

**PROCEEDINGS OF THE DIRECTOR OF AGRICULTURE ,
DIRECTORATE OF AGRICULTURE DEVELOPMENT AND FARMERS'
WELFARE, VIKAS BHAVAN, THIRUVANANTHAPURAM**

(Present : Sunil Kumar A.M.)

Sub: Annual Plan 2018-19 – **Scheme on Coconut Development** – Continuous
Administrative sanction accorded – orders issued- reg:

Read: 1) G.O.(Rt)No. 643/2017/AD dated.29.06.2017
2) Annual Plan 2018-19

Order No. TP (2) 7453/2018

Dated:11.04.2018

During financial year 2018-19, there is a budget provision of Rs.5000.00 lakhs for implementation of the scheme 'Coconut Development' under head of account 2401-00-103-87 (P).

Government of Kerala, vide order read 1st above accorded Administrative sanction for the implementation of the scheme, **Coconut Development** during the year 2017-18 for an amount of **Rs.867.50 lakhs** for the following components.

Sl. No	Components	Amount (Rs. Lakhs)
1	Development of Model HYV Dwarf/ Semi-Tall Coconut Farms	567.50
2	Pest & disease management in coconut gardens on a campaign basis	300.00
	Total	867.50

During 2018-19, the above components will be continue abiding the norms and conditions of the Government Order read above as follows.

Sl. No	Components	Amount (Rs. Lakhs)
1	Development of Model HYV Dwarf/ Semi-Tall Coconut Farms	520.00
2	Pest & disease management in coconut gardens on a campaign basis	250.00
	Total	770.00

Details of the programme is furnished below.

1) Establishment of Model HYV Dwarf / Semi- Tall Coconut Demonstration Farms

Objectives

- To set up nucleus gardens of coconut with dwarf varieties in farmers' fields as well as in Government farms/lands throughout Kerala with most modern technology of crop production.
- To create awareness among the farmers about the use of dwarf varieties in addressing labour shortage in harvesting of nuts.
- Income generation and popularisation of tender coconut production
- To evaluate the performance of some varieties which are claimed to be the super performing varieties as claimed by their producers.

Technical programme

Varieties

The main institutions producing dwarf varieties are CPCRI, Kerala Agricultural University and Tamil Nadu Agricultural University. The main varieties available are listed below.

Kalpa Raksha

This is a semi tall variety with sweet tender nut water and with higher resistance to root (wilt) disease of coconut. It comes to flowering by 54 months from planting. Its annual yield is 87 nuts/palm, 16.38 kg copra/palm and 10.65 kg oil/palm. In root (wilt) disease affected tracts, it gives an annual yield 65 nuts/palm. The quantity of tender nut water is 290ml. This is released as a variety for tender nut and for cultivation in root (wilt) prevalent areas of Kerala and developed by CPCRI.

Chowghat Orange Dwarf (COD)

This is an early flowering cultivar and takes about 3-4 years for initial flowering. The average annual yield is 63 nuts/palm/year. It is best suited for tender nut water. This cultivar was released by CPCRI in 1991 for large scale cultivation as tender nut variety.

Kalpa Sree

Kalpasree has superior quality of coconut oil, very sweet tender nut water and meat and is resistant to root (wilt) disease. This is the earliest flowering cultivar and takes about 2.5 to 3 years for flowering. It is found to be resistant to root (wilt) disease. The mean annual yield is 90 nuts/palm with a copra content of 96.3g. This variety, developed by CPCRI, is released for root (wilt) prevalent areas of Kerala.

Kalpa Jyothi

Dwarf variety with yellow fruits, higher average yield of 114 nuts per palm per year under rainfed conditions with estimated copra yield of over 16 kg per palm per year. Recommended for cultivation in Kerala and Karnataka for tender nut purpose. Developed by CPCRI.

Kalpa Surya

Dwarf with Orange fruits recommended for cultivation in Kerala, Karnataka and Tamil Nadu for tender nut purpose. The average yield is 123 nuts per palm per year under irrigated conditions with estimated copra out turn of 23 kg per palm per year. Developed by CPCRI.

Kalpa Sreshta (MYD x TPT)

The mean yield is 167 nuts/palm/year, with estimated high copra out turn of 35.9 kg/palm/year or 6.28t/ha copra. The hybrid is suitable for tender nut purpose. This hybrid is recommended for cultivation in Kerala and Karnataka States. Developed by CPCRI.

Chandra Sankara (COD x WCT)

The palms come to bearing early when compared to tall palms. It is a heavy yielder and produces 116 nuts/palm with a range of 100-150 nuts. The copra content in nut is 160-230 g. It is susceptible to drought and hence irrigation is required during summer months. Chandrasankara was released by CPCRI in 1985 for cultivation in Kerala and Karnataka.

Kera Sankara (WCT X COD)

The palm comes to bearing by the fourth year of planting. The mean annual yield of nuts is 108 with a range of 70-130 nuts. The copra content is 187g/nut.

This hybrid was released by CPCRI in 1991, for large scale cultivation in Kerala, coastal Andhra Pradesh and coastal Maharashtra.

Chandra Laksha (LCT X COD)

The hybrid palm comes to bearing in about 4-5 years after planting. The annual yield is 109 nuts/ palm with a copra content of 150-210g/nut. The hybrid was released by CPCRI.

Kalpa Samrudhi (MYDxWCT)

The mean annual yield is 117 nuts per palm. The copra yield is 4.38 t/ha and oil is 3.04 t/ha. The hybrid is suitable for tender nut purpose. This hybrid was recommended for cultivation in Kerala, and Assam. Developed by CPCRI.

Kalpa Sankara (CGDxWCT)

The mean annual yield is 85 nuts per palm. The copra yield is 2.5 t/ha and oil is 1.69 t/ha. This hybrid was recommended for cultivation in root (wilt) disease prevalent tracts of Kerala. Developed by CPCRI.

Establishment of the garden

The proposed garden (demonstration farm) will be established in farmers fields in unit size 0.2 ha either new fields or cleared existing plantation with low yield and difficulty in harvesting. These gardens will be established at the rate of at least one in every grama panchayat. A total of 850 such gardens (primary plots) are expected in this programme. Farmers with the interest and resources to accommodate one more such unit (additional plot) may be sanctioned the same. In that case, another unit of 0.2 ha., can also be established and a total 280 additional units are planned. Thus 1130 plots covering a total area of 226 ha (1130 x 0.20 ha.) of garden land will be brought under this programme.

Selection of planting material

Select seedlings, which have 6-8 leaves and 10-12 cm collar girth when they are 9-12 month old. Early splitting of leaves is another criteria in the selection of coconut seedling. Seedlings which are available in the farms under the Department of Agriculture/Kerala Agriculture university/TNAU/CPCRI will be used for this purpose.

In the farms under the Department of Agriculture, along with the released cultivars, evaluation of some of the hybrid dwarf varieties which are 'super performing' as claimed by their producers in the private sector is also envisaged in the programme for guiding the farmers.

Site Selection

Shallow soils with underlying hard rock, low lying areas subject to water stagnation and clayey soils are to be avoided. Proper supply of moisture either through well distributed rainfall or through irrigation should be ensured before planting.

Preparation of Land and Planting

On slopes and in areas of undulating terrain, prepare the land by contour terracing or bunding. In low-lying areas mounds are to be formed at planting site to a height of at least 1m above water level. In reclaimed 'kayal' areas, seedlings are planted on field bunds.

In loamy soils with low water table, a pit size of 1m x 1m x 1m is recommended. In laterite soils with underlying rocks, take larger pits of size 1.2m x 1.2m x 1.2m. In sandy soils the size need not exceed 0.75m x 0.75m x 0.75 m.

Spacing and Systems of Planting

Spacing depends upon the planting system, soil type etc. In general a spacing of 7.6 x 7.6 m is recommended for this project purpose which will accommodate 35 numbers of palms in 0.2 ha.

Time of Planting

Seedlings can be transplanted in the beginning of the south west monsoon. If irrigation facilities are available, it is advisable to take up planting at least a month before the onset of the monsoon so that the seedlings get well established before heavy rains. Planting can also be taken up before the onset of the North-East monsoon. In low-lying areas subject to inundation during monsoon period, transplanting may be done after the cessation of the monsoon.

Planting

Before planting the pits are filled up with top soil and powdered cow dung / compost up to a depth of 50 to 60 cm. Then take a small pit inside this, so as to

accommodate the nut attached to the seedling. Plant the seedling inside this pit and fill up with soil. Press the soil well so as to avoid water stagnation. If there is chance for white-ant attack apply Cartap 5g inside the small pit before planting.

In laterite areas apply 2 kg common salt per pit for improving the physical condition of the soil. Burying 25 to 30 coconut husks per pit in layers will be useful for moisture conservation.

After care

The young seedlings are prone to attack by termites, red palm weevil and rhinoceros beetle. Place 2-3 naphthalene balls in the leaf axils along with sand and beetles and bugs. For the prevention of bud rot, application of Hexaconazole 3 ml mixed with 300 ml of water and poured in to the fronts twice a year is found to be effective.

The transplanted seedlings should be shaded and irrigated adequately during the summer months. Also provide staking so that winds may not uproot the young seedlings. For the first two years after planting, irrigate the seedling twice a week during the dry summer months. Shading is a must to the transplanted seedlings.

Irrigation

Soil moisture very often limits coconut production in those areas where long spell of dry weather prevail or where the rainfall is scanty and ill-distributed. So irrigate the palms during summer months in basins around the palm. The irrigation requirement varies according to the soil type and climatic condition. Generally, an adult palm requires 600 to 800 litres of water once in four to seven days. Irrigate in basins of 1.8m radius and 10-20 cm depth. In coastal sandy soils, sea water can be used for irrigating adult palms. Do not irrigate seedlings and very young palms upto 2 year with sea water. In irrigated gardens interruption of irrigation would lead to serious set-back in yield and general condition of palms. Hence, when once started irrigation should be continued regularly and systematically. Drip irrigation is the best suited method of irrigation for coconut. It saves water, labour and energy.

Financial outlay

The critical components with their pattern of assistance and financial assistance limits are described as follows.

Sl. No	Activities / inputs needed	Full cost proposed per demonstration plot (0.2 ha)	Rate per tree or rate per unit at the current rates	Percentage of assistance	Amount of assistance per unit (Rs.)	Ceiling proposed per unit of 0.2 ha. (Rs.)
1	Land development (Clearing, removing the existing plants, levelling and other soil conservation measures if necessary, etc.)	37500	Rs. 750/-per cent of land	35	250/cent of land	12500
2	Pitting with the recommended specifications	1050	Rs. 30/- per pit	50	15 per pit	525
3	Cost of dwarf seedlings	7000	Rs. 200/- per seedling	100	200 per seedling	7000
4	Irrigation A. Drip system including cost of pump	35000	Rs.35000/- per unit of 0.20 ha.	75	26250/- per unit of 0.20 ha.	26250
	B. farmers with more than one unit of nucleus garden (cost of pump is excluded) (Additional plot)	30000	Rs. 30000/- per additional unit of 0.20 ha.	60	18000/- per additional unit of 0.20 ha.	18000
5	Cost of plant protection activities	1400	Rs. 40 per palm per year	20	8 per palm per year	280
6	Cost of manure and fertilisers	1050	Rs. 30 per palm per year	50	15 per palm per year	525
*	Total for the primary plot with item 4 A	83000				47080
**	Total for the Subsequent plot with item 4 B	78000				38830

* For the first plot with a pumpset for irrigation

** If the farmer has the resource of next 0.2 ha. of land which is adjacent or if the beneficiary already owns a pumpset

If he has another unit 0.2 ha., 4A will be applicable as the irrigation system would be independent.

Details of farmer demonstration plots proposed throughout the state is presented below.

Sl: No	Type of gardens to be established	Quantity (no.s)	Area covered (ha)	Rate per unit (Rs)	Amount (Rs in lakhs)
1.	Primary plots	850	170	47080	400.18
2.	Additional plots	280	56	38830	108.724
	Total	1130	226		508.904

The total financial requirement for establishing these gardens in farmers' fields works out to Rs.508.904 lakhs. For the effective establishment and sustainability, an amount Rs.10.666 lakhs is set apart for meeting the requirement of replanting of the damaged seedlings, insuring against natural calamities, contingency to meet the cost escalation anticipated of super dwarf palms, transportation charges etc. An amount of Rs.0.43 lakh is set apart as POL. Abstract of the programme is as follows.

Sl: No	Type of gardens to be established	Quantity (no.s)	Area covered (ha)	Rate per unit (Rs)	Amount (Rs in lakhs)
1.	Primary plots	850	170	47080	400.18
2.	Additional / secondary plots	280	56	38830	108.724
3	Re-planting / insurance / contingency to meet the cost escalation of super dwarf palms / component change to demonstration plots / unforeseen expenses				10.666
4	POL				0.43
	Total	1130	226		520.00

3) Pest and Disease Management in Coconut Gardens on a Campaign Basis.

The major pests affecting the coconut palm are rhinoceros beetle, the red palm weevil and cockchafer beetle. These pests are generally found throughout the state. The rhinoceros beetle attacked palms are prone to red palm weevil attack and if control measures are not adopted at the appropriate time, it may lead to complete loss of palm. Besides, diseases like bud rot, leaf rot, stem bleeding etc are

also seen associated in the palms attacked by the beetles. All these problems may lead to noticeable yield reduction of the crop. Taking into account the above facts, this project is being proposed so that the crop can be protected from major pest and diseases of coconut by adopting suitable "Integrated Pest Management" practices as per the Package of Practices Recommendation of KAU and recommendations of CPCRI and CDB.

Programme

- Identification of hotspots of pest/disease attack in each panchayat based on surveillance data.
- Preparation of action plan for implementing the eradication programme and arranging campaign with the active participation of local self government departments, farmer groups, Agro Service Centres/Karshika Karmasena, research institutions (KAU, CPCRI) and all other stake holders.
- Providing training and awareness to the stake holders and department officials
- Providing infrastructures like sprayers chemicals, bio control agents etc to the Plant Protection surveillance groups.
- Field level implementation in a campaign mode.
- Appraisal and monitoring in a quarterly basis by a monitoring committee at Panchayat, Block, District and State level.

Project components

a) Workshop for identification of hotspots

Workshops will be organized for identifying the hotspots in selected panchayats where Keragramam scheme is being implemented and plant protection operations are to be given thrust. An amount of Rs.10,000/- can be utilized for one workshop. It is proposed to conduct 42 such workshops for which an amount of Rs.4.20 lakhs is proposed.

b) Block level training to Plant Protection groups in Integrated Pest Management

Block level training should be imparted to the plant protection groups comprising of Karshika Karmasena/farmer groups covering the different methods of plant protection to be adopted including IPM as per Package of Practices recommendation of KAU and recommendations of CPCRI/CDB. The group should be made aware of safe handling and use of plant protection equipments, and

chemicals. An amount of Rs.25000/- is proposed for one training. It is proposed to conduct 42 such trainings for which an amount of Rs.10.50 lakhs is proposed.

c) Cost of Inputs

An amount of Rs.100/- per palm is proposed for purchase of pesticides for applying in the pest/disease infested palms in the hotspots identified and the labour charge for its application. Thus Rs.17500/ per ha. is proposed @175 palms/ha. Total area proposed to be covered is 1340 ha. and the total amount proposed is Rs.234.50 lakhs. Additional fund, if required, are to be mobilized by submitting projects to LSGD.

Plant protection equipments available in the Krishi Bhavans, Agro Service Centres, Plant Health Clinics etc. can be made use for the campaign.

d) Implementation

Suitable proposals for the management of major pests/ diseases of coconut (rhinoceros beetle, red palm weevil, bud rot, stem bleeding etc) on a contiguous area should be prepared at district level. For projects amounting upto Rs.10.00 lakhs, approval can be given by district level committees (with Principal Agricultural Officer, Deputy Director of Agriculture (YP) & Assistant Director of Agriculture concerned) and approved projects should be submitted to the Directorate for the release of funds. Project proposals exceeding Rs.10.00 lakhs should be submitted to the Directorate for approval and release of funds.

Pest/ disease affected zones should be identified at district level workshops and detailed action plan should be prepared based on the number of palms to be treated / sprayed for implementing the programme.

The inputs required viz. Plant protection chemicals , equipments, labour etc. can be mobilised through Service Co-operative banks / Karshika Karmasena / Agro Service centres/ Krishi bhavans by the Agricultural officers & Assistant Director of Agriculture concerned.

Wide publicity for the programme should be given through various print and electronic media and through Farm Information Bureau.

The programme will be implemented in a campaign mode with the active participation of local self government departments, farmer groups, Agro Service Centres/Karmasena, research institutions (KAU, CPCRI) and all other stake holders. All the activities of the plant protection group should be strictly monitored

and supervised by the staff of Krishi Bhavan and respective ADA's with the active participation of LSGD. The ATMA staff/group, Crop Health Management (Pest scout) etc should also extend their support and participation in this regard, Principal Agricultural Officers and Project Director ATMA, should co-ordinate the activities of the programme in each district ensuring the full involvement of the concerned (DDA (YP). All the activities under the programme shall be properly documented.

e) Monitoring and supervision

Appraisal and monitoring of the scheme which will be implemented in a campaign mode should be done by a monitoring committee. The monitoring committee is to be formed at Panchayat, Block, District and State level involving and the progress of the campaign evaluated and reported to the Directorate in a quarterly basis.

Abstract of the component is given below.

Sl. No	Item	Rate (Rs.)	Target	
			Physical	Amount (Rs in lakhs)
1	Conduct of workshops	10000/-	42 nos	4.20
2	Training to Plant Protection Groups	25000/-	42 nos	10.50
3	Plant protection operations @ Rs.100/- per palm including cost of PPC and labour	17500/- per ha	1340 ha	234.50
4	Unforeseen expenses (for State and District level meetings etc.)			0.80
	TOTAL			250.00

Financial Outlay

An amount of Rs.770.00 lakhs required for implementation of the following continuing components of the scheme Coconut Development during 2018-19.

Sl. No	Component	Amount (Rs.in lakhs)
1	Establishment of model HYV Dwarf/semi- tall Coconut Demonstration Farms	520.00
2	Pest and Disease Management in Coconut Gardens on a Campaign Basis	250.00
	Total	770.00


(Rupees Seven Hundred and Seventy lakhs Only)

In the circumstances mentioned above, continuous sanction is hereby issued for the implementation of the scheme Coconut Development during 2018-19 for an amount of **Rs.770.00 lakhs** as per the above statement, debiting the expenditure to head of account **2401-00-103-87 Plan** from current year's budget provision. The scheme shall be implemented abiding by the terms and conditions stipulated in the Government Order read above.

Since agriculture is a season based activity, timely implementation of the scheme has to be ensured by arranging the required inputs in time and this should be reflected in the monthly booking of expenditure from April 2018 onwards.

Monthly progress report should invariably contain component wise physical and financial targets and achievements, number of beneficiaries and the stage of implementation of each component. Since the Government is giving emphasis to women participation and gender budgeting, maximum efforts have to be made to include women beneficiaries in the scheme. The number of women beneficiaries and the amount utilised for such beneficiaries (component wise) should also be included in the monthly progress report.

Sd/-
Director of Agriculture


Deputy Director of Agriculture (Plg.)
Deputy Director of Agriculture (Plg.)
Directorate of Agriculture
Thiruvananthapuram

To
TB section of the directorate for issue of detailed working instructions

Copy to
TA to Director of Agriculture, CA to All Additional Directors of Agriculture of the HQ, State Agricultural Engineer, Senior Finance Officer for information

✓ IT section of the directorate for posting on the website