

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



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REPORT
OF THE WORKING GROUP FOR THE FORMULATION
OF FOURTH FIVE YEAR PLAN PROPOSALS

ON

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PREFACE

PREPARATORY work for the formulation of proposals for agricultural development under the Fourth Five Year Plan was taken up in the Ministry of Food and Agriculture in June, 1963 at the instance of the Planning Commission. Following the lines adopted in connection with the preparation of Third Five Year Plan, a Working Group on Arecanut 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.
3. To formulate proposals for the Fourth Five Year Plan in the perspective, wherever 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 considerations 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 proposal 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 Arecanut*

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SUMMARY

1. **Importance of Arecanut.** Though arecanut is one of the important commercial crops of the country, it has not been considered as a necessity for the community, nor has it any material export value. However, it is extensively used by rich and poor alike, particularly the poorer classes and it figures prominently in our religious and social life. It is also the means of livelihood for three million people. Therefore, proper attention is necessary for the further improvement and development of this crop. The present production of approximately 95,000 tonnes from an area of 1.17 lakh hectares valued at about Rs. 5,400 lakhs is largely accounted for by Kerala (47,000 tonnes) followed by Mysore (27,000 tonnes) and Assam (14,000 tonnes). The production in the other States, viz., West Bengal, Maharashtra, Madras, Andhra Pradesh, Orissa and Gujarat is insignificant.

The internal production of arecanut is inadequate for meeting the demand for consumption. Until 1957-58, substantial quantities were being imported from Ceylon, Malaya and Singapore to make up the deficit. Since then, however, in view of the difficult foreign exchange position, imports have been gradually reduced. No imports were allowed in the second half of 1962-63. However, during the half year April-September 1963, a ceiling of Rs. 10.5 lakhs has been fixed for import through the State Trading Corporation. Nothing can be said regarding imports in future, but judging from the continuing acute foreign exchange situation, it is unlikely that any material imports will be permitted.

On the basis of the total availabilities (production plus imports) up to 1957-58 when unrestricted imports were allowed and making allowance for a net increase in consumption due to increase in population, it is roughly estimated that our present deficit will be of the order of 20 to 25 thousand tonnes, even though the per capita consumption of arecanut may fall to some extent due to high prices and spread of education. Considering the non-essential nature of the crop and having regard to the fact that it has no export value, it is proposed that the gap between indigenous production and requirements for internal consumption should be made up by increasing per acre yields rather than by any material increase in the area under the crop.

2. **Work Done in Previous Plans.** Development work on arecanut has been undertaken since the First Plan when efforts were concentrated on the establishment of arecanut nurseries for raising

and distributing quality seedlings besides encouraging cooperative marketing. The activities during the Second Plan included establishment of new nurseries, laying out demonstration plots, financial assistance for irrigation and supply of fertilizers and manures, subsidised distribution of plant protection equipment and chemicals, and publicity and propaganda. By these measures, though the area under the crop was increased beyond the targeted figure, the additional production achieved fell appreciably short of the prescribed target. The main reason for this shortfall was that the schemes for financial assistance for short-term measures like irrigation and supply of fertilizers and manures could not be implemented by the State Governments for administrative and other reasons.

During the Third Plan, the development programmes launched during the Second Plan have been continued and intensified. But except in Kerala and Mysore States, all the contemplated measures have not been introduced. On the basis of the achievement during the first two years of the Third Plan, it has been estimated that the additional production during the Third Plan period would be only about 5,820 tonnes as against the target of 9,540 tonnes. The reasons for this anticipated shortfall are more or less the same as during the Second Plan period.

3. Anticipated Development in Fourth and Fifth Plans.

On the basis of an overall deficit of 20 to 25 thousand tonnes as stated earlier, it is proposed that the target of additional production during the Fourth Plan period should be fixed at 8,500 tonnes, to be achieved by the three principal producing States, viz., Kerala, Mysore and Assam. Except for under-planting and inter-planting, no new area is proposed to be brought under the crop as a result of the Plan programme. The target of additional production for the Fifth Plan period would also be more or less the same.

4. Measures to be Adopted. The measures to be adopted will be the same as in the previous Plans with the difference that efforts will be concentrated in the three main producing States, viz., Kerala, Mysore and Assam. The principal measures and the targets to be achieved under each are :

- (i) application of fertilizers and manures (4,000 tonnes) ;
- (ii) irrigation (2,000 tonnes) ;
- (iii) plant protection (1,230 tonnes) ; and
- (iv) newly planted areas coming into bearing (1,270 tonnes).

Besides this, it is considered that special attention should be devoted to the further development of cooperative marketing by strengthening the existing growers' cooperative societies and promoting new societies, and if possible, by assigning to all such societies,

suitable targets for effecting increase in production through the various measures proposed.

In order to achieve best results by the adoption of these measures it is proposed that Package Programmes should be organised in a few of the most favourable districts in the three States, preferably linked with I.A.D. Programme of the Ministry of Food and Agriculture and/or similar Package Programmes proposed in respect of coconut. It will be an advantage if at least two districts in each of the three States can be taken up for such work.

As coconut, arecanut and pepper are generally grown together in the States of Kerala, Mysore and Assam, it is proposed that the agencies responsible for the execution of the development programmes on all these crops should be suitably integrated so as to avoid overlapping and waste of effort.

5. **Finance.** For the above purposes including the additional administrative expenditure involved, the total financial outlay during the Fourth Plan period is estimated at Rs. 552.40 lakhs.

(i) Expenditure on development schemes	Rs 56.40 lakhs
(ii) Loans—fertilizer, irrigation and other loans	Rs. 496.00 „
(iii) Fresh expenditure on the expansion of existing research stations, development of arecanut in Goa, the Laccadives and Maldiv Islands, and marketing	Rs. 24.28 „

A summary statement of the Working Paper on Arecanut indicating the Programme for the Fourth and Fifth Plans at a glance is given in Appendix A.

WORKING PAPER ON ARECANUT DEVELOPMENT

I. INTRODUCTION

ARECANUT, commonly known as betelnut, is one of the important commercial crops of this country. It is chiefly used by the people for chewing purposes in its tender, ripe and processed forms.

The arecanut crop occupies a place of unique importance in India inasmuch as it is a source of livelihood for nearly three million people in this country. The chief growing areas are distributed in the States of Kerala, Mysore and Assam and to a smaller extent in certain areas of West Bengal, Madras, Maharashtra, Gujarat, Andhra Pradesh and Orissa.

The total area under the crop is estimated at 1,16,833 hectares and the total production in terms of processed nuts at 95,173 metric tonnes. The State-wise details of the area and production are given in Appendix I.

The production of arecanut in the country is insufficient to meet the local demand. Consequently we have been importing large quantities of betelnuts from other producing countries such as Ceylon, Malaya and Singapore during the past years. The estimated deficit was of the order of 40 thousand metric tonnes, but on account of the difficult foreign exchange position, only 10 thousand metric tonnes of betelnuts valued at Rs. 45 lakhs were imported in 1961-62. For the half year April to September 1962, a ceiling of Rs. 14.55 lakhs was fixed for imports of betelnuts by the State Trading Corporation and by established importers. However, no imports were allowed for the second half of 1962-63. For the half year April to September 1963, a ceiling of Rs. 10.5 lakhs has been fixed for import of betelnuts by the State Trading Corporation. No decision has yet been taken in respect of ceiling for the half year October 1963 to March 1964. However, judging from the import figures of the past ten years, the average annual import of arecanuts into the country comes to 27,111 tonnes vide Appendix II.

The production of arecanut in the country during the period from 1952-53 to 1961-62 is also given in Appendix II and the average annual production on this basis comes to 86,382 metric tonnes. The average annual total consumption in the country for a period of ten years, therefore, comes to 113,493 metric tonnes vide Appendix II.

In addition to this shortage we have also to keep in view the

increasing population of the country and the increase in the consumption thereof. The statistics for the ten years 1952-53 to 1961-62, however, indicate that the consumption of arecanut during this period has not only not increased but has definitely decreased. It has come down from 118.59 thousand metric tonnes in 1952-53 to 105.21 thousand metric tonnes in 1961-62. This may be due to rise in prices or reduction in the chewing habit of the people with the advance in education. However, keeping a margin for increase in consumption when the country becomes self-sufficient, fall in prices and also for the increase in population, it is estimated that our annual requirements of arecanut for the Fourth and Fifth Plan periods are not likely to exceed 115 thousand metric tonnes. We have, therefore, to plan ahead keeping in view a target production of 115 thousand metric tonnes or about 30.81 lakhs standard maunds. The production during 1960-61, namely, at the end of the Second Five Year Plan, was estimated at 95.69 thousand metric tonnes. We were, therefore, short of about 20 thousand metric tonnes only or about 5.5 lakhs standard maunds at the end of the Second Five Year Plan period, and this deficiency has to be made up during the Third, Fourth and Fifth Five Year Plans.

II. ASSESSMENT OF THE ACHIEVEMENTS DURING THE FIRST AND SECOND FIVE YEAR PLANS

A. First Five Year Plan

Arecanut crop, as such, was not included in the First Five Year Plan. However, the Indian Central Arecanut Committee, established for arecanut development in 1949, did something out of its own funds. As regards its activities in the sphere of development, the Committee could not do much during the First Plan period, except for concentrating on establishing some arecanut nurseries for distribution of quality seedlings in the potential regions like Assam, West Bengal and in the North Kerala region. In all, 1,52,600 seedlings were raised and distributed from these nurseries. Most of these seedlings were used for under-planting in the existing gardens and, therefore, there was no appreciable extension of area under arecanut during the First Five Year Plan period. To a certain extent, plant protection work was also done through an Extension Service Scheme taken up by the Committee in the years 1950-51 and 1951-52 in the erstwhile States of Mysore and Travancore-Cochin. Besides development work on the crop, cooperative marketing was encouraged by means of financial assistance towards the cost of establishment of a cooperative society in the erstwhile Madras State. No other projects for development as such were included in the Committee's programme for the First

Five Year Plan, and no research stations were set up under the Committee.

B. Second Five Year Plan

Arecanut development was duly included in the Second Five Year Plan and a total amount of Rs. 40.61 lakhs was allotted for this purpose in the Plan as follows :

- | | |
|-------------------------------------|-----------------|
| 1. For development in the States | Rs. 14.11 lakhs |
| 2. For research under the Committee | Rs. 26.50 lakhs |

The break-up of the allotment of Rs. 14.11 lakhs among the various States and the actual expenditure against this allotment are given in Appendix III.

A target of increase in area under arecanut by 3,823 hectares (9,200 acres) and an additional production of 18,930 metric tonnes (5,07,200 st. maunds) was aimed at the end of the Second Plan. The State-wise distribution of the targets of additional area and production is given in Appendix IV.

The actual measures contemplated for achieving these targets were :

- (i) establishment of new nurseries ;
- (ii) laying out demonstration plots ;
- (iii) grant of loans for pump sets, tube wells, etc.. for irrigation ;
- (iv) supply of fertilizers and manures on credit/subsidy ;
- (v) subsidy for sprayers and chemicals for plant protection measures, and
- (vi) Publicity and propaganda.

Whereas the scheme-wise achievements in terms of additional production could not be worked out, the targets achieved, as a whole, are given in Appendix V. It will be observed from this appendix that whereas the target for increase in area was more than Achieved, the achievement in additional production fell short of the target by about 1,58,000 standard maunds.

C. Causes for Slow Progress

The reasons for slow progress in the achievement of targets for additional production mainly were that some of the schemes for grant of loans for sinking wells for irrigation and distribution of fertilizers and manures could not be implemented. The targets laid down for establishment of nurseries and for the production and distribution of quality seedlings therefrom also could not be achieved in full.

III. PROGRESS IN THE CURRENT PLAN

During the Third Plan also the development programme con-

sists of the same measures as those taken up during the Second Plan, it being left to the individual State Governments to undertake such of those measures as are considered feasible and necessary in their respective States.

The total provision for the development schemes in the Third Plan amounts to Rs. 54 24 lakhs with the following targets for increasing area and production :

(a) **Area.** A gross increase of 13,514 hectares (33,393 acres) is contemplated including an additional area of 6,333 hectares (15,648 acres) to be brought under new plantations, the balance being accounted for by underplanting in the existing bearing gardens.

(b) **Production.** Production is to be increased from 95,698 metric tonnes (26,63,971 st. maunds) at the end of the Second Plan to 106,502 metric tonnes (28,53,465 st. maunds) by the end of the Third Plan or an increase of 10,804 metric tonnes (2,89,494 st. maunds) at the end of the Third Plan. A plan for increasing the production State-wise, year-wise and measure-wise is given in Appendices VI and VII. These figures which were adopted after discussion with the State Governments about the beginning of the Plan, have since been modified and reduced at the instance of certain States. On the basis of the production target figures finally accepted by the State Governments, the increase in production estimated to be achieved at the end of the Third Plan is now 9,538 metric tonnes (2,55,571 st. maunds) only. The revised plan for increasing the production State-wise, year wise and measure-wise is given in Appendices VIII and IX.

These estimates are subject to alteration on the basis of the actual area and production figures which are expected to be available as a result of the pilot sample survey now in progress.

On the basis of the above allotment and targets, the individual States have taken up development programmes according to their own requirements. Kerala and Mysore States, which are by far the biggest States producing arecanut, have taken up work on all items mentioned under the Second Five Year Plan, while the other States have taken up only such of those measures as were considered necessary according to the conditions prevalent in those States. For instance, West Bengal has taken up work on all items except publicity, while Madras has restricted its developmental activities to setting up of nurseries, plant protection measures and distribution of fertilizers and manures. In the other States, the measures undertaken are further limited.

Development Measures

A detailed critical review of the development measures initiated during the first two years of the Third Plan has not been possible because complete reports with necessary data on the measures undertaken and the results achieved so far have not been received from all the States. However, on the basis of the reports and data so far received, the position can be stated as under.

Kerala. The Plan provision is Rs. 15.08 lakhs for an estimated increase in production by 2,514 metric tonnes (67,352 st. maunds) by the end of the Third Plan. There has been a certain amount of delay in the implementation of some of the schemes. For instance, the scheme for demonstration of package treatments could not be undertaken in the first two years due to delays in getting the rate contracts for micro-nutrients finalised. The scheme for advancing loans for extending arecanut cultivation could not be finalised during the first two years and is still reported to be under consideration. Under control of pests and diseases, as rate contracts could be finalised only during November-December 1962, the implementation of the scheme had not been taken up till the second year of the Plan. The scheme for issue of manure loans to arecanut growers was also not implemented during the first two years due to departmental delays and is expected to be implemented during the current year. One scheme—that for setting up an elite seed garden—was not in operation in the first two years and is proposed to be revived in the current year. The other schemes have been fully implemented. The targets and achievements under these schemes during the first two years are given below :

Development measures	1961-62		1962-63	
	Target	Achievement	Target	Achievement
I. NURSERIES				
No. of State nurseries established	9	9	—	—
No. of certified nurseries established	125	125	125	125
No. of seedlings distributed (in lakhs)	4.5	10.48	No report	

Development measures	1961-62		1962-63	
	Target	Achievement	Target	Achievement
II. SCHEME FOR CONTROL OF PESTS AND DISEASES				
Distribution of sprayers	75	75	625	nil
Distribution of fungicides :				
(a) Copper sulphate (in lb.)	76,000	nil	76,000	nil
(b) Fytolan (in tons)	4	nil	4	nil
(c) Theovit (in tons)	4	nil	4	nil
III. IRRIGATION SCHEME (loans)				
1. Distribution of pump-sets	36	12	100	nil
2. Distribution of filter point	36	nil	40	nil
IV. FERTILIZER SCHEME				
Area to be covered (in acres)	15,000	nil	30,000	nil

From the above it will be observed that the achievement during the first two years cannot be considered as satisfactory. However, as most of the schemes have now been implemented and the rest are expected to be implemented during the current year itself, it is to be hoped that the State Government will push through these schemes vigorously with a view to achieving not only the prescribed target for the remaining period of the Plan but also making up the deficiencies of the past period. A careful watch is being maintained and every effort will be made to ensure that the deficiencies are made up and the targets are achieved. There are potentialities for development in this State by adopting short-term measures, as the average yield at present is only 3.2 m. tonnes (8.5 st. maunds) per acre against 3.5 m. tonnes (9.5 st. maunds) in Mysore and 5.6 m. tonnes (14.9 st. maunds) in Maharashtra State. It may, therefore, be reasonable to proceed on the basis that despite the deficiencies apparent so far 75 per cent of the target may be achieved as detailed below :

TARGETS AND ACHIEVEMENTS FOR INCREASING PRODUCTION

(in st. maunds)

Development measures	1961-62		1962-63	
	Target	Achievement	Target	Achievement
1. Plant protection	10,000	5,000	10,000	5,000
2. Irrigation	432	144	1,632	204
3. Fertilizer application	nil	nil	nil	nil
4. New areas coming to bearing	nil	nil	nil	nil
Total	10,432	5,144	11,632	5,204

PROBABLE ACHIEVEMENTS FOR THE NEXT THREE YEARS

Development measures	Target	Achievement
1. Plant protection	10,000	10,000
2. Irrigation	5,352	2,626
3. Fertilizer application	45,000	30,000
4. New areas coming to bearing	7,000	7,000
Total	67,352 st. mds. or 2,514 m. tonnes	49,626 st. mds. or 1,852 m. tonnes

Mysore. The progress in the case of this State is unsatisfactory in so far as that none of the schemes had been actually sanctioned by the State Government during the first two years. The Plan provision is Rs. 11 lakhs and the increase in production targeted for by the end of the Third Plan is 2,500 m. tonnes (67,000 st. maunds). Obviously the work done during the first two years has been limited to the distribution of seedlings only, continued from the Second Plan. The State Government has, however, comprehensive scheme covering a number of crops, including arecanut, for plant protection, fertilizer distribution and irrigation; and achievements made under those schemes are as follows :

Development measures	Target		Achievement	
	Area covered (acres)	Additional production (st. mds.)	Area covered (acres)	Additional production (st. mds.)
(1961-62)				
1. Irrigation	700	467	800	534
2. Green manuring	2,000	—	2,800	—
3. Fertilizer application	4,000	—	880	—
4. Plant protection	8,000	8,000	4,080	4,080
Total	14,700	8,467		4,614
(1962-63)				
1. Irrigation	700	934	1,236	1,649
2. Green manuring	2,000	—	4,280	—
3. Fertilizer application	4,000	—	2,880	—
4. Plant protection	8,000	*8,000	5,576	5,576
Total	14,700	8,934		7,225

The State Government is being pressed to take necessary steps to ensure that the schemes on the scale contemplated in the Third Plan are implemented and the targets which they have accepted are fully achieved. On the basis of the present position, however, there is likely to be a shortfall in the achievement at the end of the Third Plan unless vigorous steps are taken to step up the tempo of work. Though the shortfalls of the first two years have to be made up, it may be expected that as in the case of Kerala State, Mysore being very large and progressive arecanut growing State, the deficiencies may be made up to a large extent in the course of the remaining period. It is estimated that 83 per cent of the targets may be achieved in this case, as indicated below :

**PROBABLE ACHIEVEMENTS FOR THE NEXT THREE YEARS OF THE
THIRD PLAN**
(in st. maunds)

Development measures	Target for additional production	Achievements anticipated	Reasons
1. Irrigation	2,335	2,335	The area covered by these measures in the first two years exceeded the targets.
2. Green manuring	3,332	3,332	
3. Fertilizer application	33,333	22,222	Area covered under this measure in the first two years was 20 per cent and 50 per cent of the year-wise targets. The increase in production in 1963-64 and 1964-65, proportionate to the area covered in the first two years will be 2,500 and 11,110 as against 11,110 and 22,222 st. maunds respectively. In 1965-66, assuming that the targeted area will be covered by this measure, the achievement will be 22,222 as against the target of 33,333 maunds.
4. Plant protection	8,000	8,000	The coverage in the first two years was below the target. This will not, however, affect the achievement in subsequent years, if the target coverage for those years is achieved.
5. New areas coming to bearing	20,000	20,000	The seedlings planted in the early part of the Second Plan are expected to achieve this target. The target of seedling production in the Second Plan in Mysore was achieved in full and hence this target may be achieved in full.
Total	67,000	55,889	
in m. tonnes	2500	2086	

Assam. Even though this State has got the highest target of additional production, viz., 3,732 metric tonnes (1 lakh st. maunds) with an allotment of Rs. 5 lakhs, it is found that nothing has so far been done until recently, to formulate and implement any of the schemes. According to information available with the Committee, no development schemes had been framed by the State Government during the first two years of the Third Plan. Perhaps they could not take up the programme due to the emergency conditions which had

developed and their pre-occupation in that connection. It was, however, considered that even if they could not implement the full programme, they could at least take up a somewhat reduced programme in view of the vast potentialities for arecanut development in the State and the high target of additional production allotted to it. As a result of special efforts made in this regard by the Government of India, the State Government has now agreed to implement the scheme during the remaining period of the Third Plan. Reports received so far, however, indicate that work on seedling distribution only has been continuing from the Second Plan and no Third Five Year Plan scheme has been taken up so far. It is obvious that in view of the delay that has already occurred, the target of additional production (3,732 m. tonnes) cannot be achieved and that with the best of efforts, the State Government cannot probably account for more than 1,120 m. tonnes (30,000 st. maunds) increase in production by the end of the Third Plan. Their target will have to be reduced accordingly. Even for this, a very vigorous drive for adoption of short-term measures has to be undertaken immediately. We are taking up the matter with the State Government.

West Bengal. West Bengal has a relatively small target of additional production, viz., 242 m tonnes (6,494 st. maunds). This is proposed to be achieved by the production and distribution of quality seedlings, organisation of demonstration plots, distribution of fertilizers and manures including green manures, issue of loans for irrigation and adoption of plant protection measures. There is a provision of Rs. 4.25 lakhs for the Plan period. Out of this the estimated actual expenditure during the first two years is about Rs. 95,000. The progress reports for the first two years indicate that against an additional production of 39 m. tonnes (1,037 st. maunds) to be achieved during these two years, the actual achievement was only 10 m. tonnes (270 st. maunds). The achievement is, therefore, very much short of the target. Referring to individual items, the position is briefly as under :

Development measures	1961-62		1962-63	
	Target (acres)	Achievement (acres)	Target (acres)	Achievement (acres)
Area covered by				
1. Irrigation	130	95	120	100
2. Green manuring	600	412	600	75
3. Fertilizers	4,000	200	300	10
4. Plant protection	1,500	450	1,500	100

Under irrigation, the achievement in the first year was about 75 per cent only in terms of acreage benefited and in the second year 95 per cent. Under fertilizers and manures, again the achievement in the first year was about 60 per cent of the area targeted for, but as the work is to come into full swing only from 1963-64 onwards, it is expected that the shortfall under this item would be avoided. Under plant protection, the achievement of additional production during the first two years is about 35 per cent only. But as the effects of these measures will be apparent only in future years, higher additional production is expected from 1963-64 onwards. Under seedling production and distribution, the State Government had planned for increasing the number of nurseries from two to four, but this has not been done. There has not been any increase in the tempo of production and distribution of seedlings over the position as it was at the end of the Second Plan ; and the State Government has been asked to take immediate steps to make up the deficiency. In the case of demonstration plots, the State has set up more than the number targeted for. The deficiencies have been brought to the notice of the State Government for necessary action. If the short-term measures like irrigation, plant protection and distribution of fertilizers and manures are properly adopted, it should not be difficult to achieve the small target of increased production by the end of the Third Plan. No change in the Plan target for increased production, therefore, seems necessary at this stage.

Madras. The target for increase in production aimed at by Madras during the Third Plan period has been reduced from 597 m. tonnes to 358 m. tonnes (16,000 st. maunds to 9,600 maunds). This is intended to be achieved by distribution of seedlings, plant protection measures, manurial trials and fertilizer distribution. The Plan provision is Rs. 4 lakhs. The schemes are reported to have been initiated only in November 1961, but the State Government seems to be confident of achieving the prescribed target. The targets and achievements for the first two years are shown in the Table on next page.

The achievements create doubts whether the State Government can achieve the target by the end of the Plan period. There have been shortfalls under a number of items. It is stated that procedural difficulties in the case of short-term loans for manuring, and shortage of sulphur in the case of plant protection measures have been responsible for the shortfalls under these items. But all these difficulties have since been overcome. In the case of production and distribution of seedlings, the progress is found to be satisfactory. On the whole, considering the small additional production that has been targeted for, we may hope that the State Government's expectation of

achieving this target will be realised.

	1961-62		1962-63	
	Target	Achievement	Target	Achievement
1. Production of seedlings	1,25,000	55,000	1,25,000	59,510
2. Additional production by plant protection measures (in st. maunds)	400	192	1,200	844
3. Additional production by fertilizer application (st. mds.)	—	—	500	164
Total of 2 and 3	[400	192	1,700	1,008

Maharashtra. Maharashtra has an allocation of Rs. 10.4 lakhs and a target of increased production of 154 m. tonnes (4125 st. maunds). It has been reported that their arecanut development work forms part of Horticultural Development Schemes in the Konkan region. For want of staff and funds, the work on arecanut cultivation could not be undertaken during the first two years of the Third Plan. They have, however, a target of bringing 500 acres under new plantations and for rejuvenating 2,500 acres of existing gardens. Progress reports are expected to be received only from 1963-64. No information has been received whether in view of the State not implementing the scheme, the increased production will be achieved by the end of the Third Plan. As the activities proposed are distribution of seedlings and manuring of existing gardens, it is possible to expect some increase in production by manuring. The new trees will come to bearing only after the Third Plan. If the State Government takes up the manuring earnestly during the remaining period, the target could be achieved.

Andhra Pradesh. Andhra Pradesh has an allotment of Rs. 95 lakhs and a target of increase in production by eight metric tonnes (200 st. maunds). There are also potentialities to increase the production by taking up various measures in the arecanut-producing areas of the State, but the State Government has been averse to give any special consideration for this crop and the schemes under implementation were closed on 31-3-1963. It has, however, been stated that the target in production could be achieved without any difficulty.

Orissa. Orissa has a Plan provision of Rs. 1.57 lakhs and a target of increase in production by 30 metric tonnes (800 st. maunds). The activities proposed to be undertaken by the State are only production and distribution of seedlings and organisation of demonstration plots. Progress reports so far received indicate that against the target of distribution three lakhs seedlings, only 978 seedlings were distributed in the first two years of the Plan. No demonstration plots have been laid out so far. There is bound to be serious shortfall in production and the target cannot obviously be achieved. In this case, it will, therefore, be necessary to reduce the target of increased production to a very nominal figure, if not altogether scrapped.

Andaman and Nicobar Islands. There is no target as such for this Administration, although a provision of about Rs. 93,800 has been made for improvement of arecanut cultivation. Work so far done on production and distribution of seedlings is fairly satisfactory. As against the target of two lakhs, 1,78,984 seedlings were actually distributed in the first two years of the Third Plan period.

Tripura. There is no target as such for this Administration also. With the provision of Rs. 1,06,000 allotted for arecanut development, an arecanut nursery with an annual target of 50,000 seedlings was proposed to be established. As Tripura is a new area for arecanut cultivation, exploratory trials were proposed to be undertaken in suitable plots. The Officer-in-Charge of the Scheme was trained at Central Arecanut Research Station, Vittal, at the end of 1962-63. In 1961-62, 57,750 seednuts were sown in the nursery. The seedlings produced were not ready for distribution till the end of 1962-63. In 1962-63, 18,700 seedlings obtained from Assam, were distributed to the local ryots.

IV. CRITICAL ASSESSMENT OF THE ANTICIPATED RESULTS IN THE THIRD PLAN

From the foregoing paragraphs it may be observed that the achievements towards increasing arecanut production at the end of the Third Plan can be assessed as follows :

The production at the end of the Third Plan in the country may thus be taken at 101,851 m. tonnes (96,031+5,820) or 27,28,834 st. maunds (25,72,900+1,55,934). The State-wise distribution of the total production at the end of the Third Plan is given in Appendix X.

V. DEMAND PROJECTIONS AT THE END OF THE FOURTH FIVE YEAR PLAN

The total consumption figures given in Appendix II indicate that

the demand for arecanut during the years 1958-59 to 1961-62 moves round the figure of 1,06,000 m. tonnes. At the end of the Third Five Year Plan, production in the country is estimated at 101,851 m. tonnes or 1,02,000 m tonnes round. We may, therefore, achieve the production of 1,06,000 m. tonnes by about the middle of the Fourth Plan. Keeping a margin for slight increase in consumption, our likely demand for arecanuts may be taken at 1,10,000 m. tonnes at the end of the Fourth Five Year Plan and at 1,20,000 m. tonnes at the end of Fifth Five Year Plan. Of course, there is no scope for export of this commodity from this country, except for a small quantity of scented nuts exported to foreign countries mainly for use of Indian settlers abroad.

States	Target		Achievement	
	(in 'st mds.)	(in m. tonnes)	(in s mds.)	(in m. tonnes)
Kerala	67,352	2,514	49,626	1,852
Mysore	67,000	2,500	5,889	2,086
Assam	1,00,000	3,732	30,000	1,120
West Bengal	6,494	242	6,494	242
Madras	9,600	358	9,609	358
Maharashtra	4,125	154	4,125	154
Andhra Pradesh	200	8	200	8
Orissa	800	30	nil	nil
Total	255,571	9,538	1,55,934	5,820

VI. PHYSICAL TARGETS FOR THE FOURTH FIVE YEAR PLAN

Ordinarily, the increase in production of arecanut achieved in the Second Plan and the estimated achievement at the end of the Third Plan should be taken as the basis for fixing up targets for the succeeding Plans. But in the case of arecanut, whereas the additional production during the Second Plan was 14,369 m. tonnes, it is estimated at 5,820 m. tonnes only during the Third Plan. In view of this fall and having regard to the nature of this commodity, it is not considered necessary to provide any extension of the area under this crop during the Fourth and Fifth Plan periods.

VII. BREAK-UP OF ADDITIONAL PRODUCTION TARGETS AND REQUIREMENTS PROPOSED FOR THE FOURTH FIVE YEAR PLAN

It has been observed during the Third Five Year Plan that arecanut being a non food crop, the States do not attach much importance to its development. It is, therefore, proposed that during the Fourth and Fifth Five Year Plans the development activities may be restricted to the major growing areas only, namely Kerala, Mysore and Assam. The measure-wise targets for each of these States may be laid down as given in Appendix XI.

The requirements of fertilizers, improved seeds, plant protection materials and irrigation units are given below.

1. Fertilizers and Manures

Application of fertilizers is the most effective measure by which production of arecanut can be increased and hence the major share of the target for increasing production has been allotted under this measure. The quantities of ammonium sulphate, superphosphate and muriate of potash required for the Fourth Plan in Kerala, Mysore and Assam are given in Appendix XII. In lieu of ammonium sulphate, other nitrogenous fertilizers like urea may have to be preferred in certain areas. The requirements given in Appendix XII are based on the rough estimate of one acre to receive 336 lbs. of ammonium sulphate, 168 lb. of superphosphate and 168 lb. of muriate of potash. Fifty per cent of this proportion may be in the shape of concentrated organics, like fish manure and any other non-edible oil cakes. As in the Second and Third Plans, fertilizers may be offered on credit to the arecanut growers on medium term loans.

Green manure, farm yard manure and compost may also be used along with NPK fertilizers to get maximum yield. Provision may be made for raising green-manure cover crops or green-manure bushes by offering subsidy in the matter of supply of green-manure seeds or planting materials. An average dose of about 30 to 50 lb. of green leaf per palm may be aimed. Subsidy may be offered at the rate of 50 per cent of cost of seeds and planting materials. These seeds and planting materials are usually raised in the Agricultural Research Stations of the State Governments and separate provision under the development proposals may not, therefore, be required.

Liming of arecanut gardens, wherever necessary, may also be encouraged by advancing loans. Provision for this purpose could be found under fertilizer loans.

2. Plant Protection Materials

The requirements of plant protection equipment, fungicides and insecticides for the Fourth Five Year Plan in Kerala and Mysore are given in Appendix XIII. As Assam is not affected by diseases to any appreciable extent, it may not be necessary to provide for the State under this scheme. As during the Third Plan, subsidy at the rate of 50 per cent for sprayers and 25 per cent for fungicides and insecticides is suggested for the Fourth Plan also.

3. Irrigation Units

Loans at the rate of Rs. 1,500 per unit may be offered for digging wells or tanks for irrigation of arecanut gardens. Each unit will cover an area of three acres. The requirements of such units for the Fourth Plan period, the area likely to be covered and the financial outlay required for loans for this purpose are given in Appendix XIV.

In addition, engines and pump sets will also have to be provided on credit. Each such unit may cost about Rs. 2,400 and the requirements of engines and pump sets for the Fourth Plan are also given in Appendix XIV.

Facilities for proper drainage in heavy rainfall areas with water stagnation and for conservation of moisture in low rainfall areas may be offered. The provision required for loans for this purpose may be found from the amount proposed for irrigation loans.

4. Seedlings

As extension of area is not contemplated for the Fourth Plan, the requirements of arecanut seedlings will be limited to the needs of underplanting in existing gardens or in homesteads. Every hectare of existing gardens will require about 30 seedlings per year for underplanting. The requirements of seedlings for the Fourth Plan are given in Appendix XV. The State Nurseries and Certified Nurseries will have to meet this target; and the number of nurseries required to be established for this purpose is given in Appendix XVI.

5. Other Miscellaneous Measures

- (i) Supply of barbed wire for fencing arecanut gardens to prevent theft may be made at controlled rates. Supply of G.I. corrugated sheets, copper sheets, etc., required for erecting sheds and making vessels for processing arecanut may also be made at controlled rates.
- (ii) In the matter of supply of sprayers, dusters, pumping units

and engines, only one or two standard makes may be approved. Sufficient spare parts of such equipment may be stocked to make it easily available to the growers.

- (iii) Pesticides and fungicides may be stocked sufficiently in advance of the season for spraying, in centres of easy accessibility to the growers, like offices of the Agricultural Assistants, Agricultural Extension Officers, Block Development Officers, etc.

VIII. MEASURES AND MACHINERY FOR ACHIEVING THE SHORT AND LONG-TERM OBJECTIVES OF THE ABOVE DEVELOPMENT PROGRAMMES

Among the long-term measures, the only measures proposed are continuance of the nurseries and distribution of quality seedlings. The targets of seedling production and the location of the nurseries are furnished in Appendix XVI. With regard to the short-term measures, it is necessary that the programme of developmental activities during the Third Five Year Plan is followed in the Fourth and Fifth Five Year Plan periods as well. The requirements of fertilizers, plant protection equipment, irrigation units, etc., for the Fourth Five Year Plan have been furnished in Appendices XII to XIV.

A new scheme proposed for the Fourth Plan is the organisation of package programme for arecanut in a few of the most favourable districts in Kerala, Mysore and Assam. This scheme may be linked with the I.A.D. Programme of the Ministry of Food and Agriculture and additional funds may be provided under arecanut to the extent that funds for this purpose may not be forthcoming out of the budget of the I.A.D. Programme. At least two districts in each of the above three States may be taken up under this scheme.

As coconut, arecanut, ginger and pepper generally grow together in the States of Kerala, Mysore and Assam also, the agency responsible for executing the development programme and the measures adopted for the above crops such as procurement and distribution of seedlings, arrangement for supply of fertilizers, plant protection equipment, insecticides, pesticides, irrigation facilities and publicity measures may be one and the same for a particular State. The governmental agency and the channels of procurement and distribution of the growers' requirement will, therefore, be the same for all these crops in a particular place.

The above arrangements will mean that while the requirements of seedlings, fertilizers, manures, irrigation, etc. in respect of each of these

crops will be assessed separately as has been done above in the case of arecanut, there would be no separate provision for expenditure on the distributing agencies. The Agricultural and Extension staff posted in a particular locality where these crops are found, have to take up the responsibility for rendering all services in respect of all these crops for which they will require adequate knowledge on these to the extent necessary. A training programme for such staff will have to be undertaken to the required extent, covering not only arecanut, but also other crops like coconut, pepper, ginger, etc. growing in the same areas.

The following amounts may, however, be provided for meeting the share of arecanut for the administration of the schemes by the State Governments :

<i>State</i>	<i>Financial outlay</i>
Kerala	Rs. 3 lakhs
Mysore	2.5 „
Assam	1.5 „

The State Nurseries are generally established in the State Seed Farms and no separate supervisory staff will be required for these nurseries. For each nursery a Fieldman and a Mistry may be provided. The certified nurseries are established in private gardens by supplying selected seednuts and offering technical guidance. No separate staff is required for this purpose.

In this connection, it is also desirable that wherever coconut and arecanut are grown as mixed crops, or side by side, instead of setting up new nurseries, the existing coconut and arecanut nurseries may be enlarged so as to provide for raising seedlings of both the palms in the same nurseries. This will greatly facilitate the purchase of the growers' requirements of seedlings of both the crops at one and the same place.

Publicity programme is equally important to keep up the tempo of production and to bring the results of research and advantages of cooperative marketing, etc. to the grower.

IX. ESTIMATE OF FINANCIAL REQUIREMENTS FOR THE FOURTH PLAN

The estimate of financial requirements for the Fourth Plan for implementing the programme detailed in this Working Paper is given in Appendix XVII. No foreign exchange is involved in these proposals.

The total outlay for the arecanut development schemes for the

Fourth Plan will come to Rs. 56.40 lakhs for subsidies and grants. An amount Rs. 21.45 lakhs is anticipated by sale of seedlings produced at the nurseries during the Plan period. In addition to the financial requirements mentioned above, funds will also be required for loans for purposes of fertilizers and irrigation. Of course, this will have to be raised by the State Governments themselves. The details of such loans are also given in Appendix XVII.

X. PRESENT PATTERN OF FINANCIAL ASSISTANCE AFFORDED TO STATE GOVERNMENTS

As per the pattern of Central Assistance for State schemes fixed for the Third Plan period and the first year of the Fourth Plan, communicated to all State Governments, etc., in Planning Commission letter No. PC(P)4(2)/62 dated 4-8-1962, for phosphatic fertilizers, subsidy at 25 per cent to be shared equally between the Centre and the State has been provided. It is suggested that this concession may be extended to ammonium sulphate and muriate of potash also, as they are equally important. No other modifications are considered necessary in so far as the arecanut crop is concerned.

APPENDIX - A

SUMMARY STATEMENT OF THE WORKING PAPER OF SUB-GROUP ON COCONUT, ARECANUT, SPICES AND CASHEWNU—FOURTH AND FIFTH PLANS

I. NAME OF CROP : ARECANUT

II. EXPECTED AREA : (IN '000 ACRES)

	1960-61			1965-66			1970-71			1975-76		
	R*	I*	T	R*	I*	T	R*	I*	T	R*	I*	T
a. Total			283			283**			283**			283**
b. Proposed for intensive cultivation			283			267			267			
c. Percentage of b to a			100			94			94			

Note: R = Rainfed; I = Irrigated; T = Total

* = Information not available. ** = No provision has been made for increase in area under the Plan Schemes.

III. ESTIMATE OF PRODUCTION : (IN '000 METRIC TONNES)

Crop	Production		Additional output during the Fourth Plan from					Expected total output 1970-71	Expected total for 1975-76
	1960-61 (actual)	1965-66 (expected)	Increase in area	Intensive cultivation					
				A.F.	I.	P.P.	Others		
Areca nut	96.03	101.85	Nil	4.00	2.00	1.23	1.27	110.35	118.85

Note: A.F.=Application of fertilizers and manures; I.=Irrigation; P.P.=Plant protection.

APPENDIX-A (Contd.)

IV. EXPECTED LEVEL OF YIELD PER ACRE : (IN METRIC TONNES)

Crop	1960-61	1965-66	1970-71	1975-76
Areca nut	0.34	0.36	0.39	0.42

V. REQUIREMENT OF CURRENT INPUTS

	Unit	1970-71	1975-76
Improved seed	lakhs	165	165
Fertilizers : N	tons	27,000	27,000
P ₂ O ₅	"	13,500	13,500
K ₂ O	"	13,500	13,500
Pesticides	"	975	975

APPENDIX-A (Contd.)

VI. INVESTMENT AND FINANCIAL IMPLICATIONS—FOURTH PLAN (in lakhs)

	Estimated total cost	Direct expenditure		Loans		Grants and Subsidies		Total		Foreign exchange component
		State	Centre	State	Centre	State	Centre	State	Centre	
Wells/tanks	163.125	—	—	163.125	—	—	—	163.125	—	—
Implements : Engines and pump sets	63.00	—	—	63.00	—	—	—	63.00	—	—
Contour bunding				Nil						
Plant protection equipment :										
(i) Sprayers and dusters	2.60	—	—	—	—	1.30	1.30	1.30	1.30	—
(ii) Fungicides and insecticides	16.25	—	—	—	—	8.125	8.125	8.125	8.125	—
Seed Farms	21.55	10.78	—	—	—	—	10.77	10.78	10.77	—
Godowns				Nil						
Credit fertilizers	270.00	—	—	270.00	—	—	—	270.00	—	—
Staff	7.00	3.50	—	—	—	—	3.50	3.50	3.50	—
Others :										
Package programme	9.00	—	—	—	—	—	9.00	—	9.00	—
Research	24.29	—	24.29	—	—	—	—	—	24.29	0.30
Total	576.815	14.28	24.29	496.125	—	9.425	32.695	519.830	56.985	0.30

APPENDIX - A (Concluded)

VII. COST OF GOVERNMENT PROGRAMMES PER UNIT ADDITIONAL PRODUCTION

Fourth Plan : Rs. 949 per metric tonne

VIII. SUPPLY AND DEMAND BALANCE : (in '000 metric tonnes)

Crop	1970-71						1975-76					
	Demand			Supply			Demand			Supply		
	Domestic	Export	Total	Domestic	Export	Total	Domestic	Export	Total	Domestic	Export	Total
Areca nut	115	—	115	110	—	110	120	—	120	118	—	118

APPENDIX - I

AREA UNDER AND PRODUCTION OF ARECANUT IN INDIA—1961-62

State	Area (hectares)	Production (metric tonnes)
Kerala	59,052 (55,287)	46,692 (41,476)
Mysore	30,540 (32,952)	27,418 (45,225)
Assam	20,929 (23,162)	14,324 (19,183)
West Bengal	2,198 (2,198)	2,460 (2,460)
Maharashtra	2,053 (1,923)	2,836 (1,651)
Madras	1,797 (2,160)	1,351 (1,919)
Andhra Pradesh	172 (132)	92 (70)
Orissa	92 (51)	N.A. N.A.
Total	116, 833 (117,865)	95,173 (111,948)

N.A.=Not Available.

Figures in brackets are from the latest reports of the Pilot Sample Surveys which are subject to scrutiny.

For West Bengal, the figures from the Sample Surveys are not ready, hence official estimates have also been given in brackets.

APPENDIX -II

TREND OF PRODUCTION AND IMPORTS OF ARECANUTS DURING THE
LAST TEN YEARS

(in metric tonnes)

Year	Production	Import	Total
1952-53	81,329	37,266	1,18,595
1953-54	81,329	36,446	1,17,775
1954-55	81,329	29,646	1,10,975
1955-56	81,329	42,447	1,23,776
1956-57	81,329	40,717	1,22,046
1957-58	88,368	30,838	1,19,206
1958-59	88,346	18,363	1,06,709
1959-60	89,592	14,175	1,03,767
1960-61	95,698	11,170	1,06,868
1961-62	95,173	10,041	1,05,214
Total	8,63,822	2,71,109	1,134,931
Average	86,382	27,111	1,13,493

APPENDIX - III

**DETAILS OF FINANCIAL ALLOTMENT FOR ARECANUT DEVELOPMENT
IN THE STATES FOR THE SECOND PLAN AND THE ACTUAL
EXPENDITURE INCURRED THEREFROM**

State	Allotment	Actual expenditure
	Rs.	Rs.
Kerala	3,60,555	2,98,073
Mysore	4,16,199	2,13,323
Assam	3,05,150	1,83,485
West Bengal	2,62,809	1,30,152
Orissa	67,025	71,206
Total	14,11,738	8,96,239

APPENDIX - IV

TARGETS FOR INCREASING THE AREA AND PRODUCTION OF ARECANUT IN THE SECOND FIVE YEAR PLAN

Name of State	1956-57		1960-61		Increase	
	Area (acres)	Production (st. maunds)	Area (acres)	Production (st. maunds)	Area (acres) (columns 4-2)	Production (st. maunds) (columns 5-3)
1	2	3	4	5	6	7
Kerala	1,49,400	12,13,300	1,51,000	12,69,500	1,600	56,200
Mysore	73,100	5,70,000	76,900	9,40,500	3,800	3,70,500
Assam	25,500	2,60,000	27,100	3,05,500	1,600	45,500
West Bengal	4,500	51,500	6,100	65,500	1,609	14,000
Bombay	5,000	70,000	5,400	84,000	400	14,000
Madras	3,000	50,000	3,200	57,000	200	7,000
Total	2,60,500	22,14,800	2,69,700	27,22,000	9,200	5,07,200
	(1,05,421 hectares)	(82,665 m. tonnes)	(1,09,144 hectares)	(1,01,595 m. tonnes)	(3,723 hectares)	(18,930 m. tonnes)

APPENDIX - V

TARGETS AND ACHIEVEMENTS UNDER ARECANUT DEVELOPMENT FOR THE SECOND FIVE YEAR PLAN

Name of State	Area under arecanut in 1960-61 (acres)		Production of arecanut in 1960-61 (st. maunds)	
	Target	Achievement	Target	Achievement
Kerala	1,51,000	1,45,920	12,69,500	12,51,000
Mysore	76,900	72,128	9,40,500	6,70,238
Assam	27,100	49,017	3,05,500	4,70,048
West Bengal	6,100	5,432	65,500	65,912
Madras	3,200	4,870	57,000	28,311
Maharashtra (Bombay)	5,400	5,074	84,000	75,990
Andhra Pradesh	Nil	386	Nil	2,472
Orissa	Nil	227	N.A.	N.A.
Total	2,69,700	2,83,054	27,22,000	25,63,971
	(1,09,144 hectares)	(1,14,548 hectares)	(1,01,595 m. tonnes)	(95,698 m. tonnes)

APPENDIX - VI

TARGETS FOR INCREASING THE PRODUCTION OF ARECANUT DURING THE THIRD FIVE YEAR PLAN
(AS ORIGINALLY FIXED)

(Figures in brackets are in terms of st. maunds)

Name of State	Production in metric tonnes during						Increase (column 7—column 2)
	At the end of the Second Plan (1960-61)	1961-62	1962-63	1963-64	1964-65	1965-66	
1	2	3	4	5	6	7	8
Kerala	46,613 (12,51,000)	47,260 (12,66,200)	47,454 (12,71,400)	48,208 (12,91,600)	48,962 (13,11,800)	49,977 (13,39,000)	3,284 (88,000)
Mysore	25,016 (6,70,238)	25,332 (6,78,705)	25,349 (6,79,172)	25,823 (6,91,860)	26,297 (7,04,549)	27,516 (7,37,238)	2,500 (67,000)
Assam	17,544 (4,70,048)	17,634 (4,72,448)	17,690 (4,73,948)	17,952 (4,80,978)	18,214 (4,88,008)	21,276 (5,70,048)	3,732 (1,00,000)
West Bengal	2,460 (65,912)	2,494 (66,812)	2,499 (66,949)	2,559 (68,568)	2,620 (70,187)	2,702 (72,406)	242 (6,494)
Maharashtra	2,836 (75,990)	2,874 (76,990)	2,892 (77,490)	3,209 (85,990)	3,228 (86,490)	3,247 (86,990)	411 (11,000)
Madras	1,057 (28,311)	1,085 (29,061)	1,131 (30,311)	1,551 (41,561)	1,598 (42,811)	1,654 (44,311)	597 (16,000)
Andhra Pradesh	92 (2,472)	94 (2,512)	95 (2,552)	97 (2,592)	98 (2,632)	100 (2,672)	8 (200)
Orissa	—	—	—	—	15 (400)	30 (800)	30 (800)
Total	95,698 (25,63,971)	96,773 (25,92,728)	97,110 (26,01,822)	99,399 (26,63,149)	1,01,032 (27,06,877)	1,06,502 (28,53,465)	10,804 (2,89,494)

APPENDIX - VII

STATE-WISE, MEASURE-WISE AND YEAR-WISE BREAK-UP OF THE ADDITIONAL PRODUCTION TARGET FOR THE THIRD FIVE YEAR PLAN
(AS ORIGINALLY FIXED)

(In metric tonnes)

State	Measure*	Years				
		1961-62	1962-63	1963-64	1964-65	1965-66
1	2	3	4	5	6	7
Kerala	1	194	388	582	776	970
	2	—	—	—	—	—
	3	—	—	560	1,120	1,680
	4	373	373	373	373	373
	5	—	—	—	—	261
	Total	567	761	1,515	2,269	3,284
Mysore	1	17	34	51	68	86
	2	—	—	42	84	124
	3	—	—	415	830	1,245
	4	299	299	299	299	299
	5	—	—	—	—	746
	Total	316	333	807	1,281	2,500
Assam	1	—	56	112	168	224
	2	—	—	57	114	171
	3	—	—	149	298	448
	4	90	90	90	90	90
	5	—	—	—	—	2,799*
	Total	90	146	408	670	3,732

APPENDIX - VII (Contd.)

1	2	3	4	5	6	7
West Bengal	1	—	5	10	15	20
	2	—	—	12	25	37
	3	—	—	43	86	129
	4	34	34	34	34	34
	5	—	—	—	—	22
	Total	34	39	99	160	242
Maharashtra	1	—	18	37	56	75
	2	—	—	—	—	—
	3	—	—	298	298	298
	4	38	38	38	38	38
	5	—	—	—	—	—
	Total	38	56	373	392	411
Madras	1	—	46	93	140	187
	2	—	—	—	—	—
	3	—	—	373	373	373
	4	28	28	28	28	28
	5	—	—	—	—	9
	Total	28	74	494	541	597
Andhra Pradesh	1	—	—	—	—	—
	2	—	—	—	—	—
	3	—	—	—	—	—
	4	—	—	—	—	—
	5	2	3	5	6	8
	Total	2	3	5	6	8

APPENDIX - VII (Concluded)

1	2	3	4	5	6	7
Orissa	1	—	—	—	—	—
	2	—	—	—	—	—
	3	—	—	—	—	—
	4	—	—	—	—	—
	5	—	—	—	15	30
Total		—	—	—	15	30
Grand Total		1,075	1,412	3,701	5,334	10,804

Production level in 1960-61 = 95,698 m. tonnes

Additional production target 1961-66 = 10,804 m. tonnes

Production level in 1965-66 = 106,502 m. tonnes

(1 metric tonne = 26.792 st. maunds)

Note : * Measures 1 to 5 above indicate the following :

- 1 = Irrigation
- 2 = Green manuring
- 3 = Application of fertilizers
- 4 = Plant protection
- 5 = New areas coming to bearing

**Production from additional area according to the latest figures under the Area and Production Survey and the new areas coming to production.

APPENDIX - VIII
TARGET FOR INCREASING THE PRODUCTION OF ARECANUT DURING THE THIRD FIVE-YEAR PLAN
 (Revised on the basis of reduced targets accepted by Kerala, Madras, and Maharashtra)

Name of State	(Production in metric tonnes) (Figures in brackets are in terms of standard maunds)						
	At the end of the 2nd Plan (1960-61)	1961-62	1962-63	1963-64	1964-65	1965-66	Increase (column 7—column 2)
1	2	3	4	5	6	7	8
Kerala	46,693 (12,51,000)	47,082 (12,61,432)	47,127 (12,62,632)	47,732 (12,78,832)	48,336 (12,95,032)	49,207 (13,18,352)	2,514 (67,352)
Mysore	25,016 (6,70,238)	25,332 (6,78,705)	25,349 (6,79,172)	25,823 (6,91,860)	26,207 (7,04,549)	27,516 (7,37,238)	2,500 (67,000)
Assam	17,544 (4,70,048)	17,634 (4,72,448)	17,690 (4,73,948)	17,952 (4,80,978)	18,214 (4,88,008)	21,276 (5,70,048)	3,732 (1,00,000)
West Bengal	2,460 (65,912)	2,494 (66,812)	2,499 (66,949)	2,559 (68,568)	2,620 (70,187)	2,702 (72,406)	242 (6,49)
Maharashtra	2,836 (75,990)	2,836 (75,990)	2,836 (75,990)	2,836 (75,990)	2,906 (77,865)	2,990 (80,115)	154 (4,125)
Madras	1,390 (37,240)	1,405 (37,640)	1,454 (38,940)	1,502 (40,240)	1,551 (41,540)	1,748 (46,840)	358 (9,600)
Andhra Pradesh	92 (2,472)	94 (2,512)	95 (2,552)	97 (2,592)	98 (2,632)	100 (2,672)	8 (200)
Orissa	—	—	—	—	15 (400)	30 (800)	30 (800)
Total	96,031 (25,72,900)	96,877 (25,95,539)	97,050 (26,00,183)	98,501 (26,49,060)	1,00,037 (26,80,213)	1,05,569 (28,28,471)	9,538 (2,55,571)

APPENDIX - IX

STATE-WISE, MEASURE-WISE AND YEAR-WISE BREAK-UP OF THE ADDITIONAL PRODUCTION TARGET IN THE THIRD FIVE-YEAR PLAN

(Revised on the basis of the reduced targets accepted by Kerala, Madras and Maharashtra)

(In metric tonnes)

State	Measure ^a	Years				
		1961-62	1962-63	1963-64	1964-65	1965-66
1	2	3	4	5	6	7
Kerala	1	1	61	106	150	200
	2	—	—	—	—	—
	3	—	—	560	1,120	1,680
	4	373	373	373	373	373
	5	—	—	—	—	261
	Total	389	434	1,039	1,643	2,514
Mysore	1	17	34	51	68	86
	2	—	—	42	84	124
	3	—	—	415	830	1,245
	4	299	299	299	299	299
	5	—	—	—	—	746
	Total	316	333	807	1,281	2,500
Assam	1	—	56	112	168	224
	2	—	—	57	114	171
	3	—	—	149	298	448
	4	90	90	90	90	90
	5	—	—	—	—	2,799**
	Total	90	146	408	670	3,732

APPENDIX - IX (Contd.)

1	2	3	4	5	6	7
West Bengal	1	—	5	10	15	20
	2	—	—	12	25	37
	3	—	—	43	86	129
	4	34	34	34	34	34
	5	—	—	—	—	22
	Total	34	39	99	160	242
Maharashtra	1	—	—	—	—	—
	2	—	—	—	—	—
	3	—	—	—	70	154
	4	—	—	—	—	—
	5	—	—	—	—	—
	Total	—	—	—	70	154
Madras	1	—	—	—	—	—
	2	—	—	—	—	—
	3	—	19	37	56	75
	4	15	45	75	105	134
	5	—	—	—	—	149
	Total	15	64	112	161	358
Andhra Pradesh	1	—	—	—	—	—
	2	—	—	—	—	—
	3	—	—	—	—	—
	4	—	—	—	—	—
	5	2	3	5	6	8
	Total	2	3	5	6	8

APPENDIX - IX (Concluded)

1	2	3	4	5	6	7
Orissa	1	—	—	—	—	—
	2	—	—	—	—	—
	3	—	—	—	—	—
	4	—	—	—	—	—
	5	—	—	—	15	30
	Total	—	—	—	15	30
Grand Total		846	1,019	2,470	4,006	9,538

Production level in 1960-61 = 96,031 m. tonnes

Increase in production 1961-66 = 9,538 m. tonnes

Production level in 1965-66 = 1,05,569 m. tonnes

Note : *Measures 1 to 5 above indicate the following :

- 1 = Irrigation
- 2 = Green manuring
- 3 = Application of fertilizers
- 4 = Plant protection
- 5 = New areas coming to bearing

**Production from additional area according to the latest figures under the Area and Production Survey and the new areas coming to production.

APPENDIX - X

**ANTICIPATED ACHIEVEMENTS AT THE END OF THE THIRD PLAN IN THE
LIGHT OF THE CURRENT TRENDS**

(In metric tonnes)

State	Production at the end of the Second Plan (1960-61)	Anticipated additional production during the Third Plan (1961-62)	Anticipated production at the end of the Third Plan (1965-66) Column 2+Col. 3
1	2	3	4
Kerala	46,693	1,852	48,545
Mysore	25,016	2,086	27,102
Assam	17,544	1,120	18,664
West Bengal	2,460	242	2,702
Maharashtra	2,836	154	2,990
Madras	1,390	358	1,748
Andhra Pradesh	92	8	100
Total	96,031	5,820	101,851

APPENDIX - XI

MEASURE-WISE AND STATE-WISE BREAK-UP OF THE ADDITIONAL
PRODUCTION TARGETS PROPOSED FOR THE FOURTH PLAN

(in thousand metric tonnes)

State	Application of fertilizers and manures	Irrigation	Plant protection	New areas coming to bearing	Total of columns 2+3+4+5
1	2	3	4		6
Kerala	2.18	1.02	0.82	0.55	4.57
Mysore	1.10	0.61	0.41	0.27	2.39
Assam	0.72	0.37	—	0.45	1.54
Total	4.00	2.00	1.23	1.27	8.50

TREND OF PRODUCTION DURING THE FOURTH PLAN

(in metric tonnes)

State	Production at the end of the Third Plan (1965-66)	Target of additional production for the Fourth Plan (1966-71)	Production at the end of the Fourth Plan (1970-71) columns 2+ 3
1	2	3	4
Kerala	48,545	4,570	53,115
Mysore	27,102	2,390	29,492
Assam	18,664	1,540	20,204
West Bengal	2,702	—	2,702
Maharashtra	2,990	—	2,990
Madras	1,748	—	1,748
Andhra Pradesh	100	—	100
Total	1,01,851	8,500	1,10,351

APPENDIX - XII

STATE-WISE AND YEAR-WISE REQUIREMENTS OF FERTILIZERS FOR
THE FOURTH FIVE YEAR PLAN

(in tons)

State	Fertilizers*	1966-67	1967-68	1968-96	1969-70	1970-71	Total
Kerala	N	1,500	3,000	3,000	3,000	3,000	13,500
	P	750	1,500	1,500	1,500	1,500	6,750
	K	750	1,500	1,500	1,500	1,500	6,750
Mysore	N	1,000	2,000	2,000	2,000	2,000	9,000
	P	500	1,000	1,000	1,000	1,000	4,500
	K	500	1,000	1,000	1,000	1,000	4,500
Assam	N	500	1,000	1,000	1,000	1,000	4,500
	P	250	500	500	500	500	2,250
	K	250	500	500	500	500	2,250
Total	N	3,000	6,000	6,000	6,000	6,000	27,000
	P	1,500	3,000	3,000	3,000	3,000	13,500
	K	1,500	3,000	3,000	3,000	3,000	13,500

* N = Nitrogenous fertilizers in the form of ammonium sulphate (3 cwts. per acre)

P = Phosphatic fertilizers in the form of superphosphate (1½ cwts. per acre)

K = Potassic fertilizers in the form of muriate of potash (1½ cwts. per acre)

Area covered (in acres)	20,000	40,000	40,000	40,000	40,000	1,80,000
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Every year an area of 20,000 acres will be covered by this scheme. The same area will be treated in the next year also. The effective area covered will thus be 1,00,000 acres resulting in an increased production of 2,000 metric tonnes.

APPENDIX - XIII

REQUIREMENTS OF PLANT PROTECTION MATERIALS FOR THE
FOURTH PLAN

State	Area to be covered each year (acres)	No. of sprayers required (Nos.) columns 2-5	Area to be covered in five years (acres) columns 2x5	Quantity of fungicides and insecticides required (tons)
1	2	3	4	5
Kerala	8,000	1,600	40,000	600
Mysore	5,000	1,000	25,000	375
Total	13,000	2,600	65,000	975

FINANCIAL OUTLAY FOR SUBSIDY FOR PLANT PROTECTION

State	No. of sprayers required (Nos.)	Subsidy @ Rs. 100 (50 per cent of cost of sprayer) (Rs.)	Quantity of fungicides and insecticides required (tons)	Subsidy at 25 per cent of cost (Rs.)
1	2	3	4	5
Kerala	1,600	1,60,000	600	10,00,000
Mysore	1,000	1,00,000	375	6,25,000
Total	2,600	2,60,000	975	16,25,000

APPENDIX - XIV

REQUIREMENTS OF IRRIGATION UNITS FOR THE FOURTH
FIVE YEAR PLAN

1. Digging Wells and Tanks

State	No. of units per year	Total No. for five years (columns 2×5)	Financial out- lay for loans at Rs. 1,500/- (in lakhs of Rs.) (column 3× 1,500)	Area likely to be covered (acres) (columns 3×3)*
1	2	3	4	5
Kerala	1,250	6,250	93.750	18,750
Mysore	625	3,125	46.875	9,875
Assam	300	1,500	22.50	4,500
Total	2,175	10,875	163.125	32,625

2. Engine and Pump Sets

State	No. of units per year	Total No. for 5 years (columns 2×5)	Financial out- lay for loans at Rs. 2,400 (in lakhs of Rs.) (column 3× 2,400)	Area likely to be covered (acres) (columns 3×3)*
1	2	3	4	5
Kerala	300	1,500	36.00	4,500
Mysore	150	750	18.00	2,250
Assam	75	375	9.00	1,125
Total	525	2,625	63.00	7,875

* Each unit will cover an area of 3 acres.

APPENDIX-XV

REQUIREMENTS FOR ARECANUT SEEDLINGS FOR THE FOURTH PLAN

State	Area under arecanut (hectares)	Requirements of seedlings per year for underplanting (column 2 × 30)*	Requirements of seedlings for the Plan period (column 3 × 5)
1	2	3	4
Kerala	59,052	18 lakhs	90 lakhs
Mysore	30,540	9 lakhs	45 lakhs
Assam	20,922	6 lakhs	30 lakhs
Total	1,10,514	33 lakhs	165 lakhs

* 30 seedlings are required per year for underplanting per hectare.

APPENDIX-XVI

TARGET FOR ESTABLISHMENT OF NURSERIES DURING THE FOURTH PLAN

State	State Nurseries			Certified Nurseries			Total target columns 4+
	No. of units	Target of seedlings per year per unit	Total target for the Plan period	No. of units	Target of seedlings per year per unit	Total target for the Plan period	
1	2	3	4	5	6	7	8
Kerala	9	1,00,000	45,00,000	200	4,500	45,00,000	90,00,000
Mysore	4	1,00,000	20,00,000	120	4,500	27,00,000	47,00,000
Assam	3	50,000	7,50,000	100	4,500	22,50,000	30,00,000
Total			72,50,000			94,50,000	1,67,00,000

APPENDIX-XVII

FINANCIAL REQUIREMENTS FOR THE ARECANUT DEVELOPMENT SCHEMES FOR THE FOURTH FIVE YEAR PLAN

Particulars	1966-67	1967-68	1968-69	1969-70	1970-71	Total
1	2	3	4	5	6	7
I. SUBSIDY FOR PLANT PROTECTION :						
A. Subsidy for sprayers						
1. Kerala	32,000	32,000	32,000	32,000	32,000	1,60,000
2. Mysore	20,000	20,000	20,000	20,000	20,000	1,00,000
B. Subsidy for fungicides						
1. Kerala	2,00,000	2,00,000	2,00,000	2,00,000	2,00,000	10,00,000
2. Mysore	1,25,000	1,25,000	1,25,000	1,25,000	1,25,000	6,25,000
Total of I (A+B)	3,77,000	3,77,000	3,77,000	3,77,000	3,77,000	18,85,000
II. NURSERIES :						
A. State Nurseries : (Pay and allowances of Fieldman and Mistry and contingencies)						
1. Kerala (9 units with a target of 1 lakh per unit per year)	90,000	90,000	90,000	90,000	90,000	4,50,000

APPENDIX-XVII (Contd.)

1	2	3	4	5	6	7
2. Mysore (4 units with a target of 1 lakh per unit per year)	40,000	40,000	40,000	40,000	40,000	2,00,000
3. Assam (3 units with a target of 1 lakh per unit per year)	28,000	28,000	28,000	28,000	28,000	1,40,000
B. Certified Nurseries : (Cost of seednuts, contingencies and bonus— Total at the rate of Rs. 650 per unit)						
1. Kerala—200 units	1,30,000	1,30,000	1,30,000	1,30,000	1,30,000	6,50,000
2. Mysore—120 units	78,000	78,000	78,000	78,000	78,000	3,90,000
3. Assam—100 units	65,000	65,000	65,000	65,000	65,000	3,25,000
Total of II (A+B)	4,31,000	4,31,000	4,31,000	4,31,000	4,31,000	21,55,000
Receipts by sale of 33 lakh seedlings per year at the rate of 13 paise per No.	4,29,000	4,29,000	4,29,000	4,29,000	4,29,000	21,45,000
III. ORGANISATION OF PACKAGE PROGRAMME WITH MODEL FARMS (at the rate of Rs. 10,000 per unit per year)						
1. Kerala—6 units	60,000	60,000	60,000	60,000	60,000	3,00,000

APPENDIX-XVII (Contd.)

1	2	3	4	5	6	7
2. Mysore—6 units	60,000	60,000	60,000	60,000	60,000	3,00,000
3. Assam—6 units	60,000	60,000	60,000	60,000	60,000	3,00,000
Total of III	1,80,000	1,80,000	1,80,000	1,80,000	1,80,000	9,00,000
IV DEVELOPMENT STAFF AT STATE LEVEL						
1. Kerala	60,000	60,000	60,000	60,000	60,000	3,00,000
2. Mysore	50,000	50,000	50,000	50,000	50,000	2,50,000
3. Assam	30,000	30,000	30,000	30,000	30,000	1,50,000
Total of IV	1,40,000	1,40,000	1,40,000	1,40,000	1,40,000	7,00,000
Grand total of I to IV	11,28,000	11,28,000	11,28,000	11,28,000	11,28,000	56,40,000
LOANS						
1. FERTILIZER LOANS						
1. Kerala	15,00,000	30,00,000	30,00,000	30,00,000	30,00,000	1,35,00,000
2. Mysore	10,00,000	20,00,000	20,00,000	20,00,000	20,00,000	90,00,000

APPENDIX-XVII (Concluded)

1	2	3	4	5	6	7
3. Assam	5,00,000	10,00,000	10,00,000	10,00,000	10,00,000	45,00,000
Total of I	30,00,000	60,00,000	60,00,000	60,00,000	60,00,000	2,70,00,000
II. IRRIGATION LOANS						
A. Loans for digging wells, etc.						
1. Kerala	18,75,000	18,75,000	18,75,000	18,75,000	18,75,000	93,75,000
2. Mysore	9,37,500	9,37,500	9,37,500	9,37,500	9,37,500	46,87,500
3. Assam	4,50,000	4,50,000	4,50,000	4,50,000	4,50,000	22,50,000
B. Loans for engines and pump-sets						
1. Kerala	7,20,000	7,20,000	7,20,000	7,20,000	7,20,000	36,00,000
2. Mysore	3,60,000	3,60,000	3,60,000	3,60,000	3,60,000	18,00,000
3. Assam	1,80,000	1,80,000	1,80,000	1,80,000	1,80,000	9,00,000
Total of II (A+B)	45,22,500	45,22,500	45,22,500	45,22,500	45,22,500	2,26,12,500
Grand total of Loans	75,22,500	1,05,22,500	1,05,22,500	1,05,22,500	1,05,22,500	4,96,12,500