

**PROJECT PROPOSAL  
ON  
ESTABLISHMENT OF NUCLEAR SEED  
GARDEN FOR COCONUT  
AT  
GHODAHADA FARM**



## PROJECT SUMMARY

- Name of the project:** Project proposal on Establishment of Nuclear seed garden for Coconut.
- Proposed Work:** Civil construction, plantation of mother palms, Development of nursery, irrigation source and Maintenance of plantation.
- Proposed site:** Ghodahada Farm , Digapahandi .Ganjam ,Odisha.
- Project cost:** **Rs. 21.782**

Year	Physical Target	Assistance for development of Nucleus garden (Rs.)	Amount required for contingencies and Administrative expenses (Rs.)	Total amount in Lakh (Rs.)
2015-16	4 ha	21,57,200	21,000	<b>21,78,200</b>

- Source of fund:** Rastriya Krishi Vikash Yojanai
- Implementation period:** 2015-16 to 2017-18
- Implementing Agency:** Deputy Director of Horticulture,Ganjam,Berhampur  
under Directorate of Horticulture, Odisha, Bhubaneswar.

# **ESTABLISHMENT OF NUCLEAR SEED GARDEN FOR COCONUT AT GHODAHAD FARM UNDER RKVY 2015-16**

## **1. INTRODUCTION**

Coconut is perennial crop with an economic life span of more than sixty Years and has got a gestation period of four to seven years. The full bearing capacity of the palm is known only after eight to twelve years of planting. If the planting material happened to be inferior, emphasis must be given for selection of good quality planting materials of the desired variety. In coconut the mode of propagation available is only through seedlings raised from seed nuts. Through efforts are progressing at various levels for tissue culture propagation, we are yet to succeed the same. Presently plumule culture technology is being developed under which 6 to 8 seedlings could be produced from one seed nut (plumule).

The growth rate in area under coconut in the country during the past decade was 0.8 %. In the coming years also trend would continue and there are possibilities for expanding area under coconut in other states. The present area under coconut in our state is 50679 Ha. Taking into consideration an average growth rate 15, an additional area of about 507 ha is to be brought under new planting every year. Considering the planting density of 175 palms per ha, the annual requirement of planting material is around 88725 seedlings. The requirements of seedlings for replanting in such areas are more. The estimated requirement for under planting and rejuvenation is to the tune of about 4-5% of the present area which is about 2500 ha. The seedlings requirement for this will work out to about 437500 per annum. Thus the annual requirement of seedlings in odisha is estimated at around 550000. For the production of 550000 seedlings about 825000 seed nuts are to be collected and sown in the nursery.

### **Seedlings production scenario:**

High yielding varieties and hybrids of different parental combinations of Dwarf x tall (D x T) and tall x dwarf (T x D) has the potential to yield at least 25-40% more than the locally cultivated tails. Through many hybrid combinations of D x T have been released and its performance is much superior to local cultivator to local cultivars, its availability is limited. D x T have also got a high acceptance among the among the cultivators, due to its early bearing character, semi tall nature and high yield. The non availability of dwarf mother palms is one of the major constraints in the productions in the production of D x T hybrids. Presently there are very limited numbers of coconut gardens where dwarf palms are available. There is need to restructure the palm population ratio of tall: Dwarf: Hybrids in the country at 60:20:20. For reaching this target more dwarf seedlings are to be planted. Besides dwarf nuts are more preferred for tender nut purpose and it fetches higher price. Considering the huge demand for hybrid seedlings in odisha, the proposed project intend to establish the hybrid seed garden in Ghodahada farm and by establishing the seed garden, it is expected to produce about 30000 nos of quality hybrid seed nuts (18000-20000 seedlings) after a period of 5 years gestation period.

High yielding varieties and hybrids of coconuts have the potential to yield at least 25-40% more than the locally cultivated tails. The yield levels of the released varieties and hybrids of coconut ranges from 2.3 to 4.5 tons of copra/ ha/ year under optimum management conditions. Though many varieties and hybrids have been released during the past three decades, these are yet to reach the farmers in adequate numbers. Even today the bulk of the planting material is produced from the local trails.

The total production from all the above sources works out to 2.85 million seedlings(One tall mother palm will yield 25-30 seed nuts January-April season, which in turn will give 20 quality seedlings. Similarly, one

tall/dwarf mother palm subjected to artificial pollinations during November- April season will yield 40 seed nuts which in turn will give 20 hybrid seedlings.) In additions, the coconut seedling production from all agricultural universities (KAU, TNAU, ANGRAU, UAS, BCKW, KKV and OUAT)) comes to 0.35 million seedlings. Hence the total production from the governmental sector works out as 3.2 million seedlings. Whereas the demand is 10 million seedlings. This reveals that the production from approved sources accounts for only 32% of the total requirement. Besides, most of the seed gardens produce seedlings of tall varieties (depending on the region) to the tune of 80-85% and hybrids/ dwarfs comprise only 15-20% production from the seed gardens. The approved standard for any replanting programme is to plant with tails: Dwarf: Hybrids in the ration of 60:20:20. So the 85% of tall plants from seed gardens should come down to 60% and the 15 DWARFS/ HYBRIDS SHOULD BE ENHANCED TO 40%. This requires removal of the excess mother palms of tall varieties from the seed gardens in the phased manner and replanting the same with parental palms of dwarf varieties. The dwarf planted will serve as the source for production of dwarf/ hybrid planting materials. It is suggested that coconut seed gardens located all over India should have sufficient number of parental palms of varieties released for that particular state.

The productivity of coconut in the state is considered as lowest when compared to other neighboring state. The low productivity is mainly attributed to fact that the coconut is grown mostly as a rain fed crop, considerable yield reduction is also attributed to the attack of black headed caterpillar, Rhinoceros betel, Red palm weevil, Eriophyid mite and diseases such as stem bleeding, Gyanoderma, bud rot and late root wilt disease in costal districts like Ganjam, Puri, Cuttack, Kendrapara, Jagatsinghpur, Bhadrak and Balasore. In the state the coconut is grown mainly as a mono crop which has indirectly resulted in lower productivity of coconut. Hence, the stress has to be given for adoption of mixed farming system, Hi-density multispecies cropping system to increase the return from unit area and thereby improving the economic status of the farmer. The varieties which are grown are chowghat orange dwarf, chowghatr green dwarf, Malayan green dwarf, Malayan orange dwarf, Malayan yellow dwarf and Gangabondam. The dwarf variety is grown mainly for tender coconut purpose. The Majority of the farmers are growing Tall varieties are West coast Tall, Tiptur Tall mainly grown for matured coconut and used for tender nut purpose.

## **2. Aim and Objectives.**

The dwarf varieties of COD and CGD are to be planted in the above seed garden in the ration of 60:40. There is a great demand for hybrid seedlings in Odisha state and neighboring state of Andhra Pradesh, Tamilnadu, Chhatishgargh, West Bengal etc. In a perennial crop like the coconut palm which exhibits considerable genetic variations and is capable of being propagated only through seed, the selection and use of planting material of high intrinsic value assumes considerable importance. The palm contributes to yield for over 80 years and full bearing capacity becomes known only 10 to 15 years after planting. If the planting material happens to be inferior in quality, the garden will turn to be highly uneconomical and a continuous loss to the grower. Since coconut culture involves substantial pre-bearing investment, greater emphasis must be given to the selection and use of the right type of planting material.

If the seed nuts and seedlings are of poor quality, the new plantation will prove to be uneconomic, causing considerable loss of time and money to the grower. The coconut palm is a monocot and can be propagated only through seed. The fact that the coconut is a cross fertilized palm and that it does not bred true, makes the selection of seed nuts and then of seedlings in the nursery all the more difficult and important. By poor quality seed nuts and seedlings.

The project intend to develop in an area of 10 acres where in dwarf and tall will be planted in the ratio of 60% and 40% respectively and the seedlings will be procured from coconut Development Board, Pitapali, Khordha. The initial years it is propose to grow inter crop to get some revenue till the coconut plants start yielding and to utilize the interspaces available effectively. Under the project, all the land development activities will be done and other infrastructure like construction of farm house, pump house, labour shed, implement shed, godown, drilling of bore wells, laying of drip irrigation system for entire coconut and

banana plantations will be done. On attaining the full bearing of coconuts, we will be planning for hybridization as the scheme guidelines of the CDB and our skilled workers will be sent for hybridization training programme at Coconut Development Board, Pitapalli, and Khordha.

The first and foremost step is the selection of mother palm. The mother palms should be of 25-60 years of age with at least 30-32 fully opened healthy leaves on crown. The shape of crown should be spherical or semi-spherical, petiole length and stalk of the bunches should be short and strong in nature. Bearing habit should be regular with at least 80 nuts annual yield during the last 5 years, having medium sized round to oblong nuts (1200g weight with dried husk). One should avoid drooping crown, dies-shaped nut, proximity of cattle shed and compost pit near the palm.

- ❖ To establish a well-managed coconut seed garden in odisha.
- ❖ To make Odisha self-sufficiency in coconut seedling production.
- ❖ To produce dwarf coconut seed nuts for which there is a great demand.
- ❖ To facilitate production of hybrid seed nuts and seedlings of coconut.
- ❖ Green coverage and environmental protection.
- ❖ Increase coconut production in the state.

### **3. Feasibility and basic information on Ghodahad Farm**

The farm is suitable for Establishment of Nuclear Seed Garden for Coconut palm.

#### **Farm Information and Land utilization pattern.**

Year of Establishment	:	1987
Total orchard area	:	20 ha.
High land	:	nil
Medium land	:	20ha
Low land	:	0
Cultivated area	:	13ha (coconut 6.5ha+mango5.9 ha+others0.6)
Area under Road	:	0.5ha
Building	:	0.3ha
No of ponds	:	1 no
Nursery area	:	1 ha.
Farm Road	:	0.5 ha.
Irrigation channel	:	0.2
Area vacant	:	4.5ha
Mother plants coconut	:	700 <sub>(452 gaps)</sub> COD 274 <sub>(39gaps)</sub> GB 161 <sub>(123gaps)</sub> MSY 129 <sub>(151gaps)</sub> MSG 141 <sub>(139gaps)</sub>
Mango	:	290 <sub>(400 gaps)</sub>
Guava	:	20
Areacanut	:	8

#### **Existing Infrastructure.**

No of building	:	3	temporary sheds
Usable building	:	3	(godown cum office, garage , working shade)
Non-usable building	:	0	

### **4. Competency and Sustainability.**

The implementing Agency is competent enough for establishment of seed garden and is sustainable.

### **5. Sector & Sub-Sectors.**

Infrastructure development and Assets stream of RKV

## **6. Anticipated Benefit.**

A coconut palm starts bearing after 4<sup>th</sup> year attains full bearing after 14<sup>th</sup> year from planting. On an average, we will get 60 to nuts per plant per year and  $80 \times 175 = 14000$  nuts from 1 ha. per year.

We will get quality nuts @ 60 to 70% i.e. 8400 nos. if the good quality nuts and poor quality nuts are sold, we get;

a)  $8400 \times \text{Rs.}25/\text{nut} = \text{Rs. } 2, 10,000/-$

b)  $5600 \times \text{Rs.}10/\text{nut} = \text{Rs. } 56,000/-$

So, the total return by selling the nuts Rs. 2, 66,000/ ha per year.

If, after establishment of the garden, nursery will be established for production of coconut seedlings.

## **7. A) Expected Output.**

- 4 ha of nuclear seed garden will be established.
- The garden will be maintained for 2<sup>nd</sup> year.
- Enovation and desalting of the existing pond will be taken up.
- Bore well will be installed and energized.
- Drip Irrigation system will be facilitated.

## **B) Expected outcome.**

- Production of coconut seedlings of Tall, dwarf and Hybrids.
- Increase in availability of coconut seedlings in the state.
- To help in area expansion of coconut in the state.

### 8. Proposed Work/ Activities with cost Layout.

Sl. No.	Item	Unit	Quantity	Rate (Rs.)	Cost (Rs.)
<b>A. Recurring cost</b>					
1.a	Plantation cost for planting year	Ha	4	116700	466800
b	Maint. Cost for 1 <sup>st</sup> year	Ha	4	52600	210400
				<b>Total</b>	<b>677200</b>
<b>B. Non-recurring cost</b>					
1	Renovation and desalting of existing pond in an area of approx. 0.4 ha.	Ha	0.4	500000	200000
2	Installation bore well & energisation	Ha	1	300000	300000
3	Drip Irrigation with Fustigation system	Ha	4	60000	240000
4	Godown- cum- watch man shed	Sqft	200	1200	240000
5	Vermin compost	No	1	100000	100000
6	Preparation of mount in proposed plantation site	Ha	4	100000	400000
				<b>Total</b>	<b>1480000</b>

Total: rs. 2157200

Contingencies: Rs. 21000

Grand Total: Rs. 2178200

**(Rupees Twenty One lakh Seventy eight thousand Two hundred) only.**

#### **RKVY ASSISTANCE REQUIRED during 2015-16:**

- i. **Project cost: Rs. 21,57,200**
- ii. **Contingencies': Rs. 21,000**
  
- Total Project cost: Rs. 21, 78, 200**

**Asst. Horticulture Officer  
O/O- DDH,Ganajm, Berhampur.**

**Deputy Director of Horticulture,  
Ganjam, Berhampur.**

**11. Check list.**

- a. For funds available under other schemes of the state/ Govt of India for the proposed projects have been accessed and utilized before it is proposed under RKVY.
- b. There will be no duplication or overlapping of assistance/ area coverage through other state/ Central Govt. Schemes.
- c. The funds under the project is not proposed as additional or top-up subsidy to other ongoing schemes/ programmes of state/ Central govt. DPRs includes contingency.

**Asst. Horticulture Officer  
O/O- DDH,Ganajm, Berhampur.**

**Deputy Director of Horticulture,  
Ganjam, Berhampur.**



<b>COST OF CULTIVATION OF COCONUT (cocos nucifera)</b>									
Area 1Ha. Density-237 plants Spacing-6.5m X 6.5m									
Sl. No.	Components of cost	1 <sup>st</sup> year		2 <sup>nd</sup> year		3 <sup>rd</sup> year		4 <sup>th</sup> year	
		Unit/ MD	Cost( Rs.)	Unit/ MD	Cost( Rs.)	Unit/ MD	Cost( Rs.)	Unit/ MD	Cost( Rs.)
1	Tractor ploughing @Rs. 500/ hr & bullock plough or Power litter from 2 <sup>nd</sup> year onwards proportionate to the cost	5 hrs	2500	5 hrs	2500	5 hrs	2500	5 hrs	2500
2	Lay out & demarcation	3	600						
3	Digging of pits (1m X 1m X 1m)	84	16800	4	800				
4	Filling of pits (carrying compost, mixing with soil & basal dose of fertilizer)	28	5500	1	200				
5	Planting followed by watering	9	1800	1	200				
6	Irrigation	112	22400	112	22400	100	20000	100	20000
7	Staking	4	800						
8	Intercultural operation (hoeing, weeding, application of fertiliser & manure)	14	2800	16	3200	18	3600	20	4000
9	Application of PP chemicals & Hormone	7	1400	10	2000	10	2000	10	2000
10	Cleaning of crown					4	800	6	1200
11	Harvesting, Post harvest handing								
<b>SUB TOTAL</b>		54700		31300		28 900		29 700	
<b>B.INPUTS</b>									
1	Planting material @Rs. 70/ seedling	237nos 12390		12 nos 840					
2	Cost of manure @Rs 800/ MT	11.85MT 9480		7.0MT 4200		9.25MT 5600		11.85MT 9480	
3	Fertilisers								
	N @Rs.12.37 per Kg.	11.7kg	145	34.0kg	421	68kg	841	117kg	1447
	P <sub>2</sub> O <sub>2</sub> @Rs. 47.80 per Kg	7.5kg	1076	22.5kg	1076	45.kg	2151	75kg	3585
	K <sub>2</sub> O @ Rs.27.00 per Kg	28.1kg	759	81.0kg	2187	162kg	4374	281kg	7587
4	Micronutrients (Magnesium & Boron)	1500		2000		2500		3000	
5	Cost of PP chemicals	1500		1500		2000		2200	
6	Cost of staking material @Rs.5	1185		300					
7	Irrigation Charges	4000		4000		4500		6000	
8	Mulching material	20000							
	SUB-TOTAL	<b>51317</b>		<b>16523</b>		<b>21966.2</b>		<b>33299</b>	
	Miscellaneous/ Contingency @10%	10683		4777		5034		6201	
	<b>GRAND TOTAL</b>	<b>116700</b>		<b>52600</b>		<b>55900</b>		<b>69200</b>	

### 9. Time line.

The work will be completed in 2 years i.e, from 2015-16 to 2016-17.

### 10. Project Co-ordinator details.

	Name	Designation	Mobile No.	email
State level	Dr. Bhagyarathi Pradhan	Dy. Director of Horticulture(Hq.)	9437421475	ahorkvvy@orihot.in
Dist. level	Bhagaban Dash	Dy. Director of Horticulture	94374182081	ddhganjam.od@nic.in

### 3. Project proposal on establishment of nuclear seed garden for coconut at Ghodahada Farm, Digapahandi.

**Proposed Work/ Activities with Cost Layout.**

Sl. No	Tem	Unit	Quantity	Rate (Rs.)	Cost (Rs.)	MIDH & NMSA Norms
<b>A.</b>	Recurring cost					
<b>1.a</b>	Plantation cost for planting year	Ha	4	116700	466800	
<b>B</b>	Maint. Cost for 1 <sup>st</sup> year	Ha	4	52600	210400	
				<b>Total</b>	<b>677200</b>	
<b>B.</b>	<b>Non-recurring cost</b>					
<b>1</b>	Renovation and de-silting of existing pond in an area of approx. 0.4 ha.	Ha	0.4	500000	200000	
<b>2</b>	Installation bore well & energisation	No	1	300000	300000	
<b>3</b>	Drip irrigation with fertigation system	Ha	4	60000	240000	
<b>4</b>	Godown cum watch man shed	Sqft.	200	1200	240000	
<b>5</b>	Vermin compost	No	1	100000	100000	
<b>6</b>	Preparation of mound in proposed plantation site	Ha	4	100000	400000	
<b>7</b>	Barbed wire fencing around the plantation area	RMT	1000	400	400000	
				<b>Total</b>	<b>1880000</b>	

Total: Rs. 2557200  
Contingencies: Rs.25800  
**Grand Total: Rs.2583000**

**Components of Govt. of India –**

1. Supported as per MIDH & NMSA Norms. Recurring cost is not allowed.
2. May support the proposal as per MIDH guidelines for components of plantation only.
3. Promotion and distribution of Micronutrients is covered under Soil Health management (SHM) component of NMSA. Financial Assistance is provided @50% of cost subject to limit of Rs. 500/ ha and / or Rs.1000 per beneficiary. INM Division supports this project.

**Deputy Director of Horticulture,  
Ganjam, Berhampur.**