

# Replanting and rejuvenation programme for better productivity and income

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Coconut occupies a prime position in the socio economic development of the country. The crop which is cultivated in 19 lakh ha. is producing 1694.3 crore nuts. As per the 2011 statistics, India is the biggest producer of coconut in the world.

In India, the maximum area under coconut cultivation is in Kerala and the crop plays a very important role in the socio economic development of the state. Kerala, the state which once enjoyed the premier position in coconut cultivation and production is now scarce of suitable land for expanding area under coconut. The share in area and production of coconut reached 41.6 and 36.8 per cent respectively. The annual production of Kerala is 62,394 lakh nuts and the per ha. productivity is 6862 nuts while that of Tamil Nadu is 14,371. Shift in cultivation to other more remunerative crops, high cost of cultivation, low return from coconut, prevalence of pests and diseases like root wilt, bud rot, etc are the reasons for the negative growth rate in area and production of coconut in Kerala. Another reason for the low productivity in coconut is the prevalence of old, senile and unproductive palms. It is estimated that more than 10% of the palm population is over aged.

Though India is the third highest producer of coconut in the world it has the potential to become the



*Root wilt affected palms being cut and removed*

world leader. A major reason for the decline of production and productivity is the large scale infection of coconut by root wilt disease in different parts of the country. In order to control the spread of disease and enhance the productivity of coconut gardens, a major initiative has been launched by the Government of India, Department of Agriculture & Cooperation by implementing the pilot project on Replanting and Rejuvenation of old and senile coconut gardens in the worst affected in three districts of Kerala and A&N Islands.

The prevalence of old and senile palms, poor genetic base of the planting material under cultivation, over populated stands of both coconut and other trees in the homestead, poor management attention given to the crop and severe incidence of pest and

diseases are the major reasons for the low productivity. One of the strategies to vitalize the coconut industry is to improve the general agricultural base with large scale rejuvenation of the coconut gardens. Hence this project was implemented for improving productivity through a programme of cutting and removing the old, senile, and unproductive and disease advanced palm population, replanting with high quality seedlings and rejuvenation of the existing gardens by adopting integrated nutrient management. The project is sanctioned for the last three years of the XI Plan period at a total cost of Rs.2275.643 crores and subsidy component of Rs.478.504 crores as a Central Sector Scheme. Shri. Sharad Pawar, Minister for Agriculture, Government of India inaugurated the scheme at Thrissur district in Kerala in December 2009.

## The objectives

This massive programme is designed to help the coconut farmers to improve the productivity of coconut and thereby the income of farmers. Root wilt affected coconut gardens can be rejuvenated in two ways: the disease affected and unproductive palms shall be cut and removed and high quality seedlings upto a maximum of 70 seedlings per acre shall be planted. Scientific management of coconut garden is the second step. Board has been implementing this project on a pilot scale in Thiruvananthapuram, Kollam and Thrissur districts in Kerala and in Andaman and Nicobar Islands.

## Components of the programme

Cutting and removal of all old, senile, unproductive and disease advanced palms followed by replantation, rejuvenation of existing gardens through integrated management practices, assistance for replanting, implementation, monitoring, evaluation, training etc. are the components of the replanting and rejuvenation programme.

## Salient Features

The programme is implemented in a farmer participatory mode in contiguous areas within panchayaths in identified districts, for visible impact. The programme will commence in clusters of 25-50 ha or in each panchayat ward as a cluster unit, where farmers have formed themselves into a group. Each cluster will have elected cluster convenor and sub group leaders. For the speedy and effective implementation of the project in each area, a local development committee will be formed with the respective president of the grama panchayath as President, Agriculture Officer of the area as convener and a representative of Coconut Development Board as member. Maximum transparency is assured in the implementation of this project wherein all the farmers of the area shall be beneficiaries.

## Training and Capacity Building

Training will be imparted to farmers in scientific management of coconut palms, including identification of root wilt disease advanced, old unproductive palms, marking of the palms to be removed

and conduct of initial base line survey. Awareness/ training programmes/ group discussions and workshops involving experts from CPCRI, State Agricultural Universities (SAU), Department of Agriculture / Horticulture and Coconut Development Board (CDB) will be arranged periodically

## Steps of implementation

As a prelude to implementation, farmers of the area will be briefed on the details of the project and also about the baseline survey. The first step of the project implementation is farmer participatory survey in the project area. Trained cluster members will be undertaking the survey in the project areas. An action plan will be created on the implementation of the rejuvenation programme on the basis of the survey. In the action plan, details of the number of palms to be cut and removed, the amount to be earmarked for that, the number of seedlings to be replanted, management practices to be followed etc shall be clearly mentioned. Officials of the Board will assist in the preparation of the project by the cluster. A consolidated project for the



*Burning the trunk of the disease affected palm to arrest the spread of the pests / diseases*



*Cowpea grown in coconut basins*

Panchayat / Municipality approved by District Agriculture Officer will be submitted to the state level committee and the state level committee will submit the final project to Coconut Development Board. Board will convey the approval of the project implementation to the respective Krishi Bhavan. The beneficiary farmers will be distributed the eligible financial assistance through their respective bank accounts.

### Assistance extended to farmers

A subsidy @ Rs.500 per palm for the first 20 palms, Rs.250 per palm for subsequently removed palms, subject to a maximum of Rs.13,000/ha shall be provided to the farmers for cutting and removal of old, senile, unproductive and disease advanced palms. Financial assistance @ Rs. 20 is provided for replanting new seedlings. For adoption of integrated management practices, a subsidy of Rs.15,000/ha will be provided in two installments of Rs.7,500/- each by way of inputs. The eligibility for availing assistance under this component is a maximum 4 ha. per beneficiary.

### Management practices

Basins of 50 cm depth shall be made two meters away from the base of the palm during May-June. Lime @ 1 kg per palm can be mixed with the soil and during June. Chemical fertilizers as per the stipulated doses may also be applied. Urea @ 750 gm, Super phosphate @ 950 gm and Muriate of potash @ 1.10 kg is the recommended dosage of fertilizers for average managed coconut palms. For better managed gardens,

urea @ 1 kg, super phosphate @ 2kg and muriate of potash @ 2 kg per palm may be applied. Apart from this, gardens showing deficiency of magnesium and boron may apply 500 gm magnesium sulphate and 250 gm borax during September- October. 100 gm of cowpea is also provided as green manure.

Farmers may jointly undertake integrated pest and disease control measures against rootwilt, leaf rot, red palm weevil, rhinoceros beetle and eriophyid mite. Weed controlling and proper maintaining of the garden is one of the most important step to be followed in rejuvenation. Direct sunlight is essential for the proper growth of the palms. Mulching is an important practice to be followed for moisture conservation. Husk burial help to absorb and retain large quantities of

water for use by coconut palms. Irrigation shall be started from December onwards. Farmers shall plant intercrops like banana, cassava, vegetables, ginger, turmeric, pepper, nutmeg, cocoa etc. for realizing maximum income. Farmers can also avail the financial assistance offered by State Horticulture Mission for cultivating intercrops.

### Status of implementation

The pilot project on Replanting and Rejuvenation programme was implemented in three phases. 12 state level monitoring committee meetings (SLMC) were periodically convened from 2009-10 onwards for recommending projects worth Rs.231.56 crores for the implementation of this programme in 272 panchayaths. The details of the amount sanctioned for this programme is given Table-1.

**Table-1. Sanctioned Projects**

	Cutting	Rejuvenation	Replanting	TOTAL
<b>Phase-1</b>				
Thiruvananthapuram	1475.65	1260.15	67.41	2803.21
Kollam	1161.17	928.071	39.93	2129.171
Thrissur	1406.06	1234.71	47.48	2688.25
<i>Sub- total</i>	<b>4042.88</b>	<b>3422.931</b>	<b>154.82</b>	<b>7620.631</b>
<b>Phase-2</b>				
Thiruvananthapuram	1365.34	1403.52	26.85	2795.71
Kollam	1455.26	1393.18	30.4	2878.84
Thrissur	1743.83	2117.01	28.56	3889.4
<i>Sub-total</i>	<b>4564.43</b>	<b>4913.71</b>	<b>85.81</b>	<b>9563.95</b>
<b>Phase-3</b>				
Thiruvananthapuram	643.57	669.03	10.46	1323.06
Kollam	893.72	860.38	20.41	1774.51
Thrissur	895.62	1966.98	12.19	2874.79
<i>Sub-total</i>	<b>2432.91</b>	<b>3496.39</b>	<b>43.06</b>	<b>5972.36</b>
<b>Total</b>	<b>11040.22</b>	<b>11833.03</b>	<b>283.69</b>	<b>23156.94</b>
<b>DISTRICT- WISE ABSTRACT</b>				
Thiruvananthapuram	3484.56	3332.7	104.72	6921.98
Kollam	3510.15	3181.63	90.74	6782.52
Thrissur	4045.51	5318.7	88.23	9452.44
<b>TOTAL</b>	<b>11040.22</b>	<b>11833.03</b>	<b>283.69</b>	<b>23156.94</b>

**Table-2. Achievement under the Replanting & Rejuvenation Scheme Scheme in Kerala**

DISTRICT	CUTTING & REMOVAL					REJUVENATION					REPLANTING		TOTAL FUND UTILIZED (Rs in Lakhs)
	TARGET		ACHIEVEMENT			TARGET (2 yrs)		ACHIEVEMENT			ACHIEVEMENT		
	PHY (Nos)	FIN (Rs in Lakhs)	PHY (Nos)	FIN (Rs in Lakhs)	NO OF FARMERS BENEFITTED	PHY (ha)	FIN (Rs in Lakhs)	PHY (ha)	FIN (Rs in Lakhs)	NO OF FARMERS BENEFITTED	PHY (Nos)	FIN (Rs in Lakhs)	
<b>PHASE-1</b>													
TVM	354632	1473.99	210575	847.23	51157	12584.80	1260.15	12584.80	806.11	120668	31550	6.31	1659.65
KLM	276876	1139.37	257970	986.30	67024	8927.72	928.07	8927.72	1022.58	86016	35055	7.01	2015.89
TSR	340575	1406.07	199793	757.58	33711	14015.76	1234.71	14015.76	709.604	75330	13525	2.71	1467.184
<b>TOTAL</b>	<b>972083</b>	<b>4019.43</b>	<b>668338</b>	<b>2591.11</b>	<b>151892</b>	<b>35528.28</b>	<b>3422.93</b>	<b>35528.28</b>	<b>2538.294</b>	<b>282014</b>	<b>80130</b>	<b>16.03</b>	<b>5142.724</b>
<b>PHASE-2</b>													
TVM	275373	1365.44	156800	774.56	43882	17403.11	1408.52	16040.81	893.6	92340	72972	14.59	1682.75
KLM	292483	1455.35	215965	1066.86	74416	19868.00	1393.18	17531	940.67	119906	86700	17.34	2024.87
TSR	353957	1743.87	283939	1389.81	61495	29181.11	2117.01	28973.61	1461.67	93836	64893	12.98	2864.46
<b>TOTAL</b>	<b>921813</b>	<b>4564.66</b>	<b>656704</b>	<b>3231.23</b>	<b>179793</b>	<b>66452.22</b>	<b>4918.71</b>	<b>62545.42</b>	<b>3295.94</b>	<b>306082</b>	<b>224565</b>	<b>44.91</b>	<b>6572.08</b>
<b>PHASE-3</b>													
TVM	129876	643.59	41241	201	10523	5638.47	669.03	5638.47	--	--	--	--	201
KLM	172954	853.73	15168	75.12	3991	11238	824.86	11238	--	60269	--	--	75.12
TSR	181239	895.87	33115	132.15	6712	18961.27	1966.99	18961.27	86.35	27601	25224	5.05	223.55
<b>TOTAL</b>	<b>484069</b>	<b>2393.19</b>	<b>89524</b>	<b>408.27</b>	<b>21226</b>	<b>35837.74</b>	<b>3460.88</b>	<b>35837.74</b>	<b>86.35</b>	<b>87870</b>	<b>25224</b>	<b>5.05</b>	<b>413.32</b>
<b>G.TOTAL</b>	<b>2377965</b>	<b>10977.28</b>	<b>1414566</b>	<b>6230.61</b>	<b>352911</b>	<b>137818.2</b>	<b>11802.52</b>	<b>133911.44</b>	<b>5920.584</b>	<b>675966</b>	<b>329919</b>	<b>65.99</b>	<b>12214.47</b>
<b>DISTRICT-WISE ABSTRACT</b>													
TVM	759881	3483.02	408616	1822.79	105562	35626.38	3337.7	34264.08	1699.71	213008	104522	20.9	3543.4
KLM	742313	3448.45	489103	2128.28	145431	40033.72	3146.111	37696.72	1963.25	266191	121755	24.35	4115.88
TSR	875771	4045.81	516847	2279.54	101918	62158.14	5318.71	61950.64	2257.624	196767	103642	20.74	4555.19
<b>TOTAL</b>	<b>2377965</b>	<b>10977.28</b>	<b>1414566</b>	<b>6230.61</b>	<b>352911</b>	<b>137818.2</b>	<b>11802.52</b>	<b>133911.44</b>	<b>5920.584</b>	<b>675966</b>	<b>329919</b>	<b>65.99</b>	<b>12214.47</b>

Nearly 23.77 lakh disease affected and old palms were identified for cutting and removal from a project area of 1.3 lakh ha was surveyed. Out of this 16.51 lakh palms (70%) are cut and removed benefitting 6.76 lakh farmers. Rs.62.30 crore has been already disbursed to the farmers as subsidy for cutting and removing the palms. Due to the unavailability of funds, Board is yet to distribute the balance subsidy of Rs.12 crore to 61,329 farmers. Cutting of palms of the second and third phase are in progress.

Board has so far spent Rs. 59.20 crores for undertaking best management practices in coconut gardens. Under the first phase, the project is fully implemented in 78 Krishi Bhavans. The fertilizer

distribution of the second phase is yet to be completed. Since majority of the projects of the third phase was given approval during 2012-13, the fertilizer distribution is expected to be completed with the onset of monsoon.

Under this programme, 3.30 lakh good quality seedlings are so far distributed to the farmers. State government is formulating various other schemes to integrate with the schemes of central government to distribute good quality planting materials to farmers. Coconut Producers Societies are also in the offing to establish coconut nurseries in three districts to produce good quality planting materials. Most of the CPSs have targeted to produce maximum hybrids and dwarf varieties.

### Root (Wilt) Disease

Root (wilt) disease is non-lethal but debilitating and palms of all age group are affected. It is mainly found in Kerala and adjoining districts of Tamil Nadu. The etiology of the disease has been established due to mycoplasma like organisms. Lace bug, *Stephanitis typica*, is the proven vector, the leaf hopper, *Sephonia greeni* and the plant hopper, *Proustista inoesta* are the pupative vectors. Even though the effective prevention and control of the disease is ruled out, palms in the early stages of disease respond to management practices. Remove all highly diseased trees yielding less than 10 nuts per annum. Remove all disease affected juvenile palms and replant with disease tolerant seedlings. Leaf rot is superimposed in all the root wilt affected palms and hence adopt control measures



*Rootwilt affected palm*

regularly. Apply balanced dose of fertilizers. Improve health and natural resistance of the palm through proper management. Mixed farming and organic recycling improve the yield and general condition of the palm. Grow green manures in basins.



*The cut and removed coconut timber logs - ready for commercial utilisation*

So far Rs. 126.41 crores is expended for the implementation of this programme in three districts in Kerala and in Andaman and Nicobar Islands. In Andaman and Nicobar Islands so far Rs.2.89 crore has been utilised for cutting and removal of 15969 palms and rejuvenation of palm in 2020 ha.

ISED, the agency which was designated for analyzing the implementation of this project in its report has stated the necessity of extending this project to the other districts of Kerala. Central government was already addressed with this appeal with a request to allocate more funds in the 12<sup>th</sup> Five year plan for the same. The 2013-14 budget has made provision of Rs.75 crores for extending this programme in the entire state.

It is reported that the productivity of coconut has considerably improved in the project areas. The co operation extended by the farmers and representatives of the local self government institutions is noteworthy. In future Coconut Producers Societies can also take the lead in the speedy and effective implementation of these programme in collaboration with the nodal agencies.