

**R E P O R T**  
**OF THE WORKING GROUP**  
**FOR THE FORMULATION OF**  
**FOURTH FIVE YEAR PLAN PROPOSALS**  
**ON**  
**C O C O N U T**



*Published by*  
INDIAN COUNCIL OF AGRICULTURAL RESEARCH  
NEW DELHI

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## P R E F A C E

PREPARATORY work for the formulation of proposals for agricultural development under the Fourth Five Year Plan was taken up in the Ministry of Food & Agriculture in June, 1963 at the instance of the Planning Commission. Following the lines adopted in connection with the preparation of the Third Five Year Plan, a Working Group on Coconut was set up in the Department of Agriculture with the following terms of reference.

1. To make a critical review of the progress of the programmes and schemes in the Third Five Year Plan period ;
2. To assess, in the light of current trends and other available data, the position likely to be reached at the end of the Third Plan period ; and
3. To formulate proposals for the Fourth Five Year Plan in the perspective, whenever possible of development over a 10-year period.

On the basis of the material that is available in the Department of Agriculture and the results of studies, if any, already made, the Working Group has attempted to make an assessment of the requirements, the possibilities for development and the organisational and technical consideration involved therein and has given broad indication of the physical programmes proposed and the financial outlays needed. The Report was transmitted to the Planning Commission on August 13, 1964.

The proposals and recommendations made in this Report have been taken into account in the consolidated Memorandum 'Approach to Agricultural Development in the Fourth Five Year Plan' submitted by the Ministry of Food and Agriculture to the Planning Commission.

DR. J.S. PATEL  
*Chairman of the Working Group  
on Coconut*

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## SUMMARY

**1. Importance of Coconut Crop.** Coconut is one of the most important of our commercial crops, particularly in the coastal States where it is concentrated. The value of the annual production is estimated at Rs. 173 crores. Kerala State accounts for 55 per cent of the production followed by Madras (19 per cent), Mysore (15 per cent) and Andhra Pradesh (5 per cent). About 80 per cent of the available quantity is utilised for domestic consumption and 20 per cent in industries like soap-making, cosmetics, etc. Indigenous production has never been sufficient to meet the country's requirements and heavy imports had to be resorted to in the past. Until 1957-58 liberal imports had been allowed but since that year, on account of the acute shortage of foreign exchange, imports have been severely restricted. Even so, imports are of the order of Rs. 10 crores per annum at present.

Coconut plays a very important role in the economy of the larger producing States, particularly that of Kerala.

**2. Development Work done in Previous Plans.** Systematic attention to research and development on coconut began to be given only since the Indian Central Coconut Committee was set up in 1945. The more important coconut growing States had, however, been carrying out such work in a limited way. The Indian Central Coconut Committee set up two research stations in 1947-48 and financed a number of regional stations, but research and development of coconut as such were brought within the purview of the National Plan only with effect from 1955-56. The principal developmental activities undertaken were production and distribution of quality seedlings, organisation of demonstration plots, plant protection measures for controlling diseases and pests, improvement of marketing including establishment of regulated markets, prescription of grade specifications for coconut oil and standard contract terms for milling copra. Extensive publicity and propaganda were also undertaken through the publication of various pamphlets apart from the scientific publications of the Committee.

**3. Targets Fixed and Achievement during Second Plan.** The target of additional production prescribed for the Second Plan period was 8,500 lakh of raw nuts over the production at the end of the First Plan period. This figure actually represented the total

additional demand for coconut and coconut products then estimated on the basis of increase in population and demands by the industry. It had no bearing whatsoever on the capacity of individual States for increased production. The result was that at the end of the Second Plan period, the actual additional production as reported by the State Governments amounted to only 3,500 lakh raw nuts.

On the other hand, as a result of the developmental activities undertaken during the Second Plan period by Governmental agencies and private efforts, additional production potential had been built up in the producing States. An estimate of this potential is not, however, possible because we have no means to assess the effects of the effort put in by individual growers and estimate based on the very limited measures undertaken by Government alone, would be far from complete.

**4. Expected Achievement during Third Plan.** During the Third Plan, the developmental activities of the Second Plan have been expanded and short-term measures like application of fertilizers and manures and provision of irrigation facilities have been added. In view of the very limited scope for bringing new areas under coconut, efforts are concentrated on increasing production from all the existing areas through such measures. The target of additional production for the Third Plan was fixed by the Government of India at 7,737 lakh raw nuts. The basis on which this target was fixed is not known. It is, however, hoped that the actual additional production that will be achieved by the end of the Third Plan, will be more than what was achieved at the end of the Second Plan (3,500 lakh raw nuts) in view of the additional production potential created during the Second Plan period through Government and private efforts. It is not found possible at this stage to make any reasonable estimate in this regard. The additional production potential expected to be created by the end of the Third Plan will consist of the effects of the expanded developmental programmes undertaken by Government and private efforts by individual growers. While it is not possible to make any estimate of the latter, the Governmental measures alone are expected to result in an increased production potential of 180 lakh raw nuts up to the end of the Third Plan which will be sustained during the subsequent Plans as well. It is estimated that the increase in the production of coconuts due to the combined efforts of Government and private individuals will be of the order of 3,500 lakh of raw nuts.

**5. Proposals for Fourth Plan.** The principal measures will have to be the same as in the previous Plans. But considerable

intensification of these measures will have to be arranged, particularly-short term measures like application of fertilizers and manures, provision of irrigation during summer months and control of diseases and pests. The establishment of a large number of demonstration farms, particularly in the more important growing areas, with provision for demonstrating as many improved practices as possible, would also be necessary. In order to make the best impression on the grower about the efficacy of intensive measures, the organisation of package programmes for coconut in suitable areas in each growing State, is recommended. Such programmes should aim at covering at least 10 per cent of the area under coconut in each State during the Fourth Plan. Besides these, the following measures would also be useful : (i) encouraging people to mark out heavy yielding palms by awards of merit certificates ; (ii) organisation of prize competitions among villagers ; (iii) utilisation of village youth organisations and school students in the furtherance of coconut improvement ; (iv) provision of pumping sets and spraying equipments, etc., for hire at the block and village levels.

Under the Fourth Plan, it is proposed to set up 3,675 demonstration plots of an extent of not less than  $\frac{1}{2}$  acre and 120 plots of 5-acre size distributed over the entire coconut tract. Under the scheme for distribution of fertilizers, the four major coconut-growing States viz. Kerala, Mysore, Madras and Andhra Pradesh are included and a total of 109 lakh trees will be manured during two consecutive years. Twenty-five per cent of the cost of the fertilizers required will be given as subsidy and the rest as medium term loans. Since the soil in the Kuttanad area of Alleppey district and Kottayam district of Kerala State is highly acidic a scheme for liming and application of silt in this area is proposed. Twenty-five per cent of the cost of lime and silt may be given as subsidy, the balance being met by the cultivators themselves. Irrigation facilities will be extended to cover an area of 32,000 acres spread over the four States. To prevent the leaf rot disease and to hold in check, the root disease, it is considered essential to continue the spraying schemes in Kerala during the Fourth Plan period, on a more vigorous scale. The target fixed is 3,000 lakh sprayings. It is also proposed to distribute 5,000 sprayers on subsidy basis. The number of stations for breeding parasites for *Nephantis serripa* will be increased from the present 17 to 28 and the new stations will be established in Kerala, Madras, Andhra Pradesh, Maharashtra, Mysore, Goa and Pondicherry. For intensive cultivation of coconuts on the lines of the Package Programme, 140 blocks each of 1,000 acres in extent will have to be established. Of the 104.5 lakh seedlings that will be available



**ANNEXURE-I**

Development	Loan		Grant Subsidies Rs.	Other recurring expenditure Rs.	Total gross expenditure Ra.	Receipts including recovery of loans Rs.	Net expenditure Rs.
	Long term Rs.	Medium term Rs.					
(a) Demonstration plots	—	—	4,18,105	9,80,300	13,98,405	—	13,98,405
(b) Distribution of fertilizers (75% loan and 25% subsidy)	—	103,13,250	34,37,750	—	137,51,000	103,13,250	34,37,750
(c) Diseases and pest control	—	—	125,00,000	257,16,885	382,16,885	180,00,000	202,16,885
(d) Intensivedevelopment of coconut areas (Package Programme)	270,00,000	—	366,80,000	33,76,456	670,56,456	270,00,000	400,56,456
(e) Publicity and propaganda	—	—	—	15,00,000	15,00,000	—	15,00,000
(f) Distribution of seedlings	—	—	62,95,7.0	67,66,750	130,62,500	67,66,750	62,95,750
(g) Expansion of area	36,84,180	—	12,50,000	100,89,750	150,23,930	36,84,180	113,39,750
(h) *Other ameliorative measures for soil improvement	—	—	13,63,700	—	13,63,700	—	11,63,700
<b>Total</b>	<b>306,84,180</b>	<b>103,13,250</b>	<b>619,45,305</b>	<b>484,30,141</b>	<b>1513,72,876</b>	<b>657,64,180</b>	<b>856,08,696</b>

\*Note. Liming at 5 lb. per tree per annum in the Kuttanad area of Kerala State to cover 10% of the area and application of silt and sand in the Alleppey and Kottayam Districts to cover 10% of the area.

from different nurseries, 75 lakh will be required for under-planting. Because of the limited scope for the expansion of area under coconut, it is reasonably estimated that it will be possible to plant up 38,300 acres spread over the States of Kerala, Mysore, Madras, Andhra Pradesh, West Bengal, Gujarat and Orissa.

The developmental measures proposed in the Fourth Plan will also cover the new territory of Goa which is reported to have at present about 46,000 acres under coconut and possesses good scope for development work. The actual measures to be adopted will be determined on the basis of a survey to be undertaken in the territory.

The additional production potential that will be developed with the Fourth Plan period due to different measures envisaged in the Plan and those accruing from Third Plan schemes will add up to 1,042 Lakh nuts. Here again the additional production potential of 1,042 lakh raw nuts expected to be realised by the end of the Fourth Plan is from Government efforts alone. The impact of the Governmental measures on the individual cultivator and the additional production that will be achieved by his own efforts is difficult to assess realistically at this stage. But it may be assumed from past experience that by the combined efforts of Government and individuals, it may be possible to increase the production by 4,000 lakh raw nuts, by the end of the Fourth Plan above what could be achieved at the end of the Third Plan.

The proposals indicated for the Fourth Plan in the working paper involve a total non-recoverable expenditure of Rs. 8,56,08,696 ; the details of which are given in Annexure I.

The demand projections as given in the working paper reveals that the indigenous supply will be short of demand by 1,865 million nuts, at the end of the Fourth Plan.

#### SUMMARY STATEMENT OF WORKING PAPER ON COCONUT

##### 1. EXPECTED AREA UNDER CULTIVATION

	1960-61	1965-66	1970-71
(a) Total ('000 acres)	2,009	2,022	2,060
(b) Proposed for intensive cultivation	—	—	140
(c) Percentage of (b) upon (a)	—	—	7

The information regarding proportion of area cultivated under rainfed and irrigated conditions is not available. During Third Plan period an additional area of 13,123 acres will be planted up and in the Fourth Plan 38,300 acres.

## 2. ESTIMATE OF PRODUCTION

	Actual	Expected	
	1960-61	1965-66	1970-71
Coconut (million nuts)	4,321	4,671	5,071

## 3. ANTICIPATED INCREASE IN YIELD (million nuts)

	Third Plan	Fourth Plan
Governmental efforts	18	104
Private efforts	332	296
Total	350	400

## 4. EXPECTED LEVEL OF YIELDS PER ACRE

	1960 61	1965-66	1970-71
Coconut (No. of nuts)	2151	2310	2462

## 5. REQUIREMENT OF IMPORTS IN FOURTH PLAN

1. <i>Production of quality seedlings</i>	104.50 lakh.
2. <i>Manures</i>	
Ammonium Sulphate	17,222 tonnes
Superphosphate	20,710 "
Muriate of potash	11,554 "
3. <i>Plant protection</i>	
Copper fungicides	2,225 tonnes

## 6. INVESTMENT AND FINANCIAL IMPLICATIONS

Item	Estimated total cost	Direct expenditure		Grants and subsidies	Foreign exchange component
		State/Centre	Loans State/Centre		
Plant Protection equipments (sprayers)	9,15,000	4,15,000	—	5,00,000	—
Staff and Contingencies	15,04,57,876	4,80,15,141	4,09,97,430	6,14,45,305	—
Total	15,13,72,876	4,84,30,141	4,09,97,430	6,19,45,305	—

The figures furnished under item 6 are the total direct expenditure, loans and subsidies. The shares of the State and Central Governments have not been worked out separately as the financial pattern applicable to the schemes is not known.

**7. Cost of Government Programmes per Unit additional Production.** During Fourth Plan period by Governmental efforts alone, it is estimated that an additional production potential of 10½ million nuts will be developed for which the estimated expenditure by the Government (non-recoverable) is of the order of 8.56 crores. Thus the cost of production of single additional nut will be 82 paise. However it is anticipated that the total additional production by the end of Fourth Plan due to the combined efforts of Government and private individuals will be of the order of 400 million nuts.

**8. Supply and Demand Balance (million nuts)**

	1961-62	1965-66	1970-71
Demand	5,321	6,014	6,936
Likely supply	4,321	4,671	5,071
Shortage	1,000	1,343	1,865

# WORKING PAPER ON COCONUT DEVELOPMENT

## I. INTRODUCTION

COCONUT is grown in all the 8 Coastal States of the Indian Union, namely, Gujarat, Maharashtra, Mysore, Kerala, Madras, Andhra Pradesh, Orissa and West Bengal and also in Assam, besides being cultivated in the centrally administered territories of Goa, Pondicherry, Tripura, the Laccadives and the Andaman and Nicobar Islands. The area under the crop in the States and the territories mentioned above varies widely from about 13 lakh acres in Kerala to 8 thousand acres in Assam ; but wherever it is grown, coconut is an important factor in the economy of the region, although the degree of importance may vary from region to region.

The area and production of coconut were not being estimated scientifically until recently, but since the agricultural year 1959-60, Statistical Surveys for the correct estimation of area and yield of coconut are in progress in the different coconut-growing States of India. In almost all these States six rounds of the survey have been completed.

The figures of coconut area and production for the year 1961-62 as revealed by the surveys are given in Appendix I.

The annual production of coconuts in India in 1961-62 is estimated at 4,321 million nuts valued at Rs. 172.8 crores at current rates. But being both an edible article and an industrial raw material the demand for coconut has been in excess of the production within the country. As a result, considerable quantities of coconut products have been imported into India primarily to meet industrial needs. The average annual value of such imports is of the order of Rs 10 crores. This, however, cannot be taken as a true measure of our deficit, for the quantity of imports has been conditioned by the availability of foreign exchange.

## II. COCONUT DEVELOPMENT BEFORE THE PLANS

Prior to World War II, attempts at coconut research and development were at best but perfunctory and un-coordinated. The need to

devote special attention to this crop was, however, keenly felt during the war when supplies from outside dwindled, owing to enemy occupation of some of the coconut-growing countries. The result was the setting up of the Indian Central Coconut Committee in February 1945. On the development side, jointly with the State Governments concerned, nurseries were set up for supplying quality coconut seedlings, centres for breeding parasites for the biological control of *Nephantis serinopa*, were established; co-operative societies for marketing coconuts, and schemes for multiplication and distribution of green manure seeds particularly of *Crotalaria striata* were also put in operation. An enquiry was undertaken in some of the coconut-growing States to study the existing methods of marketing coconuts and coconut products and to make suggestions for the establishment of regulated markets.

### III. FIRST PLAN ACTIVITIES

Coconut was not brought within the purview of the First Five Year Plan. During this period, development activities were carried out as the normal functions of the Indian Central Coconut Committee, although considerable progress was marked from year to year. Nurseries with a total production target of 20.30 lakh of coconut seedlings were in operation, 9 Stations for the multiplication of parasites to control the pest *Nephantis serinopa* were functioning, schemes were worked for the multiplication and distribution of *Crotalaria striata* seeds to raise green manure crops in coconut gardens, two co-operative societies with financial aid from the Committee for the marketing of coconuts were started in Kerala. Regulated Market Committees for coconut were set up in Malabar, South Kanara and East Godavari, efforts were made to popularise kiln-drying of copra by financing the construction of such a kiln at Badagara in the premises of the Malabar District Co-operative Produce Sale Society's branch, grade specifications for coconut oil and standard contract terms for milling copra were drawn up for adoption by the trade, propaganda for popularising improved methods of coconut cultivation was undertaken through the publication of a monthly periodical, a quarterly periodical, pamphlets and posters, participation in exhibitions and an agricultural officer was appointed who toured the coconut-growing areas to contact cultivators, ascertain their problems and to give them advice.

An educative film on coconut-growing was also produced to elucidate the advantage of adopting scientific method of coconut cultivation.

#### IV. COCONUT SCHEMES UNDER SECOND PLAN

Coconut was brought within the purview of the Second Five Year Plan and the following development schemes started on different dates during the Plan period :

1. Revision of the 'Report on the Marketing of Coconuts and Coconut Products in India'.
2. Establishment of stations for breeding parasites of *Nephantis serinopa* in the States of Kerala, Madras, Andhra Pradesh and Maharashtra.
3. Establishment of coconut nurseries in Kerala, Mysore, Madras, Andhra Pradesh, Maharashtra, Gujarat, Orissa, Assam, West Bengal, Pondicherry, the Andamans and the Laccadives.
4. Spraying of coconut palms in Kerala to control the leaf disease of coconut.
5. Organisation of demonstration plots in the various States.
6. Coconut development schemes in Mysore, Madras, Andhra Pradesh, Orissa, West Bengal, the Andamans and Nicobar and the Laccadives.

#### Achievements under Second Plan

What was achieved under the development schemes mentioned above is indicated below :

**ITEM No. 1.** *Revision of the 'Report on the Marketing of Coconuts and Coconut Products in India'.*

This scheme was worked by the Directorate of Marketing and Inspection, Nagpur, during the period 1960-61. The scheme started on 5th May, 1960 and was continued as a committed item upto November, 1961. The report is now under print.

**ITEM No. 2.** *Establishment of Stations for Breeding Parasites of Nephantis serinopa in the States of Kerala, Madras, Andhra Pradesh and Maharashtra.*

Under this scheme, 11 stations were set up and a total of

635,09,661 parasites were released as shown below :

State	No. of Stations	No. of parasites released
Madras	5	47,67,695
Kerala	1	17,2 ,028
Andhra Pradesh	2	570,20,938
Mysore	1	Nil
Maharashtra	2	Nil

In Madras State two stations were set up in 1958 and the rest in 1960, in Kerala a station was started in 1957, in Maharashtra in 1959 and in Mysore in 1960. In the last two States practically no parasites were produced.

In Andhra Pradesh one station was in existence for the entire period for the Second Plan while the other was set up only during the second year of the Second Plan. The rearing of the parasite *Trichogramma minutum* in large numbers, besides the other parasites, accounts for the disparity in the production of parasites between Andhra Pradesh and the other States.

ITEM NO. 3. *Establishment of Coconut Nurseries in Kerala, Mysore, etc.*

As Against a targeted production of 15,53,500 seedlings in the Plan nurseries the actual number produced and distributed was 11,30,258 or 72.8 per cent of the target.

The State-wise target and achievement of Plan nurseries are given below :

State	Target	Achievement	Percentage of target achieved
1. Kerala	98,000	90,719	92.6
2. Mysore	314,000	247,432	71.9
3. Madras	529,500	346,745	55.5
4. Andhra Pradesh	150,000	108,547	72.4
5. Maharashtra	75,000	48,831	65.1
6. Gujarat	50,000	57,395	114.8
7. Orissa	35,000	25,256	72.2
8. West Bengal	57,000	24,269	42.6
9. Assam	187,000	157,090	84.0
10. Pondicherry	28,000	23,974	85.6
<b>Total</b>	<b>1553,500</b>	<b>1130,258</b>	<b>72.8</b>



In Kerala, distribution of seedlings was done only during the last two years of the Plan period .

In Madras, the scheme started functioning in September, 1957 while in Andhra Pradesh the seedlings were distributed only in the last year of the Plan period.

In West Bengal, the scheme was initiated in August, 1956, in Assam in April, 1957 and in Pondicherry in February, 1957.

The State-wise target and achievement in respect of non-Plan nurseries are given below :

State	Target	Achievement	Percentage of target achieved
Kerala	1155,000	778,664	67.4
Madras	30,000	30,002	100.0
Andhra Pradesh	315,000	236,386	75.0
Orissa	75,000	76,555	102.0
West Bengal	140,000	94,120	67.2
Central Coconut Research Station, Kasaragod	50,000	56,720	113.4
Total	1785,000	1272,447	72.1

In the case of non-Plan nurseries the achievement was of the order of 72.1 per cent. The total target fixed for Plan and non-Plan nurseries was 33,18,500 seedlings and actually 24,02,705 seedlings were distributed accounting for 72.4 per cent.

*ITEM NO. 4. Spraying of Coconut Palms in Kerala State to Control the Leaf Disease of Coconut.*

The scheme was started in November, 1956 and the target was to do 522.15 lakh of sprayings. As against this, the number of sprayings actually done was only 310.50 lakh. The achievement was 59.5 per cent.

Adverse weather conditions and delay in recruitment of staff and supply of spraying equipment were reported to be the factors for the shortfall in achievement.

ITEM No. 5. *Organization of Demonstration Plots in the Various States.*

As against the targeted number of 572 demonstration plots envisaged 562 were only established, the details of which are given below :

State	Target	No. of plots started
Kerala	234	234
Mysore	134	134
Madras	150	150
Andhra Pradesh	50	40
Pondicherry	4	4
Total	572	562

ITEM No. 6. *Coconut Development Schemes in Mysore, Madras, Andhra Pradesh, Orissa, West Bengal, the Andamans and Nicobar and the Laccadives.*

Under these schemes, propaganda to adopt better methods of cultivation was made in all the States.

In Gujarat, 1,716 acres of coconut gardens were rejuvenated as against a target of 2,000 acres. In West Bengal as against the target of 10 tonnes, 26.6 tonnes of manure mixture were distributed.

V. PRODUCTION TARGET AND ACHIEVEMENT OF SECOND PLAN

The target of additional production prescribed for the Second Plan period was 8,500 lakh of raw nuts over the production at the end of the First Plan period. This figure actually represented the total additional demand for coconut and coconut products then estimated on the basis of increase in population and demands by the industry. It had no bearing whatsoever on the capacity of individual States for increased production. The result was that at the end of the Second Plan period, the actual additional production as reported by the State Governments, amounted to only 3,500 lakh raw nuts. On the other hand, as a result of the developmental activities undertaken during the Second Plan period by Government agencies and private effort, additional production potential was built up in the producing States. An estimate of this potential is not, however, possible because we have no means to assess the effects of the effort

put in by individual growers and an estimate based on the very limited measures undertaken by Government alone, would be far from complete and would give a wrong picture.

#### VI. COCONUT UNDER THIRD PLAN

During the Third Plan, the developmental activities of the Second Plan have been expanded and short-term measures like application of fertilizers and manures and provision of irrigation facilities have been added. In view of the very limited scope for bringing new areas under coconut, efforts are concentrated on increasing production from all the existing areas through such measures. The target of additional production for the Third Plan was fixed by the Government of India at 7,737 lakh raw nuts. The basis on which this target was fixed is not known. The States-wise break up of the target is given in Appendix-II.

#### Development Schemes Sanctioned under the Third Plan

1. Setting up of Demonstration Plots in the States of Kerala, Mysore, Madras, Andhra Pradesh, Gujarat, Orissa, West Bengal, the Laccadives and Pondicherry.
2. Fertilizer distribution in Kerala, Orissa, West Bengal and the Laccadives.
3. Distribution of coconut seedlings in Kerala, Mysore, Madras, Andhra Pradesh, Maharashtra, Orissa, Gujarat, Assam, Pondicherry, Tripura, the Laccadives, Andamans and West Bengal.
4. Spraying of coconut palms against fungus diseases in Kerala.
5. Plant protection measures in Madras.
6. Biological control of *Nephantis serinopa* in Kerala, Andhra Pradesh, Mysore, Madras and Maharashtra.
7. Expansion of coconut area in Kerala, Madras and the Andamans.
8. Provision of irrigation facilities in Kerala.
9. Coconut demonstration farms in certain swampy areas of Madras.
10. Coconut Mother Palm Competition in Madras.
11. Centralized collection of seed coconuts for nurseries in Kerala.
12. Propaganda work in Mysore and Madras.

A review of the targets fixed under the above-mentioned schemes and the progress made during the first two years of the Third Plan is given below.

ITEM NO. 1. *Setting up of Demonstration Plots.*

As against the target of 2,240 demonstration plots for the plan period, 1,488 have been established during the first two years as shown below :

State	Target	Achievement during first 2 years
1. Kerala	800	800
2. Mysore	560	182
3. Madras	195	176
4. Andhra Pradesh	58	58
5. Gujarat	3	3
6. Orissa	500	65
7. West Bengal	20	100
8. Laccadives	100	100
9. Pondicherry	4	4
Total	2,240	1,488

The position regarding Kerala, Madras, Andhra Pradesh, Gujarat, West Bengal, the Laccadives and Pondicherry is quite satisfactory.

The progress made in Mysore and Orissa is not satisfactory and the State authorities concerned have been requested to expedite the setting up of the remaining plots without further delay.

ITEM NO. 2. *Fertilizer Distribution.*

In Kerala the scheme aims at manuring 166 lakh of coconut palms in two consecutive years according to the following phased programme :

No of Palms Treated				
I Year	II Year	III Year	IV Year	V Year
7.50 lakh	7.5 lakh	55.0 lakh	55.0 lakh	48.50 lakh
	+	+	+	
	55.0 „	55.0 „	48.5 „	
	<u>62.5 lakh</u>	<u>110.0 lakh</u>	<u>103.5 lakh</u>	

Under the scheme the same set of trees will be manured in two consecutive years. The manure is issued in kind.

In 1961-62 as against the target of 7.50 lakh, only 76,927 trees were manured and in 1962-63 as against the target of 62.5 lakh only 9,07,000 trees were manured. The achievement during the first two years together was only about 13 per cent of the target.

**Orissa.** In this State the scheme provides for the application of fertilizers to 1,10,000 trees as indicated below :

I Year	12,000 trees
II Year	17,000 "
III Year	22,000 "
IV Year	27,000 "
V Year	32,000 "
Total	1,10,000

The number of trees treated in the first year was only 3,192 as against the target of 12,000 and the number treated in the 2nd year was only 5,595 as against 17,000. The achievement in the first two years was only 39 per cent of the target.

**West Bengal.** In this State 15 tonnes of manures mixtures are to be distributed each year. This has been done during the first two years.

**Laccadives.** Here, too, the annual target of distributing 20 tonnes of fertilizers has been achieved during the first 2 years.

**ITEM NO. 3. *Distribution of Coconut Seedlings.***

The target fixed for production of coconut seedlings during the plan period is 99,24,350.

The target for the 1st year is 12,51,150 and that for the 2nd year is 18,69,150.

As against these, the number of seedlings supplied in the first year was 10,49,813 and in the second year 11,53,306. In other words the achievement in the first year was 83.9 per cent of the target while in the second year it was only 61.7 per cent.

Appreciable shortfall in production has been noticed in the following States :

**Kerala.** Against the target figures of 4,33,650 and 6,26,150 the actual supply has been only 2,71,349 and 5,50,000 during the first two years.

**Mysore.** Although in the first year the target of 90,000 was exceeded, in the 2nd year as against the target of 3,25,000 seedlings, only 91,307 were supplied. This is because four more nurseries, expected to go into production early, could be established only in 1963-1964.

**Orissa.** As against the production targets of 1,50,000 and 2,00,000 seedlings in the first 2 years, the supply has been only 52,015 and 48,586 respectively.

**West Bengal.** Although the performance in the first year was satisfactory, the supply of seedlings in the second year was only 47,620 as against the target of 90,000.

**Assam.** Here, although the target was exceeded in the first year, in the second year the supply was only 36,031 against the target of 70,000.

The State Governments concerned have been apprised of the situation and requested to make good the shortfall in the remaining years of the Plan period.

#### ITEM No. 4. *Spraying of Coconut Palms in Kerala.*

The number of sprayings targeted for is 1,780 lakh for the Third Plan period. Each spraying unit consists of one supervisor, 10 climbers and 10 pumpmen and is equipped with 10 sprayers. Each unit was expected to do one lakh of sprayings per annum but actually each unit has been able to do only 70,000 sprayings. The targets for the first two years were 180 lakh and 400 lakh against which 64 lakh and 129.12 lakh of sprayings only were actually done.

There is thus a serious shortfall in achievement. Unsuitable climatic conditions, lack of supervisory staff and the reduction in the work load of the spraying units have been reported to be the factors for the shortfall.

Under this scheme 4,100 sprayers are to be supplied to coconut growers at subsidised cost. The supply target for the first year was 100 and that number of sprayers were actually supplied. The target for the second year was 1,000 but the number actually supplied is 100.

ITEM No. 5. *Plant Protection Measures (Madras).*

Under this scheme the distribution of 500 sprayers and pesticides valued at Rs. 5 lakh at 50 per cent subsidy is proposed.

Against the target figures of 50 and 115 for the first two years 12 and 59 sprayers respectively were supplied in those years.

As regards the distribution of pesticides, against a quantity valued at Rs. 34,000 targeted for the first year, only Rs. 2,334 have been spent. In the second year against a quantity valued at Rs. 97,700 only a quantity of the value of Rs. 28,412 was supplied.

ITEM No. 6. *Biological Control of Nephantis serinopa.*

All the 17 stations proposed to be set up for breeding parasites for the biological control of *Nephantis Serinopa* were set up in the first year itself—7 in Kerala, 5 in Madras, 2 in Andhra Pradesh, 2 in Maharashtra and 1 in Mysore.

In Kerala and Madras the targets fixed for the release of parasites were 100 lakh per annum and 43.37 lakh per annum respectively.

The actual numbers released in the first two years were in excess of the targets.

Andhra Pradesh, Maharashtra and Mysore have not fixed any specific targets.

In Maharashtra, as there was little or no infestation by the pest, no parasites were released during the first two years.

In Andhra Pradesh 165,93,845 and 180,17,570 parasites respectively were released in the first two years while in Mysore the corresponding numbers were 2,27,260 and 2,01,660.

ITEM No. 7. *Expansion of Coconut Area in Kerala, Madras and the Andamans.*

Kerala. In this State it has been proposed to bring 957 acres of coastal land and 166 acres of reclaimed Kayal land under coconut. Provision has also been made for 319 irrigation units for use on coastal land. Filter points for the irrigation units are to be supplied on subsidy basis while pumpsets and cultivation and reclamation expenses will be given as loans.

In the first year, loans for cultivating 8 acres of coastal land were issued as against a target of 57 acres. No loans were issued to reclaim Kayal lands. In the second year, loans for cultivating 54.86 acres were issued against the target of 900 acres and loans and subsidy were given for the purchase of 16 filter points and 16 pumpsets.

**Madras.** In Madras under a scheme for settling landless labourers and repatriates from Ceylon on land, 1,500 acres in Ramanathapuram District are proposed to be brought under coconut. In the same district another 7,500 acres are proposed to be brought under the crop by giving suitable financial assistance to *pattadars*.

In the first year only 123 acres were allotted to settlers and 374 acres brought under the crop by *pattadars* while in the second year the corresponding figures were 257 and 1,145 acres respectively.

**The Andamans.** Here the proposals are to bring 1,500 acres under the crop, besides clearing 1,500 acres of jungle land for the purpose.

In the first and second years 620 acres and 351 acres were brought under coconut cultivation.

As regards jungle clearance 170 acres were cleared in the first year against the target of 742 acres while in the second year nothing was accomplished as against a target of 713 acres.

**ITEM No. 8. Provision of Irrigation Facilities in Kerala.**

The target is to provide 625 filter points to be worked by 514 oil engines and 111 electric motors to irrigate an area of 1,875 acres.

The achievement in the first year was nil and the targeted number of 25 filter points, 14 oil engines and 11 electric motors were not supplied. In 1962-63, 97 pumpsets were supplied against a target of 100.

**ITEM No. 9. Coconut Demonstration Farms in certain Swampy Areas in Madras.**

This scheme involves the setting up of three demonstration farms in the Kazhuveli swamp area and one in the Ramanathapuram District. All the four farms were set up in 1961-62 and were functioning in 1962-63.

**ITEM No. 10. Coconut Mother Palm Competition in Madras.**

The scheme is intended to induce coconut cultivators to enter in mother palm competition every year with a view to spotting out



suitable mother palms in those plots for future collection of seednuts. From 1,000 plots 10,000 mother palms are expected to be selected.

In 1961-62, 837 plot owners competed and in 1962-63, 1050, 6738 and 7638 mother palms respectively were selected from the plots entered in the competition during 1961-62 and 1962-63.

ITEM No. 11. *Centralized Collection of Seed Coconuts for Nurseries in Kerala.*

Under this scheme 8 lakh of seed coconuts are scheduled to be collected every year for supply to the nurseries in the State.

In the first year the actual collection was of the order of 7.15 lakh while in the second year the achievement equalled the target of 8 lakh. The target may have to be increased if the shortfall in seedling production noticed in the first 2 years is to be made good and the targets for the remaining 3 years achieved.

ITEM No. 12. *Propaganda Work in Mysore and Madras.*

Mysore. Under the scheme every year the following areas are targeted to be covered by propaganda for the purposes mentioned against them :

1. Improved cultural practices	—	25,600 acres
2. Plant protection measures	—	25,600 „
3. Application of fertilizers	—	25,600 „
4. Irrigation facilities	—	6,400 „

Under the first item in the first two years the achievement was 10,725 and 24,218 acres ; under the 2nd item 2,041 and 4,634 acres ; under the 3rd 5,066 and 8,143 acres and under the 4th, 1,233 and 5,309 acres.

Madras. The targets and achievements in the first two years in Madras State against the various propaganda measures are shown below :

Measure	1961-62		1962-63	
	Target (in acres)	Achievement	Target (in acres)	Achievement
1. Cultural practices	10,000	21,025	20,000	23,588
2. Application of fertilizers	6,000	14,691	12,000	13,866
3. Plant protection	10,000	14,534	20,000	13,711
4. Irrigation facilities	4,000	8,938	8,000	6,974

It may be seen that the targets have been exceeded in almost all cases.

#### VII. CRITICAL ASSESSMENT OF THE LIKELY ACHIEVEMENTS AT THE END OF THE THIRD PLAN

Taking the various schemes one by one in the order in which they have been reviewed in the foregoing pages and in the light of that review, the likely achievements at the end of the Third Plan period may be estimated as follows :

**1. Setting up of Demonstration Plots.** As the shortfall is only in respect of two States, namely, Mysore and Orissa it may be expected to be made up in the remaining years and the target of 2,240 plots achieved at the end of the Plan period. In each of the plots, (since the exact area is not known) it is presumed that there will be on an average 45 bearing palms. From the data available from Madras it is found that on the average 15 nuts per tree over the control could be produced from the fourth year onwards in the treated plots.

Since the manuring season is August-September, additional yield from the plots set up during the first year of the Plan will start showing only from the second half of the Plan period. Therefore, it can be safely assumed that  $\frac{1}{3}$  of the total number of plots set up during the entire Plan period will manifest additional yield at the end of the Third Plan period and the remaining  $\frac{2}{3}$  in the Fourth Plan period. It is on this basis that the additional nuts that can be achieved at the end of the Third Plan period are calculated and the figure is estimated at 5.1 lakh of nuts.

**2. Fertilizer Distribution.** In Kerala, the number of palms treated during the first two years is 9.07 lakh, out of a target of 62.5 lakh. The target fixed for the next 3 years is 103.5 lakh, of which in the light of experience in the first two years, it may be expected that at best 60 per cent will be manured. Thus the anticipated coverage of the number of trees under this scheme in the last three years is 62.1 lakh.

In Orissa during the first two years 8,787 trees were covered as against the target of 29,000 giving 30 per cent achievement. The target fixed for the next three years is 81,000 of which again 60 per cent may reasonably be expected to be manured i.e., the number of trees that will be covered in the last three years will be 48,600.

In the case of West Bengal and the Laccadives it may be seen that the targets fixed have been fully achieved in the first two years. Therefore, it may be taken for granted that the targets fixed for the last three years also will be achieved. The total number of trees

covered during the first two years in West Bengal and the Laccadives was 31,360 and the number that will be covered in the last three years will be 47,040.

Thus the total number of trees altogether covered during the first two years in all the States is 9.47 lakh. The anticipated achievement in terms of trees that will be manured in the last three years of the Plan is estimated to be 63.1 lakh.

It is presumed that when once a tree is manured the cultivator will continue to manure it year after year. Further, manuring is not taken to be discriminative in the sense that the cultivator will cover only the bearing palm and exclude the non-bearing ones. The proportion of bearing palms to the total number of palms is taken to be  $\frac{2}{3}$  as seen from the recent sample surveys.

One-third of the total number of trees expected to be covered by the end of the Third Plan will give additional yield at the end of the Plan period. The remaining  $\frac{2}{3}$  may be expected to show the increased yield only in the Fourth Plan period.

Since the manuring envisaged under the scheme is over and above the usual cultivation and manuring practices adopted by the cultivators, not more than 10 additional nuts per bearing tree can be expected per year. On this basis the additional production that will be available at the end of the Third Plan period is expected to be 161.1 lakh.

**3. Distribution of Coconut Seedlings.** Even though the production trend in some of the States like Kerala and Orissa is not encouraging, the shortfall can be made up to a considerable extent and it should not be difficult to get a 75 per cent result for the Plan period. We may, therefore, expect to have 74 lakh seedlings distributed as against the target of 99 lakh.

It is estimated that about one per cent of the total number of palms is to be replaced every year. The supply of seedlings during the First and Second Plan periods was almost equal to the number required for replacement. The same is the case with the achievements expected during the Third Plan.

**4. Spraying of Coconut Palms in Kerala.** The achievement under spraying scheme in the first two years is 193 lakh of sprayings out of the target of 580 lakh. This works out to 33 per cent. It is expected that 50 per cent of the target fixed for the last three years

will be covered. Thus, 600 lakh of sprayings are expected to be carried out in the last three years.

The spraying is reported to be effective in the control of leaf disease only. It is more of a protective measure in the case of healthy palms. In Kerala it is estimated that in the diseased tracts 2.06 per cent of trees are suffering from the leaf disease. The anticipated number of sprayings that will be covered in the Third Plan is estimated to be 793 lakh. On the assumption that two sprayings at least are given to individual trees, the number of trees covered will be 396 lakh. Among these the number of bearing palms suffering from leaf disease will be 5.44 lakh. One-third per cent of these can be expected to show an increased yield of three nuts per tree by the end of the plan period. This is estimated to be 5.6 lakh. The rest  $\frac{2}{3}$  per cent of the trees will manifest additional yield in the next plan period.

**5. Plant Protection Measures in Madras.** As the sprayers and pesticides under this scheme are sold at 50 per cent cost the targeted quantities may be expected to be disposed of by the end of the Plan period.

**6. Biological Control of *Nephantis serinopa*.** The target fixed for the release of parasites will be fully achieved.

**7. Expansion of Coconut Area.** As the loans advanced under this scheme in Kerala are fairly attractive they may be expected to be availed of fully by the cultivators.

In Madras though the progress of settlement scheme for landless labourers and repatriates from Ceylon and giving aid to *pattadars* is slow, the target may perhaps be achieved at the end of the Plan period.

The total area that will be brought under the crop during the Third Plan period will be 13,123 acres which will be a potential source of production during the Fifth and Sixth Plan periods.

**8. Provision of Irrigation Facilities in Kerala.** The demand for filter points appears to be on the low side, but it need not be a cause for anxiety, for the offtake of pumpsets in the 2nd year has been good and these, no doubt, will be used in conjunction with tanks or wells to irrigate coconut gardens. We may expect all the 625 irrigation units will be availed of to irrigate 1,875 acres. An additional yield of 15 nuts per bearing palm may be expected due to irrigation. One-third of this will become visible by the end of

the Third Plan and the rest during the Fourth Plan. The potential from this source by the end of the Third Plan will be 5.6 lakh nuts.

**9. Coconut Demonstration Farms in certain Swampy Areas in Madras.** All the four demonstration farms have been established and will be continued to the end of the Third Plan and beyond.

**10. Coconut Mother Palm Competition in Madras.** According to present indications, some 40,000-45,000 mother palms may be expected to be spotted out as a result of this scheme by the end of the Plan period.

**11. Centralized Collection of Seednuts in Kerala.** By the end of the Plan period some 35 lakh of seednuts may be expected to be collected for the nurseries in Kerala.

**12. Propaganda Work in Mysore and Madras.** In Mysore the need for intensification of the activities of the propaganda staff is obvious. Effective coverage of larger areas in regard to application of fertilizers, irrigation and plant protection is essential. The tempo of the propaganda activity may be expected to be stepped up.

In Madras the targets have been fixed on a phased basis and according to the present trend of achievement complete fulfilment at the end of the Plan period may be expected.

#### VIII. SUMMING UP OF THIRD PLAN

Thus, it will be seen that the additional annual production potential built up by the end of the Third Plan by Governmental agency alone will be as follows :

1. Demonstration plots	5.1 lakh nuts
2. Fertilizer distribution	161.1 „
3. Sprayings	5.6 „
4. Irrigation	5.6 „
<b>Total</b>	<b>177.4</b>

It is, however, hoped that the actual additional production that will be achieved by the end of the Third Plan, will be more than what was achieved at the end of the Second Plan, viz., 3,500 lakh raw nuts in view of the additional production potential created during the Second Plan period through Government and private efforts. It is not found possible at this stage to make any reasonable estimate in this

regard. The additional production potential expected to be created by the end of the Third Plan will consist of the effects of the expanded developmental programmes undertaken by Government and private efforts put in by individual growers. While it is not possible to make any estimate of the latter, the Governmental measures alone are expected to result in an increased production potential of about 177.4 lakh raw nuts upto the end of the Third Plan which will be sustained during the subsequent Plans as well.

#### IX. PROPOSALS FOR ENHANCING COCONUT PRODUCTION IN FOURTH PLAN

Both short-term and long-term measures are needed to increase production. The former are intended to increase the production within the Fourth Plan period itself while the latter will show their results in the Fifth Plan period and beyond. They will follow, more or less, the same pattern as that of the short and long-term measures now being adopted under the Third Plan.

##### (a) SHORT-TERM MEASURES :

1. Laying out demonstration plots.
2. Distribution of fertilizers.
3. Provision of irrigation facilities.
4. Control of pests and diseases.
5. Intensive cultivation in large blocks on the lines of the Package Programme.
6. Intensive propaganda.

##### (b) LONG-TERM MEASURES :

1. Distribution of quality seedlings.
2. Expansion of area under coconut.

The programme proposed under the various short-term measures are indicated below :

1. **Laying out Demonstration Plots.** The results of research have shown that by regular cultivation and manuring, prompt and timely control of pests and diseases and irrigation during periods of drought, the per tree yield can be raised to 50-55 nuts per annum from the present average yield of 35 nuts per tree. It is important that all these practical results are demonstrated to the cultivators for

adoption. It is, therefore, proposed to start 3,675 fresh demonstration plots in cultivators' gardens covering different soil types distributed in the various states as follows :

States	No. of Plots
Kerala	1,200
Mysore	800
Madras	400
Andhra Pradesh	300
Maharashtra	50
Gujarat	25
Orissa	500
Assam	50
West Bengal	100
Laccadives	200
Andaman and Nicobar Islands	25
Pondicherry	25
Total	3,675

Each plot will not be less than half an acre in extent and on it will be demonstrated all scientific methods of cultivation, manuring, plant protection and irrigation.

As already indicated two-thirds of the additional production on account of the demonstration plots set up during the Third Plan will be available during the Fourth Plan period, this is estimated at 10.1 lakh of nuts. To this has to be added the additional production potential that will be developed from one-third of the number of the fresh plots to be established in the Fourth Plan. This will be of the order of 8.3 lakh. Thus the total potential by the end of the Plan period due to this scheme will be 18.4 lakh of nuts.

**5-ACRE DEMONSTRATION PLOTS.** It is also proposed to set up 5-acre demonstration farms attached to each nursery. In these farms will be demonstrated methods of coconut cultivation right from the beginning—preparing the land, fencing, contour bunding, digging

pits of proper depth, planting of seedlings, watering, shading, etc., etc. There will be 120 demonstration farms like this distributed as follows :

Kerala	35
Mysore	7
Madras	15
Andhra Pradesh	5
Orissa	17
West Bengal	4
Gujarat	1
Maharashtra	1
Assam	20
Pondicherry	3
Laccadives	9
Andamans	2
Tripura	1
Total	<u>120</u>

These farms are not expected to show any production potential within the Fourth Plan period.

**2. Distribution of Fertilizers.** As this measure is likely to show an immediate increase in production, fertilizer distribution schemes assume the greatest importance. Under the Second Plan there was no scheme for the distribution of fertilizers, while under the Third Plan the only scheme of importance in this category is in Kerala. To some extent fertilizer distribution is also made in Orissa, West Bengal and the Laccadives.

During the Fourth Plan period it is suggested that the following number of trees may be covered by the Fertilizer Distribution Schemes in the four southern States :

Kerala	75 lakh
Mysore	15 "
Madras	12 "
Andhra Pradesh	6 "
Total	<u>108</u>



The production potential that will be developed due to manuring in the Fourth Plan, on the same basis as that followed for calculating the potential under the Third Plan, will be as follows :

Kerala	168.2 lakh nuts
Mysore	33.2 —do—
Madras	26.6 —do—
Andhra Pradesh	13.3 —do—
Total	<u>241.3</u>

To this may be added the production potential of 322.3 lakh of nuts developed from the fertilizer distribution schemes of Third Plan.

The total will, therefore, be 563.6 lakh of nuts.

At the rate of 0.79 Kg. of ammonium sulphate, 0.95 Kg. of superphosphate and 0.53 Kg. of muriate of potash, the quantities of fertilizers required for manuring in two consecutive years the 109 lakh of trees phased over the Fourth Plan period will be as follows :

Ammonium Sulphate	17,222 tonnes
Superphosphate	20,710 „
Muriate of Potash	11,554 „

In order to ensure that the fertilizers reach the cultivator in due time and as smoothly as possible, as many agencies as possible should be selected for distribution, the selection depending upon local conditions and the availability of the agency. Twenty-five per cent of the cost of the fertilizers will be given as subsidy and the balance as medium-term loans.

Other ameliorative measures like liming and application of silt and sand may also be taken up in specific areas.

In Kuttanad area of Alleppey District, where the soil is acidic, lime may be applied at the rate of 2 to 3 Kgs. per tree per annum to cover 10 per cent of the area. Silt may be applied in 10 per cent of the sandy area under coconut in Alleppey and Kottayam Districts of Kerala State. Twenty-five per cent of the cost of lime and silt may be given as subsidy, the balance being met by the cultivators themselves. The area expected to be covered is 30,470 acres.

**3. Irrigation Facilities.** Coconut is mostly grown along with other crops like arecanut and it is not, therefore, feasible or proper to

make separate provision for the irrigation of the coconut crop. It is, however, a matter of vital importance that in order to step up production the coconut palms should be irrigated during periods of drought. State Governments should, therefore, make adequate provision under their minor irrigation programmes for the irrigation of coconut gardens as well. It is proposed to bring 32,000 acres under this scheme as follows :

Kerala	20,000 acres
Mysore	7,000 „
Madras	2,500 „
Andhra Pradesh	2,500 „
Total	<u>32,000</u>

On the basis of the method followed earlier the production potential due to irrigation at the end of the Fourth Plan period will be as follows :

Kerala	60.1 lakh nuts
Mysore	12.1
Madras	11.0 „
Andhra Pradesh	6.9 „
Total	<u>90.1</u>

To this has to be added the potential of 11.2 lakh developed from the Third Plan in Kerala and thus at the end of Fourth Plan the potential from irrigation facilities developed will be of the order of 101.3 lakh nuts.

#### 4. Pest and Disease Control

(a) **SPRAYING SCHEME IN KERALA.** To prevent the leaf rot disease and to hold in check the root (wilt) disease and thereby prevent loss in yield of nuts, it is considered essential to continue the spraying scheme in Kerala during the Fourth Plan period. Since it could be observed that the present system of spraying under the direct auspices of Government is not found to achieve the target fixed, it is proposed that the responsibility for the spraying operation may be vested in the Panchayats, the Departmental agency lending a hand only where the Panchayats are not functioning. Simultaneously, cultivators may be encouraged to purchase sprayers and do the spraying themselves.

It is suggested that for the Fourth Plan period the target number of sprayings may be fixed at 3,000 lakh and the number of sprayers to be sold on subsidy basis may be fixed at 5,000.

The additional production potential, worked out on the same basis as under the Third Plan that will be realised in the last year of the Plan period is 20.6 lakh of nuts. To this may be added the production potential becoming available from the Third Plan, namely, 11.1 lakh. The total additional production potential will thus be 31.7 lakh of nuts.

(b) **BIOLOGICAL CONTROL OF NEPHANTIS SERINOPA.** The number of stations for breeding parasites of *Nephantis serinopa* may be increased from the present 17 to 28 of which 10 will be in Kerala, 8 in Madras, 3 in Andhra Pradesh, 2 in Maharashtra, 3 in Mysore, 1 in Goa and 1 in Pondicherry.

**5. Intensive Cultivation of Coconut in Large Blocks on the Lines of the Package Programme.** It is proposed to start 140 blocks, each at least 1,000 acres in extent, in which intensive cultivation of coconut will be pursued on the lines of the Package Programme. Of these, 80 will be in Kerala, 30 in Mysore, 16 in Madras, 8 in Andhra Pradesh, 2 in Orissa, 2 in Maharashtra and 2 in West Bengal.

At the rate of 15 nuts per tree per annum the additional production potential in the last year of the Fourth Plan will be 327 lakh of nuts.

#### PUBLICITY AND PROPAGANDA

The importance of publicity and propaganda in the furtherance of the development of a crop like the coconut, hardly needs emphasis, particularly when the cultivation is largely in the hands of uneducated farmers with small scattered holdings.

An intensive drive for better methods of cultivation and management including diseases and pest control, will have to be one of the principal means of achieving increased production of coconut in the country. For this purpose, Government will not only have to provide adequate supplies of propaganda material and other pre-requisites like seedlings, plant protection equipment and training facilities for field workers but also to ensure that field staff of proper calibre in sufficient numbers is made available in every village in the principal producing centres. The Village Panchayats and the agricultural extension staff will have to be given full responsibility for rendering advice and arranging supplies of material according to a pre-determined plan of operation during the Five Year Plan period.

Every Government farm, research institute and nursery concerned with coconut should be utilised as model centres for demonstration purpose. For areas which are remote from these demonstration centres, arrangements will have to be made for mobile units for propaganda through recognised media such as literature, audio-visual methods, etc. As propaganda and publicity cannot obviously be organised solely for individual crops like coconut, the requirements in respect of this commodity will have to be provided for inadequate measure in the State agricultural publicity programme and in the budgets of the existing demonstration farms and the farms to be set up hereafter. The Indian Central Coconut Committee as a central co-ordinating agency for all these activities, should arrange for the right type of publicity material and a good central library-cum-museum apart from providing facilities for training field workers.

#### Long Term Measures

**Distribution of Quality Seedlings.** It is proposed to produce under the Fourth Plan 104.5 lakh of coconut seedlings, the State-wise distribution of which is as shown below :

State	Target number of seedlings for Production
1. Kerala	32,15,000
2. Mysore	13,90,000
3. Madras	16,15,000
4. Andhra Pradesh	7,50,000
5. Orissa	13,00,000
6. Gujarat	8,00,000
7. Maharashtra	75,000
8. Assam	4,35,000
9. West Bengal	6,05,000
10. Pondicherry	75,000
11. Laccadives	40,000
12. Andamans	1,20,000
13. Tripura	30,000
Total	<u>1,04,50,000</u>

Of the above number of seedlings, 75 lakh will be required for replacement and rest, namely, 29.5 lakh will be available for fresh

planting to cover an area of 42,000 acres. The production potential from this area will be visible only during second half of the Fifth Plan.

#### Expansion of Area

During the Fourth Plan period it is proposed to plant coconuts on the banks of canals and channels.

**Kerala.** There is no possibility of planting coconuts on the banks of irrigation canals. However, it would be possible to cultivate coconut on the bunds round the R. Block Kayal land of the 'Holland Scheme' having a total length of 6 miles. As the bunds are 40 ft. wide, 2 rows of coconut, one row of arecanut and banana can be grown on them. Facilities in the form of subsidized long-term loans should be given to the paddy cultivators of the Kuttanad area to erect permanent bunds of 10 ft. width for planting one line of coconut on these bunds. It is estimated that about 50 miles in length of such bunds could be constructed on the borders of paddy field in the Kuttanad area for the planting of coconuts on them. These bunds, apart from protecting the paddy fields from flooding, will facilitate the growing of coconuts, arecanut and banana crops on them. A total number of 16,370 coconut trees can thus be grown.

**Mysore.** 5,28,000 seedlings can be planted on both sides of canals extending over a length of 1,000 miles in the Districts of Bangalore, Chitaldurg, Tumkur and Mandya.

**Madras.** The State Government have already taken up planting on the banks of canals extending over a length of 470 miles. During the Fourth Plan planting may be taken up along the banks of embankments covering a length of 1,000 miles. A total number of 5,28,000 seedlings can be planted up.

**Andhra Pradesh.** The length of the canals in Andhra Pradesh is 1,11,32,190 ft. If half the area is covered, a total number of 5 lakh of seedlings can be planted up.

**Maharashtra.** It is reported that patches of land along the rivers Godavari and Purna are fit for coconut cultivation. But as these rivers go dry during the hot weather and there is great scarcity of water for irrigation, it may not be possible to take up coconut cultivation.

**West Bengal.** The total length of the canals where coconut cultivation can be taken up is 876 miles. The State Government has already taken up a programme for planting 55,000 trees on the embankments of canals covering a length of 100 miles. During the Fourth Plan, planting of trees on the embankments of canals extending 400 miles may be taken up. 2,06,200 trees can thus be planted.

**Gujarat.** A recent inspection of the coconut-growing areas in Gujarat by the officers of the Indian Central Coconut Committee and Indian Central Arecanut Committee has revealed that 70,000 acres in the State are available for coconut cultivation. A beginning may be made to plant up this area during the Fourth Plan. At the end of the Fourth Plan 10,000 acres may be brought under the crop.

**Orissa.** The Orissa Government have already taken up a programme for planting 5 lakh of seedlings on river embankments. During the Fourth Plan another 2 lakh seedlings covering 400 miles may be planted.

Thus, in all, 26.8 lakh of seedlings will be required for planting up the above-mentioned areas of about 38,300 acres. This number of seedlings could be found from the 29.5 lakh of seedlings that will be available for new planting from the production of seedlings during Fourth Plan.

The developmental measures proposed in the Fourth Plan will also cover the new territory of Goa which is reported to have at present about 46,000 acres under coconut and to possess good scope for development work. The actual measures to be adopted will be determined on the basis of a survey to be undertaken in the territory.

#### X. ESTIMATES OF FINANCIAL REQUIREMENTS

Estimates of financial requirements are given in Appendix III.

#### XI. SUMMING UP OF FOURTH PLAN

The statements given as Appendices IV and V give the physical targets for the Fourth Plan fixed in the light of the experience of the Third Plan and the additional production potential estimated to be achieved in terms of nuts during the last years of the Third and Fourth Plans.

As may be seen from Appendix V the additional production

potential in the last year of the Fourth Plan will be as follows :

1. Demonstration plots	18.4 lakh nuts
2. Fertilizer distribution	563.6    "
3. Irrigation	101.3    "
4. Package Programme	327.0    "
5. Spraying	31.7    "
Total	<u>1,042 0</u>

Here again the additional production potential of 1,042 lakh of raw nuts expected to be developed by the end of Fourth Plan is from Government efforts alone. The impact of the Governmental measures on the individual cultivator, and the additional production that may be realised by his own efforts is difficult to estimate realistically at this stage. But it may be safely assumed from past experience that by the combined efforts of Government and private individuals it may be possible to achieve an additional production of 4,000 lakh raw nuts by the end of Fourth Plan above what could be achieved at the end of the Third Plan.

### XIII. DEMAND PROTECTIONS OVER THIRD AND FOURTH PLAN PERIODS AND EXPETED SUPPLY POSIION OF INDIGENOUS COCONUT

The present total availability of coconut in India consists of indigenous production and the restricted imports. This, however, does not fully represent the total demand. Therefore, the maximum imports during the last decade has been taken into consideration in working out demand trend for Third and Fourth Plan period. The reliable data on production available from recent sample survey for the year 1961-62, viz., 4,321 million nuts and the nut equivalent of maximum import during the last decade, viz., 1,000 million nuts have been summed up to give the total demand of the country for the year 1961-62. It is estimated that out of the nuts produced within the country and the nut equivalent of imported copra 80 per cent is used in households either as raw nuts, copra or coconut oil. The balance 20 per cent is used in the soap and toilet industries.

The actual rate of growth of population during the period 1961-62 was 2.15 per cent per annum. In 1962, the rate was estimated at 2.30 per cent based on sample surveys. It is presumed that demand for coconut in the households will increase in tune with the increase in population. Hence the rate of growth of population (2.3%) has

been applied to get at the household demand at different points of time. The increase in demand in the industrial sector has been worked out on the basis of actual trend of production of soap (in the organised sector) observed during the last 3 years. The figure for estimated demand at different points of time and likely supply at the end of the Third and Fourth Plan periods on the assumption that increase by the private and Governmental efforts during the two plan periods will be of the order of 350 and 400 million additional nuts respectively, are given in Appendix VI. It would thus appear that the likely deficit at the end of Fourth Plan will be of the order of 1,865 million nuts.



APPENDIX—I  
AREA UNDER AND PRODUCTION OF COCONUTS IN INDIA DURING 1961-62

State	Area		Production (in thousand nuts)
	In acres	In hectares	
1. Kerala	1,209,656	525,964	2,371,750
2. Madras	1,77,630	71,885	837,110
3. Mysore	302,375	122,370	631,678
4. Maharashtra	17,535	7,096	27,821
5. Gujarat	13,000	5,261	27,300
6. Andhra Pradesh	89,454	36,201	195,264
7. *Orissa	11,097	4,491	61,581
8. *West Bengal	16,500	6,677	22,205
9. Assam	7,778	3,148	10,232
10. *Andamans	18,500	7,487	33,273
11. *Laccadives	5,860	2,371	8,751
12. *Pondicherry	3,160	1,279	12,538
13. *Goa — —	46,158	18,680	81,985
Grand Total	2,008,704	812,911	4,321,488

\*Official figures and the rest Survey figures.

## APPENDIX—II

STATE-WISE BREAK-UP OF THE ADDITIONAL TARGET FOR PRODUCTION  
AT THE END OF THE THIRD PLAN

( in Million nuts )	
1. Kerala	500
2. Mysore	100
3. Madras	100
4. Andhra Pradesh	40
5. Orissa	8.80
6. West Bengal	12.50
7. Maharashtra	10.53
8. Gujarat	0.57
9. Assam	1.30
Total	773.70

APPENDIX—III

ESTIMATES OF FINANCIAL REQUIREMENTS FOR THE FOURTH PLAN

Name of Measure : Laying out Demonstration Plots

Name of State	1966-67	1967-68	1968-69	1969-70	1970-71	Total
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1. Kerala	91,200	91,200	91,200	91,200	91,200	4,56,000
2. Mysore	60,800	60,800	60,800	60,800	60,800	3,04,000
3. Madras	30,400	30,400	30,400	30,400	30,400	1,52,000
4. Andhra Pradesh	22,800	22,800	22,800	22,800	22,800	1,52,000
5. Maharashtra	3,800	3,800	3,800	3,800	3,800	19,000
6. Gujarat	1,900	1,900	1,900	1,900	1,900	9,500
7. Orissa	38,000	38,000	38,000	38,000	38,000	1,90,000
8. West Bengal	7,600	7,600	7,600	7,600	7,600	38,000
9. Assam	3,800	3,800	3,800	3,800	3,800	19,000
10. Laccadives	15,200	15,200	15,200	15,200	15,200	76,000
11. Andama and Nicobar Islands	2,280	2,280	2,280	2,280	2,285	11,405
12. Pondicherry	1,900	1,900	1,900	1,900	1,900	9,500
<b>Total</b>	<b>2,79,680</b>	<b>2,79,680</b>	<b>2,79,680</b>	<b>2,79,680</b>	<b>2,79,685</b>	<b>13,98,405</b>

APPENDIX-III (Contd.)

Name of Measure : Distribution of Fertilizers

(a) N.P.K. Fertilizers

Name of State	1966-67	1967-68	1968-69	1969-70	1970-71	Total
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1. Kerala	11,98,482	23,96,964	23,96,964	23,96,964	11,98,482	95,87,856
2. Mysore	2,36,542	4,73,084	4,73,084	4,73,084	2,36,542	18,92,336
3. Madras	1,89,234	3,78,468	3,78,468	3,78,468	1,89,234	15,13,872
4. Andhra Pradesh	94,617	1,89,234	1,89,234	1,89,834	94,617	7,56,936
Total	17,18,875	34,37,750	34,37,750	34,37,750	17,18,875	137,51,000*

(b) Other Ameliorative Measures (liming and application of fertilizers)

1. Kerala	2,72,740	2,72,740	2,72,740	2,72,740	2,72,740	13,63,700**
Grand Total	19,91,615	37,10,490	37,10,490	37,10,490	19,91,615	151,14,700

\*25% of the cost of N.P.K. Fertilizers will be subsidy and the balance granted as medium term loan.

\*\* Only subsidy for liming and application of silt is shown in the above Table.

**APPENDIX—III (Contd.)**

**Name of Measure : Posts and Diseases Control**

**SPRAYING SCHEME**

Name of State	1966-67	1967-68	1968-69	1969-70	1970-71	Total
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
<b>Spraying Scheme in Kerala</b>						
(a) Department Scheme	72,64,000	70,16,175	69,76,050	70,21,050	70,39,050	353,16,325
(b) Subsidised distribution of sprayers	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000	5,00,000
<b>Total</b>	<b>73,64,000</b>	<b>71,16,175</b>	<b>70,76,050</b>	<b>71,21,050</b>	<b>71,39,050</b>	<b>3,58,16,325</b>

APPENDIX—III (Contd.)

Name of Measure : Pests and Diseases Control

BIOLOGICAL CONTROL OF NEPHANTIS SERINOPA

Name of State	1966-67	1967-68	1968-69	1969-70	1970-71	Total
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1. Kerala	2,90,540	3,05,660	3,11,300	3,16,220	3,21,140	15,44,860
2. Mysore	31,514	28,174	28,590	29,100	29,500	1,46,878
3. Madras	76,300	53,500	53,600	54,200	55,400	2,93,000
4. Andhra Pradesh	44,290	44,990	45,600	46,400	47,200	2,28,480
5. Maharashtra	22,000	22,512	22,814	23,106	23,410	1,13,842
6. Pondicherry	9,500	6,700	6,800	6,850	6,900	36,750
7. Goa	9,500	6,700	6,800	6,850	6,900	36,750
Total	4,83,644	4,68,236	4,75,504	4,82,726	4,90,450	24,00,560

**A PENDIX—III (Contd.)**

**Name of Measure : Intensive Cultivation of Coconut in Large Blocks on the lines of the Package Programme**

Name of State	1966-67	1967-68	1968-69	1969-70	1970-71	Tctal
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1. Kerala	56,41,600	51,80,800	52,02,080	52,19,360	52,34,720	264,77,760
2. Mysore	5,93,400	5,86,080	5,90,760	5,95,440	6,00,120	29,65,800
3. Madras	8,39,104	8,22,592	8,25,280	8,40,000	8,56,000	41,82,976
4. Andhra Pradesh	7,35,360	7,32,704	7,34,048	7,35,392	7,36,736	36,74,240
5. Orissa	1,83,840	1,83,176	1,83,512	1,83,840	1,84,184	9,18,560
6. Maharashtra	1,83,840	1,83,176	1,83,512	1,83,848	1,84,184	9,18,560
7. West Bengal	1,83,840	1,83,176	1,83,512	1,83,848	1,84,184	9,18,560
Total	83,60,984	78,70,904	79,02,904	79,41,736	79,80,128	400,56,456

Only the net expenditure excluding loans have been included in the statement.

**NAME OF MEASURE : PROPAGANDA**

Office of the Indian Central Coconut Committee	3,00,000	3,00,000	3,00,000	3,00,000	3,00,000	15,00,000
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APPENDIX—III (Contd.)

Name of Measure : Distribution of Seedlings

Name of State	1966-67	1967-68	1968-69	1969-70	1970-71	Total
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1. Kerala	8,03,750	8,03,750	8,03,750	8,03,750	8,03,750	40,18,750
2. Mysore	3,47,500	3,47,500	3,47,500	3,47,500	3,47,500	17,37,500
3. Madras	4,03,750	4,03,750	4,03,750	4,03,750	4,03,750	20,18,750
4. Andhra Pradesh	1,87,500	1,87,500	1,87,500	1,87,500	1,87,500	9,37,500
5. Orissa	3,25,000	3,25,000	3,25,000	3,25,000	3,25,000	16,25,000
6. Gujarat	2,00,000	2,00,000	2,00,000	2,00,000	2,00,000	10,00,000
7. Maharashtra	18,750	18,750	18,750	18,750	18,750	93,750
8. West Bengal	1,51,250	1,51,250	1,51,250	1,51,250	1,51,250	7,56,250
9. Assam	1,08,750	1,08,750	1,08,750	1,08,750	1,08,750	5,43,750
10. Pondicherry	18,750	18,750	18,750	18,750	18,750	93,750
11. Laccadives	10,000	10,000	10,000	10,000	10,000	50,000
12. Andamans	30,000	30,000	30,000	30,000	30,000	1,50,000
13. Tripura	7,500	7,500	7,500	7,500	7,500	37,500
<b>Total</b>	<b>26,12,500</b>	<b>26,12,500</b>	<b>26,12,500</b>	<b>26,12,500</b>	<b>26,12,500</b>	<b>130,62,500</b>



APPENDIX—III (Contd.)

Name of Measure : Expansion of area

Name of State	1966-67	1967-68	1968-69	1969-70	1970-71	Total
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1. Kerala						
(a) Subsidy for erection of bunds	2,50,000	2,50,000	2,50,000	2,50,000	2,50,000	12,50,000
(b) Expenditure for cultivation of coconut	* —	—	—	—	—	—
2. Mysore	1,81,000	3,62,000	5,43,000	7,24,000	9,05,000	27,15,000
3. Madras	1,81,000	3,62,000	5,43,000	7,24,000	9,05,000	27,15,000
4. Andhra Pradesh	1,71,400	3,42,800	5,14,200	6,85,600	8,57,000	25,71,000
5. West Bengal	70,680	1,41,360	2,12,040	2,82,720	3,53,400	10,60,200
6. Gujarat	* —	—	—	—	—	—
7. Orissa	68,570	1,37,140	2,05,710	2,74,280	3,42,850	10,28,550
Total	9,22,650	15,95,300	22,67,950	29,40,600	36,13,250	1,13,39,750

\*As planting of coconut will be on private lands, loans are proposed to be given to cultivators for cultivation expenses. As the amount is fully recoverable, it has not been shown above.

APPENDIX-III (Contd.)

RECEIPTS ANTICIPATED FROM THE SCHEMES FOR THE FOURTH PLAN PERIOD

Name of State	Demonstration plots	Distribution of fertilizers	Spraying scheme	Biological control of <i>N. serinopa</i>	Intensive cultivation of coconuts	Distribution of seedlings	Expansion of area
1. Kerala	—	—	1,80,00,000	—	—	19,29,000	—
2. Mysore	—	—	—	—	—	8,34,000	—
3. Madras	—	—	—	—	—	10,49,750	—
4. Andhra Pradesh	—	—	—	—	—	4,50,000	—
5. Maharashtra	—	—	—	—	—	45,000	—
6. Gujarat	—	—	—	—	—	4,80,000	—
7. Orissa	—	—	—	—	—	7,80,000	—
8. West Bengal	—	—	—	—	—	6,05,000	—
9. Assam	—	—	—	—	—	4,35,000	—
10. Laccadives	—	—	—	—	—	24,000	—
11. Andamans and Nicobar Islands	—	—	—	—	—	72,000	—
12. Pondicherry	—	—	—	—	—	45,000	—
13. Goa	—	—	—	—	—	—	—
14. Tripura	—	—	—	—	—	18,000	—
Total	—	—	1,80,00,000	—	—	67,66,750	—

APPENDIX—III (Concluded)

ABSTRACT OF EXPENDITURE AND RECEIPTS FOR THE FOURTH PLAN PERIOD

Name of measure	Gross expenditure	Receipts	Net expenditure
	Rs.	Rs.	Rs.
1. Laying out Demonstration plots	13,98,405	—	13,98,405
2. Distribution of fertilizers			
(a) N.P.K. fertilizers	34,37,750	—	34,37,750
(b) Other ameliorative measures	13,63,700	—	3,63,700
3. Pests and diseases control			
(a) Spraying scheme	3,58,16,325	1,80,00,000	1,78,16,325
(b) Biological control of <i>N. serinopa</i>	24,00,560	—	24,00,560
4. Intensive cultivation of coconut in large blocks on the lines of the Package Programme	4,00,56,456	—	4,00,56,456
5. Propaganda	15,00,000	—	15,00,000
6. Distribution of seedlings	1,30,62,500	67,66,750	62,95,750
7. Expansion of area	1,13,39,750	—	1,13,39,750
<b>Total</b>	<b>11,03,75,446</b>	<b>2,47,66,750</b>	<b>8,56,08,696</b>

APPENDIX-IV

PHYSICAL TARGETS FIXED AND EXPECTED TO BE ACHIEVED IN THIRD AND FOURTH PLAN PERIODS

S. No.	Particulars	Third Five Year Plan			Target for Fourth Plan	
		Achievement during 1st two years	Anticipated in next 3 years	Total anticipated achievement		
1.	Demonstration plots (Nos.)	1488	752	2240	2240	3675
2.	(a) Fertilizer distribution (N.P.K.) (trees covered in lakhs)	9.4	63.1	72.5	167.9	109
	(b) Area to be covered-other ameliorative measures					30470
3.	Irrigation (area in acres)	50	1825	1875	1875	32,000
4.	Intensive cultivation blocks (1000 acres) No.	—	—	—	—	140
5.	Spraying (lakh)	193 lakh	600 lakh	793 lakh	1780 lakh	3000 lakh
6.	Seedlings distributed	52 lakh	52 lakh	74 lakh	99 lakh	104.5 lakh
7.	Fresh area planted (in acres)	3003	10120	13123	13123	38300
8.	Five-acre demonstration farms	—	—	—	—	120

## APPENDIX—V

ADDITIONAL PRODUCTION POTENTIAL ESTIMATED TO BE ACHIEVED  
IN TERMS OF NUTS (LAKH) DURING THE LAST YEARS OF THIRD  
AND FOURTH PLANS

Sl. No.	Particulars	1965-66 (Final year of the Third Plan)	1970-71 (Final year of the Fourth Plan)
1.	Demonstration plots	5.1	18.4
2.	Fertilizer distribution	161.1	563.6
3.	Irrigation	5.6	101.3
4.	Intensive cultivation blocks	—	327.0
5.	Spraying	5.6	31.7
Total		177.4	1,042.0

## APPENDIX—VI

DEMAND PROJECTIONS OF COCONUT DURING THIRD AND FOURTH  
PLAN PERIODS

Plan No.	Year	Demand in million nuts		Total Demand	Likely supply of indigenous coconut
		Household	Industry		
Third	1961-62	4259	1064	5321	—
	1962-63	4335	1136	5491	
	1963-64	4455	1208	5663	
	1964-65	4557	1289	5837	
	1965-66	4662	1352	6014	4671
Fourth	1966-67	4769	1424	6193	
	1967-68	4879	1496	6375	
	1968-69	4991	1568	6559	
	1969-70	5106	1640	6746	
	1970-71	5224	1712	6936	5071