrations were undertaken by KVKs on backyard poultry, goatery, hydroponic fodder production, silage making, mineral mixtures and improved fodder production benefitting 1519 tribal farmers during 2015-16 (Table 22). Various skill imparting training programmes conducted by KVKs benefitting 1210 tribal farmers led to establishment of micro-enterprises on backyard poultry (95), sheep (6), hydroponic units (2), apiculture (103), azonlla units (5) and black Bengal goat (30). Along with training, KVKs provided the necessary critical inputs too to the tribal youth to facilitate establishment of these micro-enterprises in the tribal areas with an aim to enhance their livelihood security.

***Table 22. Activities related to livestock under TSP during 2015-16***

S. No.	Type of Activity	Name of the activity	No. of beneficiaries
1	Demonstrations	Backyard poultry	1225
		Goatery	32
		Hydroponic fodder production	2
		Silage making	10
		High yielding fodder production	240
		Mineral mixtures	10

2	Micro-enterprises (No. of units)	Backyard poultry ( 95)	215
		Sheep units (6)	102
		Hydroponic units (2)	2
		Apiculture (103)	50
		Black Bengal goats (30)	30
		Azolla units (5)	10
3	Critical inputs supplied	Backyard poultry chicks (Giriraja, Vanaraja, Kadaknath, Srinidhi)	415
		Phule Jayawant sets	100
		Osmanabad bucks	3
		Mineral mixture	20
		Black Bengal goats	20
4	Skill Development training	Backyard poultry	632
		Production of Phule Jayawant	100
		Production of low cost poultry feed	40
		Integration of sheep in agri-horti farming system	100
		Hydroponic fodder production	60
		Silage making	37
		Vaccination of large ruminants	45
		Murrel culture	53

## 4. Successful interventions of KVKs

### 4.1 Enhanced livelihood security through improved Jasmine production and collective Marketing-Palghar, Maharashtra

**Background information :** Jawhar, Vikramgad, Dahanu, and Talasari talukas tehsils of Palghar district of Maharashtra are dominated by tribal communities like Warli, Kokna, Malhar Koli and Katkari. These tribal families are predominantly dependent on agriculture. Low productivity of land and lack of awareness regarding modern farming practices and paucity of money for investment lead to low productivity of crops in these areas. *Rabi* cultivation is practically non-existent due to non-availability of irrigation. Floriculture or *Fulsheti*, has emerged as an alternative source of livelihood for small and marginal farmers in this area over years. The income from floriculture was very low due to fragmented landholdings and poor management practices followed.

**Intervention of KVK, Palghar :** KVK, Kosbad hill adopted Ganje Dhekale Village in Palghar Tehsil and demonstrated an improved jasmine cultivation model which included fertilizer management (60 : 120 : 120 g of NPK / plant [June-July & Jan.-Feb.]), spraying of water soluble fertilizer (19:19:19) 4 times per year @ 0.5% (August, September, March & April) and low cost drip irrigation system in place of flood irrigation. The floriculture model gained quick acceptance by the tribal farmers because of low resource requirement, ease of management and good access to markets. The model includes cultivation of 200 jasmine plants on 500 sq. m (0.05 ha) of land, with an investment of Rs. 3,000. KVK, Kosbad hill facilitated the formation of a collective Jasmine marketing society called *Eklavya Pushpa Utpadak Sangh* in its adopted village, Ganje Dhekale. As many as 1904 tribal farmers of the village growing Jasmine came together as members of the society. The produce is collected at one point in the village and transported to a wholesale dealer in Mumbai. The income is then distributed among members based on their contribution to the consignment.

**Outcome of the intervention :** The yield of Jasmine went up by 34.10% due to improved nutrition management and drip irrigation. A net income of Rs. 27,000 was realized from 0.05 ha area (500 m<sup>2</sup>) in this method. Collective marketing of the flowers fetched Rs. 55000-60000 annually to each member of *Eklavya Pushpa Utpadak Sangh*.

**Table 23. Impact of KVK interventions in Jasmine Production**

Intervention	Yield (Kg/ 500 m <sup>2</sup> )	Gross income (Rs/500 m <sup>2</sup> )	Net income (Rs / 500 m <sup>2</sup> )	B:C ratio
Farmers practice	240	38400	11200	1.41
KVK intervention (Fertilizer management and Low cost Drip irrigation)	386	61680	31580	2.04

**Impact of the intervention :** The collective marketing ensured continuity of access to markets and higher remuneration to the produce. Inputs for cultivation are also purchased collectively and distributed to the members of the society. The enhanced income levels of tribal farmers in the village got translated into higher education, improved health and enhancement of civic amenities and living standards. This successful intervention spread to the entire Palghar district over years and tribal farmers are encouraged to take up floriculture as a stable livelihood option.

About 1,904 farmers are now involved in floriculture as an income-generation activity in Palghar district. Over the years, the farmers have earned more than Rs. 2 crore from selling jasmine. Not only has this money helped improve the quality of life, education and health of the farmers but also helped them build their asset base by constructing homes and wells, buying vehicles and other agricultural implements to aid floriculture. Working in groups has improved the social interactions among farmers by developing their communication skills and also helped in developing leadership skills at the community level. Exposure to the markets in Mumbai has boosted confidence of the members who are now venturing into flower crops such as marigold, champaka, gaillardia, rose and tuberose. The formation of common interest groups and their federation at the taluka level has effectively democratized the process and brought in total transparency.





*Demonstration of improved Jasmine production technology*



*Low cost drip irrigation system*



*Eklavya Pushpa Utpadak Sangh*

## **4.2 Millet processing-a group approach for livelihood security of tribal woman in West Godavari District of Andhra Pradesh**

**Background information :** West Godavari district has 6 mandals dominated by tribal population ranging from 7 to 64%. The people are mostly dependent on agriculture for livelihood. The yields of the crops are low because of low awareness and skill gaps related to improved crop production and protection technologies. Alternative sources of livelihood are also lacking because of which net family income and living standards of the people are poor. The women in these villages are mostly dependent on agriculture as farm labour and the availability of work is seasonal. They are engaged in backyard poultry rearing and collection of cashew nuts and other minor forest produce as other sources of livelihood.

**Intervention of KVK :** Training programmes on millet processing were conducted by KVK, Venkataramannagudem, Andhra Pradesh to tribal Self Help Groups (SHGs) under TSP. Two Self Help Groups viz., Girivanitha and Giriposhana were formed which established their own millet processing units with the financial assistance of ITDA. Each Group has a membership of 15 tribal women. Both the Groups branded their product by the name ‘**Sri foods**’ under FSS registration, Vijayawada. The processed products like ragi, jowar, multigrain biscuits and malt powder are supplied to 28 schools under supplementary nutrition programme.

### **Outcome of the intervention :**

Both the groups supply approximately 800kg (400 kg each) of millet products to schools every week and each group is earning an amount of Rs. 2,00,000 per month. After deducting the expenses, net profit is shared among the members of the group. The millet products are also supplied to nearby super markets in Eluru, Koyyalagudem, Rajahmundry and local shandies in the villages. ITDA is encouraging by giving orders as per their requirement for official meetings and functions. Recently an outlet in Eluru Rythu Bazar was also started and the sales are encouraging with a turnover of about Rs. 30,000/- to 50,000/- per month.

### **Impact of the intervention :**

This group activity enhanced the livelihood standards of the tribal women markedly and brought about a significant impact on their socio-economic conditions. These two groups participated in “Millet Fest” organized by the College of Home Science, ANGRAU, Guntur, Exhibitions at Vijayawada, Eluru, Pattiseema and could raise demand for their products. Now these groups are ready to procure additional machinery like Dough Kneader, Solar drier *etc.*, required to make quality products with an intension to go for online marketing. Product diversification by way of providing further training is planned for these women groups during this year.



*Training programme on value addition of millets to tribal women*



*Supply of millet processing units to tribal SHGs*



*Bakery unit preparing millet products*



*Millet value added products ready for marketing*

### **4.3 Apiculture - A successful skill based intervention for sustainable livelihood to rural and tribal families of West Godavari**

**Background information :** Tribal areas of west Godavari district comprise of three agency mandals viz., Buttaigudem, Polavaram, Jeelugumilli and two plain tribal mandals, T. Narasapuram and Lingapalem. Most of the area is covered with horticultural crops like cashew, mango, oilpalm and vegetables apart from paddy and maize. New plantations are also taken up with guava and oilpalm as a part of crop diversification by ITDA, Kotaramachandrapuram, West Godavari. Collection of honey from wild bee colonies is one of the income sources for rural/tribal families during lean periods of employment *i.e.* during November to February. This activity is slowly coming down as the skill in identifying wild bee colonies is not passed on to present young tribal farmers. Domestication of honey bees with the species *viz.*, *Apis mellifera* and *Apis cerana indica* was reported to be very successful among horticulture farmers where abundant forage required for bee activity and production of honey is available.

**Intervention of KVK and the outcome :** Vocational trainings of six day duration were conducted by KVK, Venkataramannagudem under “Tribal Sub Plan” during the year 2015-16 to impart knowledge and skills related to types of bees, classification, bee hive structure and management, life cycle of various categories of bees, parts of bee hive box, accessories required for honey bee keeping and honey extraction *etc.*, The trainees were also taken to ARS, Vijairai under Acharya NG Ranga Agricultural University for exposure and to interact with the successful farmers maintaining apiary in that area. After successful completion of the programme the participants were provided with a certificate and booklet titled “*Teneteegala Pempakam*” in telugu to use as a ready reckoner to have first hand information regarding the honey bee rearing. Details of departmental schemes available to the farmers for taking up apiary as an enterprise were also provided during the valedictory. Sixteen tribal farmers from Kamaiahkunta, Pandugudem and Bandarlagudem villages of Buttaigudem mandal were identified to support with bee hive boxes under Tribal Sub Plan activity of KVK, Venkataramannagudem. Regular follow up visits were also made by the scientists of KVK to the units and advisory was also provided for effective maintenance of the bee hives. Support in terms of supply of foundation sheets and portable honey extractors is provided to these farmers for strengthening the activity. Honey can be extracted @ 2-3 Kg from each box by October and can be continued up to June. Honey extracted from these colonies can be sold @ Rs. 300/- to 500/- per Kg. depending on the season and demand.



*Training on bee keeping*



*Bee hive boxes maintained by a trainee in Kamaiahkunta village*





*Apis cerena indica bee hive colony in a tribal village*

#### **4.4 Mushroom cultivation as livelihood option in tribal villages of Visakhapatnam District of Andhra Pradesh**

**Intervention of KVK :** BCT-KVK conducted training on Mushroom cultivation during 2015- 2016 under Tribal Sub Plan (TSP) programme. Totally 60 farmers and youth from 6 tribal mandals were trained on chemical treatment of paddy straw, preparation of beds, spawning and casing of mushroom beds *etc.* The trainees were taken on an exposure visit to two mushroom units running successfully in the district.

**Outcome of the intervention :** On completion of training mushroom cultivation was taken up by one SHG with the technical support by the staff KVK. Each member of the group is earning additional income of Rs. 2750/- per month and the total family income per month rose to Rs. 11,950/-. The group plans to scale up the business to make available mushrooms throughout the year in Araku valley as it is a well known tourist place and the village is only 6 km away from the Araku valley mandal head quarters. The valley being situated at an altitude of 1000 MSL has a cool climate which is very congenial for the cultivation of mushrooms.



*Visit of KVK scientists to the mushroom unit*



*Milky mushrooms produced by the SHG in araku valley*

#### **4.5 Collective Seed production through Self Help Groups (SHGs)- Nandurbar, Maharashtra**

**Background information :** KVK, Nandurbar operates in the tribal dominated tehsils of Nandurbar district of Maharashtra where agriculture is the main source of livelihood. The farmers have been facing shortage of seed during peak season.

**Intervention of KVK :** KVK, Nandurbar facilitated seed production of paddy, onion, red gram and chick pea by tribal farmers of Nandurbar district, through group approach in convergence with Directorate of Onion and Garlic (DOGR), Rajgurunagar. Seed production was managed by Cluster Development Committee (CDC) and Self Help Groups in 14 villages. The various stages of seed collection, processing, storage and distribution are managed by CDC.

#### **Onion seed production through Self Help Groups**

Onion seed production through Self Help was initiated by Krishi Vigyan Kendra, Nandurbar from the year 2004-05. It began with the village Bandharpada of Navapur tehsil. Jai Bajarang SHG was the first farmers group which hired 0.20 ha of land for seed production and received net profit Rs. 43000/- from onion seed production. Over a period of 12 years a total of 25 farmer groups from 15 villages have got involved in this seed production programme in Nandurbar district. DOGR, Rajgurunagar has been entering into MOU with Self Help Groups with KVK acting as intermediary agency and gives buy back guarantee to seed produced by Self Help Groups.

For the last three years this programme has been brought under Tribal Sub Plan. The land is collectively hired by the SHGs for seed production. Some of the critical inputs and technical advice have been provided by the KVK under TSP. By 2015-16 a total of 25 SHGs have been involved in onion seed production programme. 7.5 q of onion seed worth Rs. 3,37,500 was produced by SHGs during 2014-15. Tribal SHGs produced 8.20 quintals of onion seed worth Rs. 4,10,000 during 2015-16. The data on onion seed production over four years have been furnished in Table 24.

**Table 24. Onion seed production through SHGs during 2011-16**

Total SHGs involved	Year	Seed produced (q)	Amount received (Rs.)
03	2011-12	5.24	209600
03	2013-14	3.61	144400
06	2014-15	7.50	337500
10	2015-16	8.20	410000

**Seed production by Cluster Development Committee (CDC):** The SHGs from 14 villages formed Cluster Development Committee (CDC) for production, collection, storage, processing and distribution of seed of different crops. The details of seed production by the CDC are given in Table 25.

**Table 25. Details of Seed Production by CDC**

S. No.	Crop	Variety	Quantity (q)
1	Paddy	Indrani	198
		Phule Radha	510
2	Red gram	Vipula	90
		Phule Rajeshwari	
3	Rabi jowar	Phule Revati	107



*Onion seed production by SHGs*



*Collective processing and storage of seed by CDC*

**Impact of the intervention :** The timely availability of the seed material led to timely sowing at optimum moisture levels which enhanced the productivity of crops. Seeing the success of the intervention, many farmers are willing to become members of CDC.

#### **4.6 Production of vermicompost and vermiwash by tribals as an alternative livelihood option-KVK, Nadurbar**

**Background information :** In Nandurbar district of Maharashtra most of the tribal farmers use less chemical fertilizers for their crops. There

is plenty of availability of crop residue, dairy waste and household waste which can be utilized to produce organic manure for their crops.

**Intervention of KVK :** Nadurbar implemented a programme to disseminate vermicompost and vermiwash production technology among the vegetable growers in Navapur tehsil of Nandurbar. KVK facilitated formation of six groups of vegetable farmers for vermicompost and vermiwash production to reduce reliance on chemical fertilizers, make them self sufficient in organic manure requirement and to provide opportunities for generating additional income.

**Outcome of the intervention :** These six farmer groups produced 40.5 tons of vermicompost and 85 liters of vermiwash through 12 beds in a year. Most of the farmers utilized the vermicompost and vermiwash for their vegetable crops which reduced the cost on chemical fertilizers. The vegetables thus produced organically fetched good market price too.



*Demonstration on Vermi-bed preparation*



*The tetrabeds of vermicomposting*

#### **4.7. Backyard poultry as an alternative source of livelihood in Nandurbar and Palghar Districts of Maharashtra**

##### **a. Nandurbar**

##### **Background information**

Nandurbar is an administrative district in the northwest corner (Khandesh Region) of Maharashtra. The six tehsils of the district are tribal dominated with the population of tribes ranging from 45 to 95%, the major occupation of the people being Agriculture and farm labour. The average size of land holding ranges between 0.1 ha to 1 ha. The main source of income is agriculture and secondary source is



livestock and poultry. Throughout the year livestock and poultry play an important role in meeting the daily needs of family through sale of livestock and poultry products. Since the productivity of local breeds of poultry is low, the income from this source has been meagre and KVK, Nandurbar intervened to bring about enhancement in the productivity of the poultry through better management and marketing of poultry in these tribal areas.

### **Intervention of KVK**

To strengthen the poultry enterprise, vocational training programmes were organized in KVK to rural youth on aspects covering the basic topics like poultry management practices, common diseases, homemade feed formulation, and group marketing of poultry produce in tribal area. Apart from the training, KVK provided 25 day old chicks to farmers after brooding and necessary vaccination in KVK farm which checked the mortality of poultry birds at farmer's level. To sustain the activity of backyard poultry in the tribal belt, group approach was encouraged. Each group comprised of 10-15 families. Presently 247 families are engaged in backyard poultry farming throughout Nandurbar district. The women took the lead in managing the poultry farms. Group approach helped farmers in the procurement of chicks from KVK, feed production on large scale and in giving timely vaccination. The essential requirement of poultry farm is poultry shed which has been met by farmers by utilizing local material like bamboo, *kadbi*, local grass and wood for construction of poultry sheds. The feed was prepared locally from available grains which comprised of maize, jowar, bajra, rice bran, dal chunni and in addition to this they added area specific mineral mixture to the feed for increasing the nutritive value. KVK provided area specific mineral mixture to the farmers on a regular basis.



*Training on poultry feed production from locally available material*



*Poultry sheds constructed with indigenous material*

**Outcome of the intervention :** The three tier system comprising of brooding at KVK, rearing at farmers' level and group marketing ensured sustainability of the backyard enterprise in the district and enhanced livelihood security to the tribals.

**Impact of the intervention :** Realizing the benefits of backyard poultry, rural youth from this tribal area are coming forward for undergoing training and to start poultry enterprise at village level. The major outcomes of initiation of backyard poultry in this tribal area are decreased mortality of poultry birds, good weight gain of poultry in less time, and sustainable income throughout the year.

## **b. Palghar**

**Background information :** Backyard poultry is a common vocation among the tribal areas of the Palghar district of Maharashtra state. Poor farmers not only rely on it for regular income but also for nutritive food. Women are mainly engaged in this activity and take pride in contributing to the family income. They mostly rear local hens, which lay only 50 to 60 eggs annually and gain only 1 to 1.5 kg bodyweight.

**Intervention of KVK, Kosbad Hill :** An effort was made by KVK, Kosbad hill to introduce improved breeds of backyard poultry (RIR, Giriraj, Vanaraj and Kadakanath) with an objective of enhancing productivity and net income from backyard poultry in these tribal tracts. The intervention was undertaken during 2013-15 in Palghar and Jawhar blocks covering 300 tribal farmers who were given 3,000 40-

45 day old vaccinated chicks (1 male and 9 females / family). Training programmes were conducted to tribal women on vaccination and feed management.

**Outcome of the intervention :** The improved breeds gained a weight of 2.5-3 kg in 11 months and laid 170-190 eggs per year, way higher than the local breeds. The enterprise became a source of regular income to the tribal women who are motivated to scale up the venture due to high number of eggs laid, higher weight gain and market preference. In convergence with ATMA and State department of agriculture, the KVK is all set to spread the benefits of backyard poultry with improved breeds to the entire district of Palghar.

**Table 26. Performance of improved breeds of poultry birds in the tribal tracts of Palghar District, Maharashtra**

Particulars	Initial wt. of day old chick (g/ bird)	Weight of Bird (gm) after one year	No. of eggs/ year/ bird	Income from eggs (Rs)	Income from sale of birds	Total income / year (Rs)
Improved (Kadaknath)	48	Male - 3190 Female – 2300 (Av. Wt. 2700)	97	6000	2500	8500
Improved (Vanraj/Giriraj)	54	Male : 3000 Female- 1900 (Av. Wt. 2450)	168	3650	1870	5520
Non-descriptive	41	Male – 2100 Female- 1460 (Av. Wt. 1780)	62	2290	550	2840



**Backyard poultry unit in a tribal household**

## **4.8 Improving socio-economic status of tribal fishermen through reservoir fisheries: Pandirimamidi, East Godavari District, Andhra Pradesh**

### **Background information**

Aquaculture is an important economic activity among the agri-allied sub-sectors in Andhra Pradesh. Aquaculture ensures nutritional security to the rural people, generating gainful employment and enhancing income of the farmers. The agency area of East Godavari district has vast potential for development of fisheries as there are many perennial hill streams and rivers like Godavari and Sileru flowing through the agency area. Many small and medium irrigation projects were constructed in the agency area which can also be a big source for fish production. There are about 170 fish ponds (one acre each) constructed in the own lands of tribal farmers from 1983 onwards under different schemes, out of which 68 tanks are in operation. There are about 30 seasonal irrigation tanks with an effective water spread area of about 75 ha excising in the agency area. Another 14 reservoirs existing in the agency area have 475 ha. of Water Spread Area (WSA), out of which 6 are perennial and the remaining are long seasonal and have less than 10 ha of WSA. There are another 2 medium irrigation projects in Rampachodavaram Mandal viz., Bhupathipalem project (completed) and Musurumilli project (nearing completion). There are 20 Tribal Fishermen Cooperative Societies (FCSs) and 2 tribal women FCSs which are registered exclusively with the tribals in the agency and sub plan Mandals.

### **Intervention of the KVK**

Bhupathipalem Reservoir Scheme is a Medium Irrigation Scheme across Seethapalli Vagu near Bhupathipalem Village in Rampachodavaram Mandal of East Godavari District. It is proposed to serve an ayacut of 12,100 acres (4840 ha.) in two mandals of Rampachodavaram and Gangavaram. In addition to this, it is a drinking water source for 31 tribal villages with an enroute canal length of 31.5

km. Due to the construction of Bhupathipalem Reservoir project 3 villages namely Gandhinagaram, Kothapakalu, Suddagommu in which 147 tribal families are residing were affected with flood and inundation. To improve the socio-economic condition and livelihood of the inundation affected tribal families, KVK, Pandirimamidi took initiative to utilize the available water resources through reservoir management for development of fisheries. The fisheries scientist of the KVK created awareness among tribal farmers on reservoir management for fish production by conducting focused group discussions and facilitating interaction with line department officials and ITDA there by developing linkages among various stake holders. This motivated 147 tribal families to take up fisheries activity in the reservoir with the technical support from KVK. During December, 2012 two lakhs fish fingerlings were released in Bhupathipalem Reservoir with the financial support from Project Officer, ITDA, Rampachodavaram and Department of Fisheries, East Godavari District and technical support of the KVK, Pandirimamdi. After seed stocking in the reservoir farmers were trained on “Reservoir fisheries management practices” and exposure visits were organized with help of ATMA and State fisheries department to bring awareness on scientific management practices on tank based fish culture.

The tribal families involved in this activity were registered as “Primary Tribal Fishermen Co-operative Society” (PTFCS), bearing the Reg.No.C-159 in the year 2014 with help of the department of fisheries, with 41 farmers as members with a view to get the benefit of the government schemes and subsidies and also to get the fishing rights on the reservoir. The role of Primary Fishermen Cooperative Society (PFCS) is to prevent exploitation of fishermen by the middlemen and money lenders and to allow fishermen to market the produce through the PTFCS. Krishi Vigyan Kendra has provided need based technical support and conducted periodical sample netting to assess the fish growth and health to enhance the fish production and sustainable exploitation of fish harvest from Bhupathipalem reservoir.

## Outcome of the intervention

The tribal fisher men started harvesting fish in the reservoir with the grill nets and teppas since October, 2014. The average size of the harvested fish ranged from 3 to 5Kg., and the fish were sold at Rs.100/kg at the reservoir site. The members of the society harvested 5 to 6 quintals of fish per day which was marketed through PTFCS. The profit thus obtained was distributed equally among the tribal fishermen families after completion of the fish harvesting. The intervention of the Krishi Vigyan Kendra, Pandirimamidi which was initiated with two lakh fish fingerlings in the Bhupatipalem reservoir ensured 147 tribal families an income of Rs. 20,000 to 25,000 per family over a period of eight months and gave livelihood security to these rehabilitated tribal families.



*Releasing of Fish seed in the reservoir*



*Flagging of Exposure visit by PO, ITDA*



*Fish marketing through Tribal Fisher men*

### 4.9 Entrepreneurship Development of tribal women through Garment Making - East Godavari, Andhra Pradesh

**Background information :** The tribal farmers and youth in the Rampachodavaram mandal of East Godavari, Andhra Pradesh are entirely dependent on agriculture, manual labour and collection of minor farm produce for their livelihood which resulted in large scale unemployment, under nourishment and poor economic and social status. Agricultural activities are confined to only *kharif* season and the youth remain idle for most part of winter and summer seasons. Majority of the tribal young men and women are in the age group of 20-25 years, usually are school/college dropouts and therefore are a potential source for imparting skill training and entrepreneurship development. In this direction KVK, Pandirimamidi played a vital role in organizing vocational training courses on promotion of garment



making for improving the livelihood of women as per the needs and available resources.

**Intervention of the KVK :** Vocational trainings were conducted to 28 tribal women on garment making with the financial support under Andhra Bank Institute of Rural Development, East Godavari for 30 days. KVK monitored the vocational training programme on basic garment making and developed the necessary linkages with other institutions like ITDA, TRICOR, Rampachodavaram and Union Bank of India, Rampachodavaram for the procurement of machinery, financial support and marketing. Subsidy component under government schemes was made available to this women tribal group for starting garment making as a group activity. The group created a revolving fund with mutual contribution for meeting the initial expenses of the enterprise.

**Outcome of the intervention :** The 28 tribal women who were given vocational training on garment making divided into four groups and earned on an average Rs. 38,000/- per group.

The vocational training programme resulted in significant motivation to the tribal women to take up Garment making as a livelihood option. The activity improved group dynamics such as co-operation, division of work and interpersonal communication. Some of the tribal women who were trained in this programme became master trainers and have started their own training center for imparting requisite skills to needy girls and women for self-employment.



*The tribal women trained in garment making*



*The Garment sale counter set up by the trainees in an exhibition*

#### 4.10 Introduction of Digvijay, an improved variety of chickpea in Nandurbar district of Maharashtra

**Background information :** Chickpea is grown in 1.43 lakh hectares in Nandurbar district of Maharashtra. Hitherto, the tribal farmers used to grow local varieties like Gulabi and Kharya which were low yielding and susceptible to pests and diseases.

**Intervention of KVK and the impact :** KVK, Nandurbar introduced the high yielding chickpea variety Digvijay in the year 2008 in the district which was readily accepted by the farmers and the area is expanding. The variety gives 28% higher yield, is resistant to wilt and responds well to 1-2 irrigations. The approaches used for popularizing this variety were Front Line Demonstrations (FLDs), training, exposure visit, field days, supply of extension literature, paper news *etc.* The major thrusts given were seed production through the establishment of seed banks and integrated pest and nutrient management. Six seed banks were established among farmers and seed production has been taken up on 468 ha. The area under this variety reached 2000 ha by 2015.



*Demonstration plot of Digvijay variety*

#### 4.11 Cost reduction technology in Ginger cultivation - A success story from Agency area of Visakhapatnam District

**Background information :** The tribal farmers in Araku Mandal of Visakhapatnam district cultivate ginger as a major cash crop besides



paddy and pulses. They are facing many problems while cultivating ginger due to unavailability of quality seed material, high seed cost and low yields. An amount of Rs. 45000/ acre has been spent solely on seed during peak season.

**Intervention of KVK:** During 2014-15 BCT-KVK organized on farm trials to assess the pro-tray method of seedling production and transplanting in comparison to conventional method.

**Outcome of the intervention :** A benefit cost ratio of 4.0 was achieved in the trial plot compared to 1.92 in the conventional method. The trial was repeated in 2015-16 too with similar encouraging results. The seed requirement was brought down to 200 kg and an yield of of 5.9 t was achieved with a gross income of Rs. 1,77,00. The cost on seed could be brought down by Rs. 44000 per acre because of which an addition net income of Rs. 54,400 could be obtained. With these encouraging results several farmers have adopted this technology and started raising their ginger nursery as group activity during 2016-17.

*Table 27. Economic evaluation for one acre area of ginger cultivation*

S. No.	component	Costs in the improved method (Rs.)	Costs in traditional method (Rs.)
1	Land preparation	5000	5000
2	Nursery maintenance cost	5000	0
3	seed	14500	58500
4	Sowing/transplanting	5000	5000
5	Intercultural operations	4200	5000
6	Harvesting cost	8200	7800
	Total cost	41900	81300
<b>Returns</b>			
8	Yield /acre	5.9 t	5.4 t
10	Gross returns (Rs. 90/kg)/acre	177000	162000
11	Net returns/acre	135100	80700



*Ginger Nursery ready for transplanting*



*Demonstration Plot of Ginger in a tribal village*

## 4.12 Integrated management of cashew orchards in West Godavari district of Andhra Pradesh

**Background information:** KVK, Venkataramannagudem, West Godavari district of A.P operates in 23 upland mandals including 7 tribal mandals viz., Buttiahgudem, Polavaram, Jeelugumilli, Velerupadu, Kukunuru, T. Narasapuram and Lingapalem. Cashew is the main horticultural crop in these mandals and provides livelihood to tribal adivasi families. The cashew orchards in this area are much neglected without any management except collection of nuts at the end of the season.

**Intervention of KVK :** KVK, Venkataramannagudem during the preliminary visits and survey identified that improved management of these cashew orchards which includes canopy management, nutrient management and control of Tea mosquito bug incidence can improve the productivity and livelihood security of the tribal families. Critical inputs like fertilizers, micro-nutrient spays and pesticides were provided to the tribal farmers by KVK in the demonstration orchards. The KVK undertook the following demonstrations and trainings during 2015-16 to impart skills required for better management of orchards.

Topic	Activity	No. of beneficiaries
Canopy management	Training	53
INM in Cashew	On farm trials	20
Control of Tea mosquito bug	Front Line Demonstrations	200
Seasonal management of Cashew orchard	Trainings	110

KVK conducted various cashew value chain promotion programmes in 7 adivasi villages in collaboration with PARD an NGO operating in the area. This programme mainly aims to demonstrate the skills and practices related to cashew orchard management. Under this programme 223 chosen farmers regularly attended training programmes /meetings related to cashew value chain promotion. PARD in associated with KVK, Venkataramannagudem not only gave training on orchards management but also established village groups of cashew farmers for collective procurement of inputs and marketing of the produce. Digital weighing machines were provided by the Project Officer, ITDA, Kotaramachandrapuram to support the activity. Involvement of middle men could be avoided with the active involvement of NGOs and support extended by the officials of horticulture department.

**Outcome of the intervention :** A total of 57.8 (12% increase over previous year) tonnes of cashew nuts were marketed by these 223 farmers with an average price of Rs. 123.5 per kg of nuts. Each farmer on an average got an amount of Rs. 31,251 per acre at the end of the season. Thus this collaborative activity of KVK and NGO helped the cashew farmers realize better price to their produce and overcome exploitation by the middle men and traders in terms of weighment, price fixing *etc.*



*Demonstration on INM of cashew*



*Training on Tea mosquito bug management*



*Collective marketing of cashew nuts*

#### **4.13 Demonstration of improved varieties of Sorghum and better management practices - KVK, East Godavari (Pandirimamidi)**

**Background information :** Farming in agency areas of East Godavari district of A.P has been characterized as a subsistence activity with farmers producing a wide array of crops (including multiple cultivars of the same crop) for their own consumption, using few purchased inputs. The productivity level of these crops is very low resulting in poor economic status of these tribal farmers.

**Intervention of KVK :** Krishi Vigyan Kendra, Pandirimamidi, in collobaration Indian Institute of Millet Research (IIMR), Hyderabad, initiated a programme on “Implementation of Sorghum Demonstration Programme for Tribal farmers” under the component of Tribal Sub-Plan during 2014-16 in the agency area of Rampachodavaram of East Godavari. Sorghum seed (improved variety CSV-15) and other inputs were distributed to 200 tribal farmers (200 acres) covering 4 agency mandals (Rampachodavaram - 100, Maredumilli - 40, Gangavaram -10 and Devipatnam 50) of East Godavari district, Andhra Pradesh. Each demonstration was conducted in a block of one acre of land in order to have better impact of the demonstrated technologies. Ten to twenty farmers were randomly selected from selected villages. After distribution of the inputs, head and scientists of KVK, Pandirimamidi, made regular field visits, conducted need based training programmes, diagnostic visits and made suggestions on crop production and protection measures.

**Outcome of the intervention :** The package of improved practices including seed treatment, line sowing, raising of nursery, transplanting in line, adoption of recommended dose of fertilizers and timely plant protection measures resulted in higher productivity of 7-8q/acre compared to 1-2 q/acre by their traditional practices. An average net income of Rs.10,000/- was achieved by the tribal farmers who followed the improved practices and realized an average benefit cost ratio of 5.99. This benefit was realized in a short span of 3 months compared to 6 months that a traditional variety used to take. Superior quality traits of the newly introduced CSV-15 variety fetched premium price of Rs. 1500/q in the local market compared to the Rs.1100/- per quintal of local varieties.

**Impact of the intervention :** Farmers saved some of the produce as seed for sowing in the ensuing season as the results were very encouraging to them. In convergence with the efforts of ITDA and ATMA, the technology is likely to be adopted on a large scale by tribal farmers of this region ensuring better livelihood security to them.



*Field visit by KVK staff to the demonstrations*



*Supply of critical inputs to tribal farmers*

#### **4.14 Successful demonstrations for the management of shoot fly in *rabi* Jowar-KVK, Nandurbar**

**Background information :** *Rabi* jowar is the major rainfed crop of Nandurbar district covering 24000/ha of area. Most of the *Rabi* jowar is cultivated in Navapur on light to medium soils under rainfed conditions.

Farmers were using their own seed for sowing and were cultivating jowar under minimal management which resulted in low productivity.

**Intervention of KVK:** KVK Nandurbar took up front line demonstrations on large scale on improved varieties of Jowar and management of shoot fly, a major pest of *rabi* jowar limiting productivity to a tune of 20 per cent. The IPM package that was demonstrated included removal and destruction of shoot fly affected plants, seed treatment (with seed dressing drum) with thiomethoxam or imidacloprid, fish meal traps and need base chemical pesticide spraying.

**Outcome of the intervention :** In the demonstrations plots farmers could reap an average harvest of 16.98 q /ha with average gross income of Rs. 49242/ ha. (@ Rs. 2900 /q). Thus they could earn higher net income of Rs. 8178/ha over local check plots. Shoot fly attack was brought down to 2.83% in demonstration plots as compared to 12.91% in control plots. Large scale conduct of different programmes like field days, trainings, news paper coverage by KVK helped in the diffusion of this technology.



*Method demonstration on seed treatment*



*Field visit of KVK staff to the demonstration plot*







## **ICAR-Agricultural Technology Application Research Institute (ATARI)**

CRIDA campus, Santoshnagar, Hyderabad - 500 059, Telangana, India