

CLUSTER PROMOTION PROGRAMME (CPP), A NOVEL METHOD FOR THE UPLIFTMENT OF SOCIO-ECONOMIC CONDITIONS OF SCHEDULE CASTE AND SCHEDULE TRIBE FARMING COMMUNITY

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ABSTRACT

Cluster Promotion Programme (CPP) was implemented during 2008-2019 under XI & XII five year plans to generate gradable Bivoltine raw silk and project India as a potential Bivoltine silk producer in the international scenario. Kalyandurg has become one of the clusters selected for implementing the CPP out of 17 clusters choose to implement CPP in Andhra Pradesh. CPP was implemented in Kalyandurg during 2010-19 and distributed 28.51 lakh of DFLs against the target of 24.75 lakh with a significant achievement of 121.44%. During the CPP implemented period, 26.80 lakh DFLs were harvested, produced 1397.7MT of cocoons and contributed in generation of 275.85MT graded Bivoltine raw silk. Cocoon yield/100DFLs was enhanced from 45kg (benchmark level) to 68.11kg and fetched Rs. 395 average market price per kg cocoons. Further, as a part of cluster promotion programme, several scheduled caste and scheduled tribe farmers were approached and encouraged to take up Bivoltine sericulture to uplift their socio economic conditions. Chovitivanka Thanda (C. V. Thanda) of Kambaduru mandal under Kalyandurg Cluster, Anantapur District, Andhra Pradesh, where only 50 Sugali (ST) families live in and they were approached and made efforts to take up sericulture. Smt. Alivalamma, G. Rama Naik and Ch. Rama Naik are Scheduled Tribe farmers and suffered with losses due to the cultivation of various agricultural, vegetable and horticultural crops. They were struggling for their survival and they were planning to go to urban areas to pull the days as daily waged labourers. Under this situation, CPP was implemented by giving subsidies in all aspects of sericulture in the year 2017. They established gardens, rearing houses, infrastructure facilities and harvested yield of more than 80 Kgs/100 DFLs and earned more than Rs. 1lakh in the first crop itself in all cases and their life has been transformed, uplifted their socio-economic conditions and brought glitters in their lives. They became role models for the other farmers, 15 new farmers have come forward and established sericulture from the same village and they are also in the same path of profitable sericulture. The village so called C.V. Thanda have become Seri Thanda with the development of Bivoltine sericulture under CPP.

INTRODUCTION

Scheduled castes and Schedule tribes are those castes, which suffer from extreme social, educational and economic backwardness arising out of age-old practice of un-touchability. They need more attention and special considerations for safeguarding their interests and for their accelerated socio-economic development on account of lack of infrastructure facilities and geographical isolation. The people, who belong to schedule caste, were untouchable previously. According the Hindu mythology, this is the fifth category in the Varna System. They are called Ati Shudras (Untouchables) and were condemned for all dirty and polluting jobs. They named themselves as Dalits or Harijans (son of God). On the other hand, STs are also known as Adivas who lives in tribal areas and sharing 7-8% of the

Indian population. The Scheduled Castes Development (SCD) Bureau of the Ministry aims to promote the welfare of Scheduled Castes/ Tribes through their educational, economic and social empowerment. Ministry of Textiles is one of the organizations, which is also having several schemes for the development of deprived categories like SCs and STs under various schemes in sericulture. Central Silk Board (CSB, Ministry of Textiles) and Department of Sericulture, Andhra Pradesh State have jointly launched Cluster Promotion Programme during XI (2008 to 2012) and XII (2013-2019) five years plan and given prime importance and encouragement by specified and more percentage of subsidies to SC and ST categories. CPP was implemented in 174 clusters all over India i.e., 102 clusters

in 5 states of Southern zone, 45 in 5 states of North-western zone, 11 in 3 states of Central Western Zone, 7 in 3 states of Eastern zone and 9 in 8 states of North Eastern zone, respectively. Out of 102 clusters in Southern India 46 clusters were implemented in Karnataka, 28 clusters in Tamil Nadu, 17 clusters in Andhra Pradesh, 4 in Maharashtra whereas 2 in Kerala with an anticipated 167.06 lakh DFLs brushing and to generate 1920 MT of graded bivoltine raw silk (Himantharai *et al.*, 2012; Qadri, 2012; Sudhakar *et al.*, 2018, 2019).

Kalyandurg has become one of the clusters selected for implementing the CPP out of 17 clusters chosen to implement CPP in Andhra Pradesh and CPP was implemented in Kalyandurg during 2010-19. Kalyandurg is one of the historical important areas under Ananthapur District (Sathyanarayana Raju, 2014; Vindhya, 2012). Vijayanagara Empire of Krishnadevaraya (in 16 century) Kalyandurg was ruled by Boya Palegars by constructing Kalyandurg and Rayadurgam forts under the leader ship of Boya Kalyanappa, hence named on his memory as Kalyandurg. It has geographically located at 14°55'N and 77°10'E under arid zone with poor stony red lateritic soils. The annual rainfall of the area is about 550 mm, temperature from min. 16 to max. 42°C with a relative humidity (RH) between 30-90%. The area also witnesses moderate to high density of pump sets, low level irrigation with low cropping intensity. Benchmark survey was conducted in Kalyandurg cluster during 2009-10. According to the survey, 446 acres of mulberry garden was established by 413 sericulturists and they were practicing cross breeds. Survey of Kalyandurg cluster also revealed that, 25,000 Bivoltine hybrid DFLs fetching 45.0 kg/100 DFLs yield and 93,000 cross breed (CB) DFLs with 53.4 kg/100DFLs yield contributing 13,133 kg raw silk production of CB and Bivoltine. The above information indicates that Kalyandurg area is not new for Bivoltine sericulture but traditional for cross breed. Therefore, CPP was implemented in order to increase graded bivoltine raw silk production during XI and XII five year plans in Kalyandurg cluster (Kiran Kumar *et al.*, 2019).

Further, as a part of cluster promotion programme, several scheduled caste and scheduled tribe farmers were approached and encouraged to take up Bivoltine sericulture to uplift their socio economic conditions. Chovitivanka Thanda (C. V. Thanda) of Kambaduru mandal under Kalyandurg Cluster, Anantapur District, Andhra Pradesh, where only 50 Sugali (ST) families live in and they were approached and made efforts to take up sericulture. Smt. Alivalamma, G. Rama Naik and Ch. Rama Naik are Scheduled Tribe farmers and suffered with losses due to the cultivation of various agricultural, vegetable and horticultural crops. They were struggling for their survival and they were planning to go to urban areas to pull the days as daily waged labourers. Under this situation, CPP was implemented by giving subsidies in all aspects of sericulture in the year 2017. They established gardens, rearing houses,

infrastructure facilities and harvested yield of Bivoltine crops and their life has been transformed, uplifted their socio-economic conditions and brought glitters in their lives. They became role models for the other farmers, 15 new farmers have come forward and established sericulture from the same village and they are also in the same path of profitable sericulture.

MATERIALS AND METHODS

With the commencement of Cluster Promotion Programme (CPP) in Kalyandurg cluster a bench mark survey was conducted on the existence of bivoltine sericulture to discern the status of technical knowhow of the farming community on various aspects of sericulture during 2009-10. Survey revealed that, both bivoltine and cross breed (CB) silkworm rearing were existing to a limited level, disease free laying (DFLs) brushing was ranging at 25000 lakh with a insignificant level of cocoon yield with 45 kgs/100dfls obtained with a market value of Rs. 223/-per kg indicating the uneconomic and not a viable venture of adopting sericulture by the farming community. Further survey also extended by the Scientist and Dept. of Sericulture (DOS) jointly to understand the prominence of mulberry area, variety, spacing, rearing house and rearing facilities to quantify the requirement of farmers and also funds to meet the farmers requirements. Subsequently, the CPP was launched by involving all the modalities during 2010 to 2019 to boost the Bivoltine sericulture in and around the vicinity of Kalyandurg cluster in which C.V. Thanda was also involved. Under this programme, adjoining villages within the radius of around 30-40km are selected to facilitate closer monitoring and interactions of scientist as well as field functionaries with cluster farmers and to ensure good and anticipated results (Sudhakar *et al.*, 2019; Vindhya, 2012). Basing on the survey the following assistance is provided to the farmers through Catalytic Development Programme (CDP) to strengthen the facilities, encourage and motivate the bivoltine sericulture farming under the cluster.

- i) The cluster was operated closely by the REC, CSB and DOS, Kalyandurg a Scientist as Cluster Development Facilitator (CDF) and Technical Staff of REC, in association of a CDF from the DOS with Co-ordination of extension functionaries of Kalyandurg.
- ii) A localized Chawki Rearing Centre (CRC) was recognized followed by the proper training to the entrepreneur at CSRTI, Mysore and required financial assistance was extended under CDP.
- iii) The chawki worms were reared at CRC and healthy and chawki worms were supplied after joint quality Chawki certification by the coordinating Cluster Development Facilitators (CDFs) - Scientist and DOS official.
- iv) Sericulture farmer's field visits were regularly conducted by CDFs, Technical and field functionaries

and extended technical guidelines for quality mulberry leaf production and successful rearing crops.

- v) Sericulture farmer’s garden soils collection, analysis and analysis based soil nutrient management recommendations were served followed by the issue of soil health cards to improve their garden soils for enhanced quality leaf production.
- vi) Sensitised farming community on the importance of green manuring during monsoon with sunhemp (*Crotalaria Juncea*) green manure seeds (@ 8kg/ac to sow during monsoon) under INM to enrich the soil nutrient status.
- vii) Bio-control agents like *Cryptolaemus montrouzieri*, *Cryptolaemus montrouzieri* and *Nesolynx thymus* were

supplied to control Tukra, Leaf roller and Uzy, respectively.

- viii) The Extension communication programmes viz. Film shows, Group discussions, Awareness Programmes, Farmers days, Field Days, Enlightenment programmes, Exhibitions, Study tours and Farmers Skill Training Programmes were conducted to enrich the knowledge of the farmers on Bivoltine sericulture framing.

Required data was collected systematically and subjected for statistical analysis to know the impact of CPP implementation on cocoon production quality, cocoon quality and economic benefit of the sericulturists in Kalyandurg cluster (Jaishankar and Dandin, 2005; Sreenivas et al., 2010; Sudhakar et al., 2019).

Table 1: Influence of Cluster Promotion Programme in the improvement of Bivoltine sericulture in Kalyandurg cluster

CPP Activities	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	Total
DFLs target (Lakh)	0.50	0.60	0.65	1.00	1.50	3.00	3.60	6.40	7.50	24.75
No. of DFLs reared (Lakh)	0.60	0.63	0.70	1.33	2.47	3.28	5.41	6.53	7.56	28.51
% of Achievement	119	106	108	133	165	109	150	102	101	121.44
DFLs harvested (Lakh)	0.55	0.60	0.66	1.26	2.15	3.26	4.96	6.43	6.93	26.80
Actual cocoon yield (MT)	20.7	23.2	25.5	57.9	96.5	165.3	248.5	362.0	398.2	1397.7
Yield/ 100 Dfls (kg)	61	62	62	68	67	71	71	75	76	68.11
Production of raw silk (MT)	4.85	5.34	5.88	12.16	20.57	33.26	49.99	68.95	74.84	275.85
Market Rate (Rs/ kg)	301	309	311	331	341	288	423	482	338	347.11
New plantation Target	20	25	50	50	50	50	50	50	50	395.00
Mulberry plantation achieved	23	56	88	103	193	259	302	392	442	1858.00
% of achievement	115	224	176	206	386	518	604	783	883	432.78
Among the no. of farmers	20	43	99	80	174	199	288	274	276	1453.00

RESULTS AND DISCUSSION

Based on perusal of results, the development of Bivoltine sericulture was tremendous and beyond the belief with implementation of CPP in Kalyandurg cluster area. During the CPP implemented period of 2010-2019, 28.51 lakh of DFLs were brushed against the target of 24.75 lakh with a significant achievement of 121.44%. During the CPP implemented period, 26.80 lakh DFLs were harvested, produced 1397.7MT of cocoons and contributed in generation of 275.85MT graded Bivoltine raw silk. Cocoon yield/100DFLs was enhanced from 45kg (benchmark level) to 68.11kg and fetched Rs. 395 average market price per kg cocoons. Bivoltine DFLs brushing and cocoon yield/100 DFLs were increased due to the adoption of various technologies like usage of recommended manure and fertilizer application, adopting soil analysis based amelioration of their mulberry gardens and effective disinfection of silkworm rearing houses by usage of Serifit and better rearing management. The results obtained are in agreement with the earlier studies conducted (Jaishankar and Dandin, 2005; Himantharaj et al., 2012; Sudhakar et

al., 2019). This study is also corroborated with the similar study conducted by other scientists in various clusters (Sreenivas et al., 2010; Himantharai et al., 2012; Sudhakar et al., 2018, 2019). Bivoltine cocoons generated by the cluster farmers fetched higher market prices which ranged from Rs. 288 to Rs. 482.0/kg during the CPP implementation period 2010-2019 in comparison to the benchmark rate of Rs. 223.0 due to qualitative improvement (Table 1).

During the CPP period of 2010-2019, a total of 1453 farmers have been undertaken 1858 acres of new mulberry plantation with high yielding mulberry varieties like V1 and G4 in varied geometries such as paired row [(3’x2’)5’], 6’x2’, 3’x3’ and 4’x4’ in low bush form. The wider spacings like 8’x8’ and 10’x10’ in tree form with partial irrigation or micro irrigation (drip irrigation) conditions to combat with the prevailing drought stricken conditions in Kalyandurg area under Ananthapur District, Andhra Pradesh.

Further, all the above results are also may be due to the organization of 157 ECPs of various kind and 41 FSTs on

various aspects of technology interactions on Bivoltine sericulture adoption and sensitized more than 6104 farmers during XI & XII plan in Kalyandurg cluster under CPP (Table 2). Enthusiastic participation of sericulturists in

various ECPs is also one of the main reasons for the successful implementation of CPP and achieving anticipated results in Bivoltine sericultural development in Kalyandurg cluster during 2010-2019.

Table 2: ECPs organized and sensitized the farming community for the development of Bivoltine sericulture under Kalyandurg cluster

Name of ECP	During the period 2010-2019									Total
	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	
Film shows	3	9	6	0	0	0	0	0	0	18
No. of farmers	36	105	165	0	0	0	0	0	0	306
Group discussion	6	9	6	4	6	7	6	6	10	60
No. of farmers	86	98	126	76	154	221	167	186	283	1397
Awareness Prog.	2	4	4	9	2	1	2	0	0	24
No. of farmers	63	118	139	257	65	189	336	0	0	1167
Farmers days	0	0	0	2	0	0	2	4	2	10
No. of farmers	0	0	0	64	0	0	145	278	157	644
Field Day	2	6	4	0	2	0	1	3	2	20
No. of farmers	40	100	111	0	66	0	165	361	221	1064
Enlightenment programme	1	1	1	0	1	0	0	0	0	4
No. of farmers	133	96	157	0	150	0	0	0	0	536
Exhibition	0	4	4	2	2	0	0	0	0	12
No. of farmers	0	94	227	191	275	0	0	0	0	787
Study tour	3	3	0	1	0	0	2	0	0	9
No. of farmers	64	60	0	39	0	0	40	0	0	203
Target of ECPs	17	36	24	11	13	8	10	13	8	140
Total ECPs conducted	17	36	25	18	13	8	13	13	14	157
% of achievement	100	100	104	164	100	100	130	100	175	1073
Total farmers sensitized	422	671	925	627	710	410	853	825	661	6104

Adoption of Scheduled Caste and Tribe Farmers for their Upliftment

Chovitivanka Thanda (C. V. Thanda) of Kambaduru mandal under Kalyandurg Cluster, Anantapur District, Andhrapradesh, where only 50 Sugali (ST) families live in. This village is known for water scarcity and poverty. Tomato, green chilli, ground nut and mango crops are grown under limited water resources. They used to get less crop yields and lower prices because of inferior quality of crops. They never harvested good and high yielding crops which can sell at optimum prices, because of which their socio and economic conditions were very poor. Knowing the struggle and poor condition of farmers of C.V. Thanda and surrounding villages like Nuthimadugu, Ralla ananthapuramu, Ikasaplli and Gulyam. The CPP team comprising Dr. K.P. Kiran Kumar, cluster development facilitator (CDF) along with DOS counter parts visited those villages and studied resources and feasibilities for the establishment of sericulture in that area. Farmers have narrated the bad situations and bitter experiences of

growing other crops. Some of the farmers namely, Aivelamma, Sena Naik, Gidda Rama Naik and Chinna Rama Naik expressed that they have decided to become daily laborers and migrate to the towns and cities for their lively hood. The Scientists and the field functionaries of the cluster considered to adopt the Tribal to change their economic condition by introducing Sericulture in their society. Several extension and communication programmes were conducted (Fig. 1) and they were motivated with profits of sericulture. The programmes were also participated by Mr. Mancho Ferror, CEO of the Rural Development Trust (RDT), an NGO organization which extends financial supports and subsidies to the deprived category.

On the onset of adoption of the tribal farmers in sericulture farming, the following steps were conducted by the team of CPP, Kalyandurg:

- Smt. C. Aruna Kumari, Joint Director of Sriculture (JDS), Dept. of Sericulture, Ananthapuram and Dr. K. P.

Kiran Kumar, Scientists-D, RSRS, Ananthapur cluster development facilitators (CDFs) financial benefiting schemes available for the benefit of the sericultural farming community.

- The farming communities were sensitized on the economic comparison with other crops viz. tomato,

green chilly, groundnut, and other horticultural crops with sericulture.

- Educated on the pre-requisites to establish sericulture like selection of land, high yielding mulberry varieties, ideal spacing, rearing infrastructural facilities to be procured and Govt. support.



Figure 1: Sensitizing Farmers on improved technologies in mulberry cultivation & silkworm rearing

- The subsidized critical supplies for various categories like for mulberry plantation (Rs. 22,500/-); construction of rearing house to STs (Rs. 1.80 lakh); SCs (Rs. 1.70/-lakh) and others (Rs. 0.87 lakh). Similarly for the construction of shoot rearing stands (Rs 0.23/- lakh), verandah construction (Rs. 0.23/- lakh) were also sanctioned.
- On persuasion of the CPP team, Branch manager of Andhra Pragathi Grameena Bank, Nuthimadugu branch has given Rs. 1.00 lakh rupees/each farmer as loan for 30 farmers for construction of rearing house.
- CPP team, has taken necessary steps to sanction additional Rs. 1 lakh from S.T. corporation to all ST farmers.
- With the above support the farmers planted mulberry, constructed rearing shed, verandah and shoots rearing stands were also erected.
- As the farmers pretty new to the serifarming, REC, Kalyandurg has imparted 3 days farmer’s skill training programme & sensitized on mulberry farming and silkworm rearing by taking them to Yenumuladoddi of Kundurpi mandal which is traditional area of sericulture.



Figure 2: Successful sericulturists displaying their efforts in the form of quality Bivoltine cocoons

- New farmers were taken to the Study tour to Sira, explained and exposed to the improved sericulture
- The farmers adapted improved technologies such as mulberry planting in improved spacing, imparting recommended spacing, green manuring to improve soil nutrient status.
- Built improved rearing houses as specified, imparted appropriate disinfection methods, followed hygiene during rearing, used heaters to regulate temperature and foggers to accelerate climate.
- Therefore with the all above efforts the farmers initiated their 1st crop of silkworm rearing in the month of September, 2017.



Figure 3: Healthy silkworm rearing resulting in the form of quality and enhanced cocoon yield

Successful and Proven Scheduled Tribe Farmers in Adopting Sericulture

A. Alivelamma W/o Tulasi Naik, C.V. Thanda: Smt. Alivelamma before adoption of sericulture through the other farmings such as tomato, musk melon, green chili and mango and incurred huge financial losses due to high input costs, poor harvest of crops, inadequate market rates and natural calamities leading to loss only. Due to the above farming their economic conditions has collapsed miserably and sold their gold to payback the debts. Further also decided to migrate to the urban areas and work as daily wag labors. However, after attending an awareness programme at Nuthimadugu organized by the REC, Kalyandurgam, a ray of hope was raised to adopt sericulture. With the support and moral courage given by the CPP team she established 2 acres of mulberry garden and brushed 300 bivoltine DFLs, harvested 275 kg cocoons with 91kg/100dfls yield and received Rs. 1,23,300/- (Table 3).

B. Gidda Rama Naik, C. V. Thanda: Similarly Gidda Rama Naik family too were growing several other agricultural and horticultural crops but failed to harvest good crops and remained a disappointed farmer with his farming avocation. With intervention of CPP team of Kalyandurg cluster and the kind intervention of Dr. K. P. Kiran Kumar, Scientist-D & CDF of the cluster managed to convince a Bank Manager and extended providing 1 lakh rupees as loan. With the above

financial support the farmer could improve his mulberry garden and rearing conditions. As first time effort the farmer brushed 250 DFLs for 2 acre mulberry garden and harvested 212 kg of Bivoltine cocoons, fetching a market value of Rs.440/- per kg cocoon along with incentive benefit a total of Rs. 1,03,880/- could gain. The farmers expressed that first time they have witnessed such high monetary benefit through sericulture

C. Chinna Rama Naik, C.V. Thanda: In case of Chinna Naik with the support and encouragement of the CPP team have planted 2 acre of mulberry in the month of February, 2017. Naik was extended technical & financial support from the REC, DOS, Andhra Pragathi Grameena Bank, Kalyandurg, respectively and established sericulture practice. First crop initiated with 250 DFLs and harvested 205kgs and received sale value of Rs. 1,00,300/- for the month of September, 2017. With the inspiration Naik extended his garden to 2.5 acres of mulberry as tree plantation.

One year progress of progressive farmers of C.V. Thanda: The above mentioned three progressive farmers one year data was collated and analyzed statistically and the results revealed that, they have harvested 10 crops in a year and Yield/100DFLs ranged from 81kgs to 85kgs and total income is more than Rs. 90,000/- in all cases which directly indicates prosperity of Bivoltine sericulture (Table 3 & Fig. 4).

Table 3: Average values of 10 crops raised in a year by progressive farmers of C.V. Thanda

Name of the farmer	Mulberry acreage (acres)	No. of DFLs brushed	Yield (kg)/100 DFLs	Total yield	Market rate (Rs/kg)	Income/crop (Rs)	Incentive from Govt.	Total Income/crop (Rs)	Extension of mulberry (acres)
Smt. Alivalamma	2	300	85	255	410	1,04,550	12,750	1,17,300	2.0 (tree)
G. Rama Naik	2	250	83	208	403	83,623	10,375	93,998	2.5 (tree)
Ch. Rama Naik	2	250	81	203	398	80,595	10,125	90,720	2.5 tree

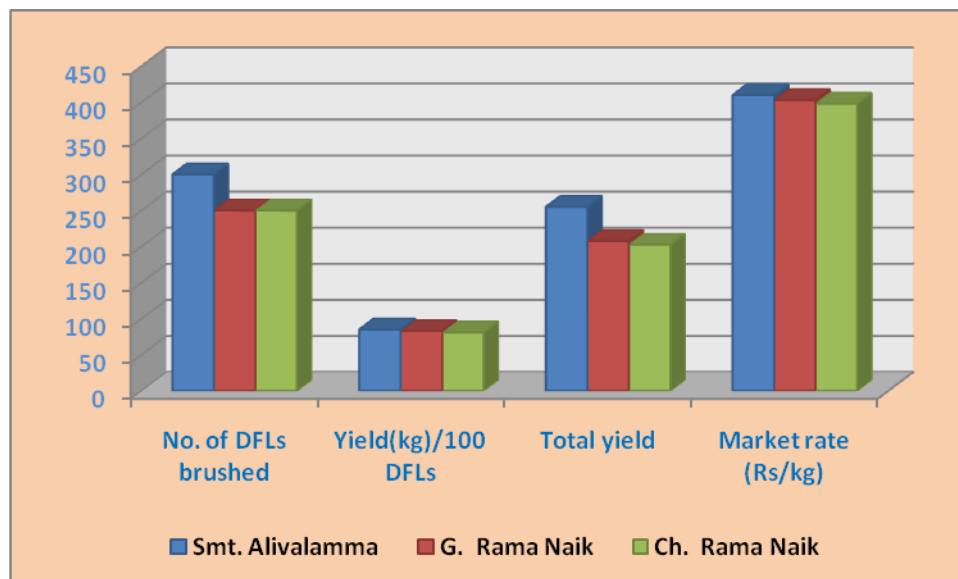


Figure 4: Comparison of development of progressive farmers of C.V. Thanda

CONCLUSION

With all the motivational team efforts of CPP, Kalyandurg and farmers sincerity, dedication and belief on the Scientists and DOS field functionaries the cluster today in a single village a total of more than 30 Schedule tribe farmers were adopted intensive Bivoltine rearing and began harvesting successful Bivoltine crops with encouraging yields, generating assured and motivational income of regular basis. The villagers are day by day increasing their economic status, improving the socio economic conditions and leading safe, secured and beyond their expected exceptional life. They express their sincere regards to all who have directly and indirectly stand behind them in their success.

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