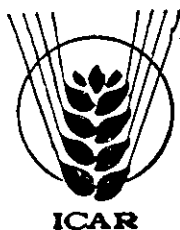


R E P O R T
OF THE WORKING GROUP
FOR THE FORMULATION OF
FOURTH FIVE YEAR PLAN PROPOSALS
ON
SPICES AND CASHEWNUT



Published by
INDIAN COUNCIL OF AGRICULTURAL RESEARCH
NEW DELHI

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OF THE WORKING GROUP FOR THE FORMULATION
OF FOURTH FIVE YEAR PLAN PROPOSALS
O N
S P I C E S A N D C A S H E W N U T



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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 & 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 Spices and Cashewnut 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 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 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 SPICES AND CASHEWNUT

CONTENTS

	PAGE
PREFACE	3
SUMMARY	5
CHAPTER I. Introduction	9
CHAPTER II. Appraisal of the achievements during the First Three Plans	11
CHAPTER III. Demand projections for the Fourth and Fifth Five Year Plans	26
CHAPTER IV. Measures required and proposed for achieving targets	35
CHAPTER V. Details of crop-wise schemes with financial requirements	40

SUMMARY

INDIA is a home of many spices. The spices find a variety of uses in various industries. Pepper, cardamom, ginger and cashewnut are important as earners of foreign exchange. Tree spices such as clove, nutmeg, etc., however, are in short supply and are being imported and cause a drain on our foreign reserves.

There is a tremendous scope for increased exports of a variety of spices and cashewnut.

APPRAISAL OF ACHIEVEMENTS OF THE FIRST, SECOND AND THIRD FIVE YEAR PLANS

A number of development schemes were initiated.

In pepper, the Second and Third Plans envisaged additional production so as to reach a total of 30,000 tonnes. An increase of 101 tonnes only was possible during the Second Plan due to violent and frequent fluctuations in the prices of pepper which was responsible for lack of incentives. During the Third Plan, however, about 16,000 acres are expected to be newly brought under the crop in the States of Mysore, Kerala, Assam and West Bengal. The increase in production will be felt only during the Fourth Plan.

Besides the establishment of marketing organisations, grant of loans and setting up of demonstration plots have also been taken care of.

In cardamom, an increase of 11,200 acres was targeted for the Third Plan besides activities like raising and distribution of quality seedlings, setting up of demonstration plots and plant protection measures. It is expected that an increase of 7,000 acres will be achieved considering the pace of work in the initial years.

In ginger, schemes were taken up only during the Third Plan in Assam, Kerala and Himachal Pradesh. In Assam, improved material for 200 acres as against a target of 400 acres are likely to be produced. In Himachal Pradesh, an additional production of 2,000 tonnes (dry) is estimated.

In chillies, 70 per cent of the area in Andhra Pradesh has been brought under improved types.

No work was taken up on turmeric.

Tree spices are expected to cover an additional area of 500 acres.

Development schemes on cashewnut were initiated in the Second Plan. The pace of work has been very encouraging and it is believed that the production of raw nuts would touch 1,69,000 tonnes by the end of the Third Plan as against 60,100 tonnes in 1953.

DEMAND PROJECTIONS FOR THE FOURTH AND FIFTH PLANS

Considering the present level of exports, consumption and demand, an additional production of 5,000 tonnes of black pepper is envisaged, out of which 3,000 tonnes is for exports. The market for white pepper will also be explored. In cardamom, an additional production of 500 tonnes in each of the Fourth and Fifth Plan periods appears to be reasonable considering its demand and at the same time the limitations in increasing production. In ginger the spread of high yielding exotic types alone is expected to increase production of 5,000 tonnes during each of the Fourth and Fifth Plan periods. In chillies, the line of development envisaged is the spread of improved varieties and setting up of demonstration plots to show the efficacy of improved practices. Additional production of 5,000 and 10,000 tonnes of turmeric, respectively, during the Fourth and Fifth plan periods by undertaking propaganda measures and spread of improved varieties have been planned. Tree spices are planned to cover an area of 1,750 acres. The development of minor spice crops will be along with other crops only with which these form associate crops.

TABLE 1. ESTIMATE OF REQUIREMENTS OF KERNELS FOR THIRD, FOURTH AND FIFTH PLANS AND CORRESPONDING QUANTITY OF RAW NUTS TO BE PRODUCED

	Third Plan	Fourth Plan	Fifth Plan
Export kernel (tonnes)	50,000	35,000	60,000
raw nuts „	2,00,000	2,20,000	2,40,000
Internal consumption			
kernel „	9,000	10,000	12,000
raw nuts „	36,000	40,000	48,000
Total kernels „	59,000	65,000	72,000
raw nuts „	2,36,000	2,60,000	2,88,000

In cashewnut, efforts to plug the drain on imports are called for besides increasing exports. The target set for increased exports is of the order of 5,000 tonnes for each plan. Hence a total of 2,60,000 tonnes of raw nuts are required by the end of the Fourth Plan and 2,88,000 tonnes by the end of the Fifth Plan (Table 1).

MEASURES REQUIRED AND PROPOSED TO ACHIEVE THE TARGETS

These consist of utilizing improved varieties, manurial and plant protection measures, organisation of demonstration plots and incentives to growers in the shape of loans.

Schemes Proposed. A number of individual schemes have been proposed as given below :

TABLE 2

	Centres of activities	Financial outlay Lakh Rs.
Pepper	Kerala	19.75
	Mysore	10.45
	Assam	2.25
	West Bengal	0.90
		<u>33.35</u>
Cardamom	Kerala	2,64,610
	Mysore	2,14,200
	Madras	50,300
	West Bengal	52,600
	Ad hoc	<u>5,00,000</u>
	<u>10,81,710</u>	
Ginger	Kerala	} Rs. 7.725 lakh
	Himachal Pradesh	
	Assam	
	West Bengal	
Chillies	—	—
Turmeric	—	Rs. 2.00 lakh
Tree spices	Kerala	2,43,750

	Madras	2,20,000
	Mysore	1,23,750
		<u>5,87,500</u>
Minor spices	—	—
Cashewnut	Expansion of area	9,00,000
	Fertilizers, plant protection Improved seeds	5,00,000
	Demonstration	5,00,000
	Production and marketing survey	3,00,000
	Subsidies	5,00,000
	Setting up of factories	10,00,000
	Publicity and propaganda	5,00,000
		<u>42,00,000</u>

CHAPTER I

INTRODUCTION

Most of the spices are grown in India and these find a variety of uses. Apart from flavouring and spicing of different types of food preparations, industries such as meat and fish packing, fruit and vegetable canning, bakery and confectionery have need for spices. A few like cloves, celery and coriander have medicinal uses also.

The spices are important earners of foreign exchange. Pepper, Cardamom, Ginger, Chillies and a few minor spices figure largely in the export trade. Pepper valued at Rs. 10 crore, cardamom at Rs. 4 crore and ginger at over Rs. 1 crore are the important crops in this respect.

TABLE 3. PRODUCTION FIGURES OF SPICES IN INDIA

Crop	Production	Value
Pepper	28,000 tonnes	Rs. 12.5 crore
Cardamom	3,150 „	0.28 „
Ginger	22,000 „	1.24 „
Chillies	3,88,000 „	Not available
Clove, Nutmeg and Cinnamon	Not available	„
Minor spices	„	„

The production of tree spices like clove, nutmeg and cinnamon is far short of our requirements and has necessitated imports valued at Rs. 1 crore every year. Besides the chief spice crops, we are also in a position to export minor spices besides curry powder and paste.

Cashewnut is an important cash and dollar earning crop in the country and we supply nearly 95 per cent of the world's demand for kernels. The production is of the order of 1.15 lakh tonnes only and is far short of the capacity of processing factories with the result that

the country imports substantial quantities of raw nuts from East Africa. Such imports cost us nearly Rs. 6 crore every year. Our export earning is of the order of Rs. 18.17 crore per annum.

There is tremendous scope for increased exports of spices and cashewnut and there is an urgent need to plug drain on imports of certain spices and raw cashewnut.

CHAPTER II

APPRAISAL OF THE ACHIEVEMENTS DURING THE FIRST THREE PLANS

PEPPER

No systematic programme of developmental work on pepper was undertaken during the First Plan period. It was initiated during the Second Five Year Plan in the States of Kerala, Mysore, Assam and Andamans with a total provision of Rs. 15.49 lakh, of which Rs. 6 lakh was reported to have been utilized. The programmes envisaged were, bringing additional area under the crop and production of rooted cuttings. An additional production of 3,000 tonnes was targeted to be achieved by the end of the Second Plan period. Very little was, however, achieved as a consequence of violent and frequent fluctuations in the prices of pepper.

Figures of area and production of pepper at the beginning and end of the Second Plan were as follows :

TABLE 4. AREA AND PRODUCTION

State	At the beginning of the Second Plan (1956-57)		At the end of the Second Plan (1960-61)	
	Area (in acres)	Production (in tonnes)	Area (in acres)	Production (in tonnes)
1. Kerala	2,14,900	26,800	2,46,500	26,600
2. Madras	529	40	450	40
3. Mysore	5,589	956	6,868	1,257
Total	2,21,018	27,796	2,53,818	27,897

Critical Review of the Developmental Measures initiated during the First two years of the Third Plan and Assessment of the likely Achievements at the end of the Third Plan in the Light of the Current Trends

During the Third Plan, a total provision of Rs. 35 lakh has been made for the development of pepper in the States of Kerala, Mysore,

West Bengal and Assam, to bring an additional area of 16,700 acres under the crop. The State-wise break up of the target is as follows :

TABLE 5. STATE-WISE AREAS

State	Increase in area (in acres)
1. Kerala	6,000
2. Mysore	10,000
3. Assam	500
4. West Bengal	200
Total	16,700

The target of total production to be achieved by the end of the Third Plan was fixed at 30,000 tonnes against 29,897 tonnes at the end of the Second Plan.

The following developmental schemes have been undertaken in the different States:

Kerala

1. ESTABLISHMENT OF PEPPER MARKETING ORGANISATION : Financial assistance in the form of subsidy is given to Pepper Marketing Organisations for godown construction and managerial staff. So far, the subsidy for godown construction, Rs. 6,000 per society has been given to three Pepper Marketing Co-operative Societies during the year 1962-63 and a sum of Rs. 18,000 has been spent under the scheme. The total quantities of pepper handled by these societies during the years 1959-60 and 1960-61 were 9,909 and 15,562 maunds respectively.

2. PRODUCTION AND DISTRIBUTION OF ROOTED CUTTINGS : Six nurseries with production capacity of 1 lakh rooted cuttings per year in each have been started.

3. DEMONSTRATION PLOTS: Three types of demonstrations are being carried out, viz.,

- (i) Fertilizer demonstrations to convince the growers the effect of fertilizers in stepping up yield of pepper ;

- (ii) Hollow berry control demonstrations where 50 per cent D.D.T. is sprayed to control 'Pollu' disease ; and
- (iii) Rooted cuttings demonstrations to show the superiority of rooted cuttings over unrooted cuttings. In addition to the above three types of demonstration plots, a scheme for the laying out of demonstration plots on 'wilt' control by spraying 1 per cent Bordeaux mixture is being implemented from the current financial year onwards. During the past two years a total of 500 demonstration plots have been laid out in all. The effect of demonstration plots in convincing the cultivators the superiority of scientific cultural practices has been proved beyond doubt.

4. **NEW PLANTATIONS—GRANT OF LOANS :** Loans to the extent of Rs. 3,26,992 for raising new plantations over an area of 3,370 acres have been disbursed among the growers.

5. **PLANT PROTECTION :** About 190 sprayers have been purchased and distributed for undertaking plant protection measures.

Since nearly 60 per cent of cultivated pepper is from small holdings, considerable benefits to the growers would accrue by co-operative marketing of this crop. The Kerala State has been advised to intensify work on organisation of co-operative marketing societies.

The work done under production and distribution of rooted cuttings of pepper during the first two years of the Third Plan period has been satisfactory, in that 12 lakh cuttings have been raised and 88 lakh distributed upto June, 1963.

The additional area of 6,000 acres targeted for is, therefore, expected to be achieved.

Mysore. The scheme envisages: (a) grant of land for pepper cultivation ; (b) grant of loan for pepper cultivation ; (c) voluntary cultivation of pepper as a subsidiary crop in coffee and areca plantations ; and (d) production of rooted cuttings.

It is reported that due to certain administrative difficulties, it was possible to grant only 5 acres of land so far under first scheme. The State Government appears to have taken necessary steps to speed up this work. A sum of Rs. 67,057 was disbursed during the two years of the Third Plan as loan for pepper cultivation. Rooted cuttings numbering 4,05,800 were distributed among the growers. The State has been advised to step up production of rooted cuttings at the rate

of 6 lakh per year. By adopting the measures stated under (a), (b) and (d), an additional area of 2,950 acres is reported to have been brought under this crop during the first two years of the Third Plan, as against a target of 4,000 acres. It is likely that the State may be able to achieve the target of 10,000 acres provided they step up work under all the four items. They are being addressed in the matter.

Assam. The scheme envisages development of pepper by establishing nurseries with an annual production target of 35,000 rooted cuttings and rendering technical guidance to the growers. As against this target of 35,000 the State has produced and distributed only about 5,800 rooted cuttings in the first two years. No information has been given regarding the additional area covered, but it is obvious that with the low production of cuttings, the area covered so far is insignificant. With its current emergency problems, not much can also be expected from this State. The achievement at the end of the Third Plan may not exceed 25 per cent to the target of 500 acres. Since production and distribution of large number of rooted cuttings of high yielding vines is an important item in the developmental programme, the State has been advised to take suitable measures to intensify the nursery work in the coming years.

West Bengal. There is no report from West Bengal on the scheme. The target for the Third Plan is to bring 200 additional acres under the crop but the work has not yet been started. The State Government has been addressed. It is not expected that there will be any material achievement against the targets assigned to them.

The following are the achievements against the targets in these 4 States during the first two years of the Third Plan.

TABLE 6. ACHIEVEMENTS

State	Target			Achievement		
	1961-62 (area in acres)	1962-63	Total for 1961-62 and 1962-63	1961-62 (area in acres)	1962-63	Total for 1961-62 and 1962-63
Mysore	2,000	2,000	4,000	1,450	1,500	2,950
Kerala	1,200	1,200	2,400	500	1,800	2,300
Assam	100	100	200	9.5	6	15.5
West Bengal	40	40	80	Scheme not yet started		

- The plantings undertaken during the first two years would come into bearing only towards the close of the Third Plan. No increase in production could, therefore, be expected from the new areas during the Third Plan.

CARDAMOM

The Spices Enquiry Committee (1953) had recommended that in order to increase production of this commodity, adequate supplies of reliable planting material should be organised in the Kerala and Mysore States. No developmental schemes on the crop were taken up during the First Five Year Plan. It was only in the final year of the Second Plan that development schemes on cardamom were taken up in Kerala and Mysore States with a provision of Rs. 6.62 lakh of which only about Rs. 1.50 lakh were reported to have been utilized. The object of the scheme during the Second Plan period was to expand the area under the crop and to set up nurseries for producing and distributing reliable planting material. No target of achievement was laid out. The area and production of cardamom at the end of the Second Plan period were as follows :

TABLE 7. CARDAMOM—AREA AND PRODUCTION

State	Area (in acres)	Production (in tonnes)
Kerala	73,756	1,316
Ma ras	3,810	450
Maharashtra	62	1
Mysore	48,136	1,386
	<u>1,35,764</u>	<u>3,153</u>

Schemes for the development of cardamom have been taken up in the Third Plan period in Kerala, Mysore and West Bengal with a total provision of Rs. 15 lakh. An increase of 11,200 acres over the area at the end of this Second Plan has been targeted for. No target of additional production as such has yet been prescribed. The activities contemplated under the development schemes are increase in the area, raising and distribution of seedlings, adoption of plant protection measures and organisation of demonstration plots. The

following is a brief statement of the work done in the various States during the first two years of the Third Plan :

Kerala State. Development schemes in the Kerala State started functioning in 1959. For the Third Plan a provision of Rs. 4.24 lakh has been made of which during the first two years only Rs. 0.92 lakh has been utilised. The periodical reports received show that while there has been an increase of 1,350 acres in the area during the first two years, the increase in production is only 1 ton. In the absence of information from the State regarding the targets for the Third Plan as a whole and the achievements during the first two years under each of the schemes, it is not possible to make a proper appraisal of the performance in relation to the Third Plan. Generally speaking, while the progress in plant protection measures and production of seedlings is considered to be fairly satisfactory, the achievements in respect of additional area and production are very much below expectation. The precise reasons for the shortfall have not been reported. Without very special efforts, not much can be expected from this State. The deficiencies have been brought to the notice of the State Government for rectification.

Mysore. The Plan provision for Mysore is Rs. 10 lakh. It is envisaged to raise 8 lakh seedlings per annum for distribution to increase the area by 3,500 acres and production by 300 tonnes during the Plan period and to lay out demonstration plots in respect of manurial treatments and control of pests and diseases including eradication of Kattee disease. The reports received up to the end of 1962-63 show that the targets for distribution of seedlings and for increase in area have been achieved and appreciably exceeded. Demonstration plots have also been laid out as targeted. An increase of 80 tonnes in production is reported during 1962-63. In the absence of information regarding the precise details of achievement, it is difficult to appraise the actual position and/or make a reliable forecast of the position as it will be at the end of the Third Plan. However, in the case of Mysore, the progress should be considered as generally satisfactory and that the targets for the Third Plan would be achieved.

West Bengal. The scheme in West Bengal is reported to have started in March 1962. The Plan provision is only Rs. 86,000. No targets for the Third Plan as a whole or the achievements during the first two years have been intimated. However, considering the fact that the crop is yet to be introduced in the State on a wide scale, not much of development and production can be expected.

In the light of what has been stated above, it will be optimistic to expect that the targeted increase in area of 11,200 acres will be achieved. A reasonable expectation is that an increase of about 7,000 acres with an additional production of 200 tonnes is the best that can be achieved by the end of the Third Plan.

GINGER

No development schemes as such were taken up during the First and Second Five Year Plans. This was perhaps because no research findings of proved economic value were available which could be put across to the growers.

Critical Review of the Developmental Measures initiated during the first two years of the Third Plan and Assessment of the Likely Achievements at the end of the Third Plan in the Light of the Current Trends

During the Third Plan, three Ginger Development Schemes have been sanctioned, viz, one in Assam, one in Kerala and one in Himachal Pradesh. No specific targets of increased area or production were prescribed under these schemes except in the case of the Assam Scheme. The position in respect of these three schemes is briefly stated below.

Ginger Development Scheme, Assam. The scheme was started in January, 1961. Its current sanction expires in March, 1966. The scheme envisages multiplication of improved local varieties of ginger for propagation. It was expected that enough improved seed material for covering an additional area of 400 acres could be produced during the Third Plan period. A review of the progress in the first two years, however, shows that this target is not likely to be achieved and that there will be a short-fall of about 200 acres by the end of the Third Plan. The short-fall is attributed to non-availability of proper seed material in adequate quantities.

Ginger Development Scheme, Himachal Pradesh. This scheme was started in January, 1960. Its current sanction period is up to March, 1966. The scheme does not envisage any expansion of the area under the crop as such, but is meant to investigate the possibilities of replacing the existing local types by improved exotic types with lower fibre content and high-yielding qualities. According to the report for 1961, improved varieties have been tried in about

100 acres in this State with an additional production of about 2,000 tonnes in terms of dry ginger.

CHILLIES

Research on improvement of chillies undertaken in the undivided Madras State from 1931 had led to the evolution of certain high yielding types tolerant to thrips attack. These improved types have been spread in about 70 per cent in the present Andhra State. Botanical and agronomical investigations in the same areas had led to results of practical application which have also been adopted on field scale.

TURMERIC

Not much of developmental work has been carried out, as no research results of economic value were available.

TREE SPICES

No development work on these crops was undertaken during the First and Second Five Year Plans.

Arising out of the recommendations made by a Seminar on Spices and Cashewnut, held at Mercara in May, 1958, pilot projects for the development of clove, nutmeg and cinnamon have been sanctioned in the States of Kerala, Mysore and Tripura during the Third Plan with a provision of Rs. 1.15 lakh. These projects for the setting up of nurseries for producing plant material for distribution to growers. No targets of area and production have been fixed by any of the States. The following is a brief statement of the position with regard to the operation of these schemes :

TABLE 8. TARGETS OF SEEDLINGS PRODUCTION

	1961-66	1961-62	1962-63
Clove	30,000	5,000	5,000
Nutmeg	50,000	13,500	24,500
Cinnamon	20,000	3,500	3,500

Kerala. During the first two years of the Third Plan, however, the number of seedlings distributed was: clove 685, nutmeg 5,675 and cinnamon 3,454. The achievement is very much short of the targets. The principal difficulty seems to be non-availability of seed material or high price for seed demanded by local sellers. It is expected that

on the basis of the present production of seedlings only about 500 acres are likely to be covered by the end of the Third Plan under all the three crops.

Mysore. In this State, the work is purely exploratory. No targets have been laid down. It is stated that the combined area under clove and nutmeg at the beginning of the Third Plan was about 12.5 acres only which had increased by 2 acres up to the end of December, 1962. No production is expected as the plants are young and it takes 8 to 12 years for them to start bearing. It is stated that intensive propaganda is being carried out and that growers are responding well; that there is high demand from growers of the Mainad tract and that the State Government is taking efforts to procure the required seed material for raising seedlings. The increase of area and production by the end of the Third Plan is, however, expected to be only very nominal.

Tripura. It is reported that no work has yet been started. It is doubtful whether there is any use in keeping this scheme if Tripura Administration is not interested in taking it up.

From what has been stated above, it will be seen that the only State which is likely to show an increase in the area is Kerala with a total of about 500 acres under the three crops. There is no development scheme in Madras. In view of the long time taken by clove and nutmeg to start yielding, no additional yield can be expected in their case until the end of the Fourth Plan or even perhaps till the early years of the Fifth Plan period. In the case of cinnamon the bark can be taken about 5 years after planting.

MINOR SPICES

No development schemes were taken up.

CASHEWNUT

There were no development schemes on cashewnut during the First Five Year Plan. During the Second Plan a programme for increasing the area under cashewnut by 1,88,500 acres by the end of the Second Plan period was formulated. Originally the Planning Commission had fixed a target of producing 1,06,000 tonnes of cashewnut by the end of the Second Plan period, but considering the perennial nature of the crop and the fact that new plantations would start yielding only five years after planting, it was later on decided (1958) that the target of additional production should be fixed in terms of acres (1,88,500) as stated above. The development pro-

gramme provided for giving incentives to growers through the distribution of crop loans, assignment of lands on lease and supply of planting material. The pattern of financial assistance prescribed

TABLE 9. TARGETS FIXED FOR THE SECOND FIVE YEAR PLAN AND AREA AND PRODUCTION ACHIEVED AT THE END OF THE SECOND FIVE YEAR PLAN

State	Targets		Achievements	
	Area (in acres)	Pr duction (in tonnes)	Area (in acres)	Production (in tonnes)
Madras	1,19,665	11,300	90,410	15,600
Kerala	1,45,091	13,500	1,35,976	84,449
Maharashtra	33,801	4,696	9,100	NK
Mysore	90,272	8,096	14,881	10,997
Andhra Pradesh	60,019	8,550	23,065	2,239
Assam	2,820	4	—	—
Orissa	9,569	49	1,816	605
West Bengal	4,266	250	5,167	1,481
Madhya Pradesh	411	—	NK	NK
Andamans and Nicobar Islands	203	6	116	6
Total	4,66,117	1,16,391	2,80,531	1,15,377

TABLE 10. AREA AND PRODUCTION OF CASHEWNUT IN 1953

State	Area (in acres)	Production (in tonnes)
Madras	1,35,639	33,000
Travancore-Cochin	82,925	20,000
Bombay	4,509	4,500
Coorg	155	
Mysore	500	2,600
Total	2,23,128	60,100

TABLE 11. AREA AND PRODUCTION OF CASHEWNUT AT THE
END OF THE SECOND FIVE YEAR PLAN

State	Area (in acres)	Production (in tonnes)
Madras	90,410	13,600
Kerala	1,35,976	84,449
Maharashtra	9,100	NK
Mysore	14,881	10,997
Andhra Pradesh	23,065	2,239
Orissa	1,816	605
West Bengal	5,167	1,481
Andamans and Nicobar Islands	116	6
Total	2,80,531	1,15,377

Figures as furnished by the different States.

TABLE 12. IMPORT OF RAW CASHEWNUT INTO INDIA AND
EXPORT OF CASHEW KERNELS FROM INDIA

Year	Quantity (in tonnes)	Value (in Rs. lakh)
1953-54	64,000	422
1954-55	85,000	425
1955-56	62,000	483
1956 (April-Dec.)	22,000	188
1957	96,000	737
1958	1,20,000	747
1959	90,000	607
1960	1,18,300	961
1961-62	87,950	591

TABLE 13. EXPORT OF CASHEW KERNELS

Year	Quantity (in tonnes)	Value (in Rs. lakh)
1953-54	26,650	1099
1954-55	34,000	1070
1955-56	30,850	1292
1956-57	31,058	1453
1957-58	36,348	1516
1958-59	31,058	1453
1959-60	38,188	1605
1960-61	42,936	1891
1961-62	41,095	1817
1962-63	47,791	1936

TABLE 14. TARGETS AGREED TO BY STATE GOVERNMENTS FOR THIRD PLAN (1961-66)

State	Non-forest (in acres)	Forest (in acres)	Total (in acres)
Madras	10,000	10,000	20,000
Kerala	10,000	5,000	15,000
Maharashtra	5,00,000	—	5,00,000
Mysore	75,000	20,000	95,000
Andhra Pradesh	6,500	50,000	56,000
Orissa	1,00,000	—	1,00,000
Assam	5,000	—	5,000
West Bengal	5,000	—	5,000
Madhya Pradesh	500	—	500
Andamans and Nicobar Islands	1,000	—	1,000
Tripura	2,000	—	2,000
Total	7,15,000	85,000	8,00,000

was that the growers would be entitled to a loan of Rs. 150 per acre for the area brought under the crop and the State Governments would be eligible for subsidy up to 50 per cent of the recurring expenditure on additional technical staff appointed in connection with these development programmes. Provision was made for taking up this activity both in non-forest and forest areas. Table 11 gives State-wise targets fixed for the Second Plan and the actual achievements of this target in terms of area, including production in terms of raw nuts at the end of the Plan period. The total provision for the Second Plan was Rs 1.71 crore of which it was reported that Rs. 76 lakh had been actually utilized.

Considering the large increase in the import of raw nuts (Tables 12 and 13) and the high prices paid therefor, particularly during the years 1957 to 1961, it was considered that every effort should be taken to increase indigenous production and to depend less and less on import of raw nuts. Accordingly, it was proposed that the target of additional acreage by the end of the Third Plan period should be fixed at 8 lakh acres including 85,000 acres in forest areas (Table 14). A provision of Rs. 1.90 crore was made for this purpose, the pattern of financial assistance being the same as during the Second Plan period.

A review of the work done during the first two years of the Third Plan in relation to the targets for those two years shows that the targets for 1961-62 had been achieved and even slightly exceeded. The target for 1962-63 is also almost achieved. The State-wise targets and achievements are given in Table 15.

On the basis of the above facts, there is every reason to hope that the additional area targeted for at the end of the Third Plan would be fully achieved and even exceeded. The estimated area and production at the end of the Third Plan is shown in Table 16. It will be seen that at the beginning of 1966-67, i.e., at the end of the Third Plan, the production of raw nuts would be 1,69,000 tonne yielding about 42,250 tonnes of kernels. A ceiling has also been prescribed for import of raw nuts into the country during the Third Plan, viz., one lakh tonnes per year (equivalent to 2,500 tonnes kernels). Assuming that the entire imported products will be processed for export, the total availability of kernels at the end of the Third Plan period is estimated at 67,250 tonnes. The target for export of cashew kernels at the end of the Third Plan period has been fixed at 50,000 tonnes of kernels.

TABLE 15. TARGETS AND ACHIEVEMENTS FOR THE FIRST TWO YEARS OF THE THIRD FIVE YEAR PLAN

State	Targets (in acres)			Achievements (in acres)		
	1961-62	1962-63	Total	1961-62	1962-63	Total
Madras (forest)	2,000	2,000	4,000	3,204	2,600	5,804
„ (non-forest)	2,000	2,000	4,000	3,845	6,987	10,832
Mysore („)	15,000	15,000	30,000	14,000	15,000	29,960
Gujarat (forest)	200	200	400	—	200	—
Madhya Pradesh	100	100	200	—	136*	—
Tripura	420	420	840	320	360	680
Kerala	2,000	2,000	4,000	6,000	N.R.	—
Maharashtra	1,00,000	1,00,000	2,00,000	94,335	94,469	1,88,795
Andhra (non-forest)	1,300	1,300	2,600	1,018.4†	162.50(A)	—
Assam	1,000	1,000	2,000	553	411 (£)	964
West Bengal	1,000	1,000	2,000	600	119.41	719.41
Andamans and Nicobar Islands	200	200	400	245	55	300
Total	1,26,220	1,26,220	2,52,440	1,27,015	1,20,139	2,38,054

*Estimates for 1961-62 and 1962-63.

N R.—Not Reported.

(£)—Area upto December, 1962.

TABLE 16. TOTAL AREA AND PRODUCTION ESTIMATED AT THE
END OF THE THIRD PLAN

State	Area (in acres)	Production (in tonnes)
Madras	1,32,870	16,039
Kerala	1,54,301	84,649
Maharashtra	1,25,936	1,210
Mysore	1,77,855	12,687
Andhra Pradesh	1,11,961	3,157
Orissa	1,01,424	1,637
Assam	6,837	70
West Bengal	8,920	1,519
Madhya Pradesh	895	8
Andamans and Nicobar Islands	1,114	15
Tripura	1,902	19
Bihar	6,516	67
Total	8,30,531	1,21,077

On the basis of the satisfactory achievement of the targets during the first two years of the Third Plan and of the steady improvement in the export figures during this period, it is expected that the targets of production (67,250 tonnes) and export (50,000 tonnes) by the end of the Third Plan period, would be achieved.

CHAPTER III

DEMAND PROJECTIONS FOR THE FOURTH & FIFTH PLANS

CONSIDERING the erratic nature of the trend of production exports and internal consumption in the past, no scientific assessment of pepper requirements can be attempted. However, on the basis of existing level of exports and internal consumption, it is proposed that we should aim at an additional production of 5,000 tonnes of black pepper for each of the Fourth and Fifth Plan periods, 3,000 tonnes for increased exports and 2,000 tonnes for increased internal consumption. The export target is based on the estimates of the Spices Export Promotion Council and the Ministry of International Trade. There is also scope for export of white pepper which is reported to be finding favour in the European markets.

The position thus will be as follows:

TABLE 17. EXPORTS AND CONSUMPTION

At the end of	For export	Demand Internal consumption	(Metric tonnes) Total
Third Plan	24,000	6,000	30,000
Fourth Plan	27,000	8,000	35,300
Fifth Plan	30,000	10,000	40,000

Cardamom. The demand projections for the Fourth (Table 17A) and Fifth Plans will have to be made keeping in view on the one hand the importance of cardamom as a foreign exchange earner and on the other, the limitations in increasing production. According to the Ministry of International Trade, the export requirements for each of the Fourth and Fifth Plan periods is 250 tonnes. Keeping in view the present ratio between production and exports and allowing for a slight increase in internal consumption, it is considered that our additional production of 500 tonnes in each of the Fourth and Fifth Plan periods would be reasonable.

TABLE 17A. STATE-WISE AND YEAR-WISE BREAK-UP OF TARGETS OF ADDITIONAL AREA AND PRODUCTION FOR CARDAMOM IN FOURTH PLAN (1966-1971)

States	Additional area (in inches)						Additional production (in metric tonnes)					
	1st yr.	2nd yr.	3rd yr.	4th yr.	5th yr.	Total	1st yr.	2nd yr.	3rd yr.	4th yr.	5th yr.	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Mysore	500	500	500	500	500	2,500	—	—	50	75	75	200
Kerala	480	480	480	480	480	2,400	—	—	50	75	75	200
West Bengal	150	150	150	150	150	750	—	—	10	25	25	60
Madras	100	100	100	100	100	500	—	—	10	15	15	40
Total	1,230	1,230	1,230	1,230	1,230	6,150	—	—	120	190	190	500

Ginger. We have no data on the basis of which the future requirements of ginger for internal consumption and export can be estimated with any precision. However, considering the limited area under the crop and the large increase in yield which can be obtained by substituting local types with high-yielding exotic types, it is felt that an additional production of about 5,000 tonnes (Table 18) during each of the Fourth and Fifth Plan periods, should be adequate for the present, this increase being solely achieved by the spread of high-yielding exotic types over an area of 5,000 acres in each of the two Plan periods and not by bringing in new areas under the crop. It has been ascertained from the Ministry of International Trade that their export targets for the Fourth and Fifth Plans are 10,000 and 12,000 metric tonnes respectively. The additional production proposed above would therefore appear to be adequate for export and internal consumption.

Chillies. The line of development for the future therefore solely lies in spreading improved varieties over the areas for which they are suitable. Information regarding the extent of area already covered by these varieties, further areas to be covered and the inducements to be offered for the purpose are being ascertained and a project for undertaking development measures to the required extent in Andhra Pradesh will be formulated when these particulars are available.

In other States, in the absence of conclusive results of experimental work on improved strains it is not considered necessary to plan for any special developmental programmes. However, five per cent increase in area may be provided for in the case of Maharashtra, Mysore, Madras and Madhya Pradesh where work on improvement of chillies is already in progress. As and when better varieties are evolved, these can be propagated. Also demonstration plots will be organised for showing the efficacy of improved agronomic practices, better methods of drying, processing, etc.

Turmeric. The Spices Export Promotion Council and the Ministry of International Trade have targeted for exporting 5,000 and 10,000 tonnes during the Fourth and Fifth Plan periods respectively by popularising measures on its various uses, quality control measures, etc. Additional production to this extent has to be provided for by undertaking propaganda measures and spreading high-yielding improved varieties as and when they are evolved at the research stations.

TABLE 18. PHYSICAL TARGETS OF GINGER IN FOURTH PLAN (1966-71)

States	At the end of Third Plan (Area in acres)	Area proposed to be covered under improved strain during Third Plan	Additional production during Dry Ginger in tonnes
Kerala	29,700	3,000	3,000
Himachal Pradesh	3,000	1,000	1,000
Assam	5,200	500	500
West Bengal	2,300	500	500
	<u>40,200</u>	<u>5,000</u>	<u>5,000</u>

FIFTH PLAN

During the Fifth Plan it is proposed to achieve an additional production of 10,000 tonnes (i.e., over the total production of 27,000 tonnes at the end of Fourth Plan) by growing improved varieties and adopting improved agronomical practices.

A--AREA PROPOSED IN ACRES

States	1966-67	1967-68	1968-69	1969-70	1970-71	Total
1. Kerala	600	600	600	600	600	3,000
2. Himachal Pradesh	200	200	200	200	200	1,000
3. Assam	100	100	100	100	100	500
4. West Bengal	100	100	100	100	100	500
Total	1,000	1,000	1,000	1,000	1,000	5,000

B--SEED REQUIREMENTS (IN LB.) IMPROVED SEEDS OF CHINA, RIO-DE-JANEIRO, ETC.

States	1966-67	1967-68	1968-69	1969-70	1970-71	Total
1. Kerala	7,20,000	7,20,000	7,20,000	7,20,000	7,20,000	36,00,000
2. Himachal Pradesh	2,40,000	2,40,000	2,40,000	2,40,000	2,40,000	12,00,000
3. Assam	1,20,000	1,20,000	1,20,000	1,20,000	1,20,000	6,00,000
4. West Bengal	1,20,000	1,20,000	1,20,000	1,20,000	1,20,000	6,00,000
Total	12,00,000	12,00,000	12,00,000	12,00,000	12,00,000	80,00,000

Tree Spices. As stated in chapter I, in view of our heavy imports of clove and nutmeg, there is urgent need for stepping up production of these two crops. In the case of cinnamon also, the position is the same except that the drain on our foreign exchange is not as much in this case as in the others. But even here, there is need for covering at least the current deficiency.

Expansion of the production of these spices has certain limitations. The principal handicap seems to be that agriculturists are not likely to shift their preference from more remunerative and dependable income from crops like coffee, rubber, tea, etc., to the relatively less paying and more difficult crops like clove, nutmeg and cinnamon. The difficulties experienced by the Kerala State in raising the seedlings have already been explained. For these reasons, there may not be much enthusiasm among the growers for raising plantations of these crops. Further, there are no organised agencies at present for supplying seedlings and rendering advice on the planting and management of the seedlings on scientific lines. However, in view of the need for increasing production and of the availability of suitable areas for development such as the vicinity of the Nilgiris, Courtallam in Tinnevely District, certain high ranges of Kanyakumari District, parts of Kerala State and the Malnad area in Mysore State, we could aim at a reasonable increase in the production of these crops in these areas during the next two Plans. It would not, however, be realistic to plan for self-sufficiency even by the end of the Fifth Plan period. In any case a proper survey of the production of the crops will have to be undertaken before planning systematic expansion.

The suggested additional areas to be brought under these crops in the three States are as under :

TABLE 19. SUGGESTED ACERAGE IN FOURTH PLAN

Crop	Kerala	Madras	Mysore	Total
Clove	500	250	250	1,000
Nutmeg	250	100	150	500
Cinnamon	100	75	75	250
Total	850	400	575	1,750

FIFTH PLAN

Normally, a higher target than in the Fourth Plan would be reasonable during the Fifth Plan, but as the development work on these crops is expected to gain momentum only during the Fourth Plan period, it would be more realistic to limit the targets for the Fifth Plan at the same level as in the Fourth Plan.

As regards production, no additional production can be expected from the plantations of clove and nutmeg taken up during the Third Plan, until the early years of the Fifth Plan. In the case of cinnamon, however, the bark can be removed by about the fifth year of the Plan so that by the end of the Fourth Plan, additional yields could be expected from the plantations taken up during the current Plan. The following is a rough estimate of the additional production that can be expected in respect of these three crops during the Fourth and Fifth Plan periods.

TABLE 21. PRODUCTION (IN METRIC TONNES)

	Fourth Plan	Fifth Plan
Clove	Nil	0.2
Nutmeg	Nil	0.2
Cinnamon	Nil	18

Note: No additional production is anticipated during the Fourth Plan period, as the trees would commence bearing only by the end of Fifth Plan.

Minor Spices. These are used in cooking and also in the preparation of curry powder and curry paste which are becoming increasingly popular in European countries. The improvements of these crops will substantially help in increasing foreign exchange earnings.

Cashewnut. According to information informally obtained from Cashew Export Promotion Council, they want to target for an increase in the export of kernel by 5,000 tonnes in each of the Fourth and Fifth Five Year Plans. In other words, with 55,000 tonnes of kernels at the end of the Third Plan, the export figure aimed at the end of the Fourth Plan is 5,000 tonnes on the basis of an increase of 1,000 tonnes every year and 60,000 tonnes at the end of Fifth Plan on the same basis of annual increase.

Regarding internal consumption, provision has to be made for a reasonable increase as a result of growth in population and the rise in standard of living. The Spices Enquiry Committee (1953) had estimated total annual internal consumption of kernels at 2 to 3 thousand tonnes or 8 to 12 thousand tonnes in terms of raw nuts. Since then, the requirements of internal consumption have increased and by the end of the Third Plan period, it is expected that this will amount to 9,000 tonnes of kernels or 36,000 tonnes in terms of raw nuts. By the end of the Fourth Plan, it may be estimated that the demand for internal consumption would rise to 10,000 tonnes of kernels (40,000 tonnes of raw nuts) and to 12,000 tonnes of kernels by the end of the Fifth Plan (48,000 tonnes of raw nuts).

TABLE 21. STATE-WISE BREAK-UP OF THE TOTAL ESTIMATED AREA AND PRODUCTION AT THE END OF THE FIFTH PLAN

State	Additional area proposed to be covered in the Fourth Plan period (in acres)	Total at the end of the Fourth Plan	
		Area (in acres)	Production (in tonnes)
Madras	57,750	1,90,620	17,541
Kerala	63,000	3,17,301	92,580
Maharashtra	56,000	1,81,936	1,323
Mysore	70,000	2,47,855	13,875
Andhra Pradesh	49,000	1,60,961	3,455
Orissa	38,500	1,39,924	1,792
Assam	4,200	11,037	76
West Bengal	5,250	14,170	1,660
Madhya Pradesh	525	1,420	9
Andamans and Nicobar Islands	525	1,639	16
Tripura	1,750	3,652	21
Bihar	3,500	10,016	1,473
Total	3,50,000	11,80,531	1,32,421

Assuming that the new plantations established during the Third Plan will just start bearing by about the end of the Fourth

Plan, it may be estimated, on a conservative scale, that 1/5th of this additional area would yield at 1/10 tonne per acre. In other words, out of the 5.5 lakh acres that may be planted during the Third Plan period, 1.1 lakh can be expected to yield about an additional 11,000 tonnes of raw nuts by the end of the Fourth Plan.

On the basis of the above estimates, the requirements of kernels and the corresponding quantity of raw nuts during the Fourth and Fifth Plan periods can be estimated as shown in Table 21. It will be seen that by the end of the Fourth Plan, the total quantity of kernels required for internal consumption and export would be 65,000 tonnes or 2,60,000 tonnes of raw nuts. The corresponding figures at the end of the Fifth Plan would be 72,000 tonnes kernels and 2,82,000 tonnes of raw nuts. The annual increase would be 1,000 tonnes of kernels or 4,000 tonnes of raw nuts.

Working on the above figures, it will be noticed that the production of raw nuts at the end of the Third Plan would amount to only 1,21,07 tonnes (Table 16). There will be a deficit of 1,14,923 tonnes raw nuts at the end of the Third Plan. Imports to this extent will also have to be provided for during the early part of the Fourth Plan. At the end of the Fourth Plan would, however, on the basis of an additional production of 11,600 tonnes of raw nuts as stated in an earlier paragraph, the total production should be 1,32,070 (1,32,060) tonnes of rawnuts or 33,000 tonnes in terms of kernels. Against this, our estimated requirements at the end of the Fourth Plan would be 65,000 tonnes of kernels, according to these calculations, therefore, at the end of the Fourth Plan period, we will be having a deficit of 32,000 tonnes of kernels or 1,28,000 tonnes of raw nuts.

CHAPTER IV

MEASURES REQUIRED AND PROPOSED FOR ACHIEVING TARGETS

Pepper. The principal developmental measures proposed for achieving the increased production during the Fourth and Fifth Plan periods are extensive adoption of improved agricultural practices like manurial and plant protection measures in the existing plantations, organisation of demonstration plots, extension of area under pepper to the extent feasible in the principal growing States and improvement in marketing practices. The adoption of improved agricultural practices is expected to result in an additional yield of 80 to 100 lb per acre. The scope for bringing new areas under the crop is somewhat limited and the total new area proposed during the Fourth Plan is 12,500 acres against 16,700 acres in the Third Plan period. It is proposed that the execution of development measures on pepper including cultivation, processing and marketing should, wherever possible, be integrated with similar work on coconut and arecanut with which pepper is generally grown as mixed crop.

About 20 per cent of the total area under pepper is confined to pure plantations, concentrated mostly in the district of Cannanore in the Kerala State. In view of the potentialities for increasing production by intensive agricultural practices, it is proposed that a Package Programme for developing a block of about 5,000 acres should be introduced in that district during the Fourth Plan, this programme being combined, if possible, with similar programmes for arecanut and coconut which are extensively found in the same area.

Cardamom. Apart from the existing measures, viz., production and supply of healthy seedlings, organisation of demonstration plots and plant protection measures, it is essential to undertake a vigorous drive to eradicate the Kattee disease, which is widespread in Mysore, Madras and Kerala. Such a drive is expected to be undertaken during the Third Plan itself. Besides the provision of funds for these purposes, intensive propaganda will have to be undertaken. It may even become necessary to provide suitable compensation to the grower for the loss of produce resulting from the destruction of diseased plants.

Ginger. The only measure now proposed is the multiplication and distribution of improved varieties including exotic types by establishment of seed multiplication centres in the important ginger-growing States of Kerala, Himachal Pradesh and Assam.

It is proposed that the execution of development measures on ginger including collection, processing and marketing, should, wherever possible, be integrated with similar work on other important crops growing in the same areas such as coconut and arecanut. In particular, there seems to be considerable scope for organising co-operative marketing of ginger.

Chillies. The principal line of development to be adopted is the spread of improved varieties in areas for which they are suitable by publicity and propaganda. Demonstration plots will have to be organised for showing the efficacy of improved agronomic practices, better methods of drying, processing, etc. This can be done in the departmental agriculture demonstration farm.

Turmeric. No particular development measures except publicity and propaganda are contemplated at this stage, in the absence of conclusive results of practical application. However, work on the improvement of drying and processing of turmeric has to be taken up for which a suitable project will be drawn up.

Tree Spices. Pending results of research work on the cultural and manurial aspects of these crops including investigations into the diseases and pests and measures for their control, the principal developmental activity to be taken up during the Fourth Plan period at least would be the raising of healthy seedlings and their distribution. For this purpose, apart from expanding the capacity of the existing nurseries, new nurseries may have to be set up at suitable places. The State Governments will have to be provided with assistance towards the strengthening of existing nurseries and setting up of new nurseries according to the normal pattern of 50 per cent subsidy on recurring expenditure. Besides this, it will be necessary also to subsidise the supply of seedlings to the growers for some time. During the Fourth Plan period, it is considered that seedlings should be distributed on a subsidised basis of 50 per cent of the cost. At present there are complaints that the planting material is very expensive. In Kerala, the existing price of clove and nutmeg seedlings is Re. 1 and Rs. 1.50 respectively. The prices are reported to be much higher in the case of material purchased from private nurserymen. As we are in the very initial stages of developmental work on these crops, it will be

essential to provide this incentive if the targets for increasing the area and production of these crops are to be achieved.

Cashewnut. It will be seen from the above that the following are the principal development measures for improvement of the cashewnut crop so as to achieve the targets for the next two Plan periods :

- (i) Extension of area under cashewnut.
- (ii) Provision of fertilizers.
- (iii) Supply of fungicides and insecticides and distribution of sprayers and other appliances.
- (iv) Supply of good quality planting material.

The following further development measures are suggested for implementation during the next two Plan periods :

Production and Marketing Survey of Cashewnut. No systematic survey of the production and marketing of cashewnut has so far been undertaken. At present we largely depend on the information contained in the Spices Enquiry Committee's Report (1953) supplemented by information subsequently received from the State Governments from time to time. With the large programmes for extension of cashewnut cultivation undertaken during the Second and Third Plans, it seems very desirable to make a proper appraisal of the present position with regard to area and production of cashewnut in the various States on a scientific basis. Without this basic information, it would not be possible to formulate proper plans for development in future. It is accordingly proposed that such a production and marketing survey should be undertaken in the case of cashewnut as early as possible, through the Agricultural Marketing Department. A provision of Rs. 3 lakh on an *ad hoc* basis can be made for the purpose.

2. Improvement of Marketing. Out of the estimated production of 1,15,00 tonnes of raw nuts in India, only about 60,000 tonnes are estimated to reach the processing factories at present. The rest is apparently consumed in homesteads. The raw nuts required for the factories are largely procured by merchants and agents of the factory owners and exporters. These merchants and agents get the nuts at a nominal rate from the growers and the profits accruing from the crop subsequently, upto the stage of export go entirely to these persons and to the factories and exporting agencies. The Spices Enquiry Committee had estimated that the producer's share of the price of raw nuts delivered at the factory was about 50 per cent only.

The possibility of improving marketing of cashewnut with a view to securing the maximum advantage to the grower has been considered by the Indian Council of Agricultural Research and *ad hoc* Committee appointed by them. Various suggestions have been made but so far no concrete steps have been taken, obviously due to the fact that complete informations regarding production, processing, marketing, etc., is not yet available. The proposed production and marketing survey will doubtless provide the necessary data. Meanwhile, there are obvious possibilities of improvement over the existing position. Co-operative organisations for the collection of nuts for supply to the factories and elimination of middle-men functioning between the producers and the factories, could perhaps be organised on lines more or less similar to the co-operative organisation in the case of arecanuts. In both these cases, the crop is mostly produced in the small scattered holdings. The organisation of Co-operative Marketing for arecanut has shown very promising results, particularly in Mysore, Madras and Maharashtra. The position in Kerala is being looked into. Similar steps could be taken in a systematic way in the case of cashewnut also. At any rate, during the Fourth Plan period, it is considered essential to make a beginning in this respect. Apart from collection and delivery at the factories, it would be very desirable to promote the setting up of a few co-operative factories also in suitable places, avoiding conflicts with the existing factories as far as possible. Such co-operative factories could also undertake trade in cashewnut oil and handle exports. The proposal for organising co-operative factories is already being examined. Pending formulation of suitable projects, it is recommended that an *ad hoc* provision should be made for the improvement of co-operative marketing of cashewnut including collection, processing and export. Apart from provision for subsidising, the setting up of co-operative marketing organisations on the present approved lines, and for advancing production and marketing loans through institutional agencies, provision will have to be made for the capital and other expenditure involved in setting up a few processing factories. It is suggested that an *ad hoc* provision of Rs. 10 lakh may be made towards capital and recurring expenditure on the setting up of 3 or 4 factories in the co-operative sector during the Fourth Plan period.

3. Publicity and Propaganda. As in the case of other similar crops, publicity and propaganda are essential for the improvement of the cashewnut crop as well as for its systematic collection, processing and export. Leaving the export side to the Export Promotion Council, there is considerable scope for propaganda and publicity on the production and processing side.

Several pamphlets will have to be brought out for the purpose and intensive propaganda taken up particularly in the important producing areas so that the growers take up the improvement of the crop on the lines recommended by departments and take full advantage of the facilities extended by Government for the purpose. While special provision will have to be made for the preparation of propaganda material, the actual field propaganda can be left to the State agencies responsible for general agricultural propaganda in the regions concerned. A provision of Rs. 5 lakh is suggested for this purpose. The actual details will have to be drawn up in collaboration with the Export Promotion Council. It is likely that some funds would be made for this purpose from the special funds placed at the disposal of this Council.

CHAPTER V

DETAILS OF CROP-WISE SCHEMES WITH FINANCIAL REQUIREMENTS ETC.

PEPPER

Physical Targets for the Fourth and Fifth Plans. The demand projections mentioned in Chapter II have to be achieved by increasing production from existing areas as well as by bringing in fresh areas under the crop.

The scope for bringing in additional areas is somewhat limited as pepper requires a very good soil and is generally grown as a home-stead crop. Against 16,700 acres of additional area expected to be brought under the crop at the end of the Third Plan, it is felt that the additional area which can be covered by the end of the Fourth Plan should be limited to 12,500 acres. The increased production during the Fourth Plan will, therefore, have to be achieved by adoption of intensive methods like application of fertilizers, plant protection, etc. These measures by themselves are estimated to lead to an increase in yield of 80 to 100 lb. per acre. Out of the total area of 2,70,000 acres at the end of the Third Plan, it is proposed that 1,00,000 acres should be covered under these measures at the rate of 20,000 acres per annum, 90,000 acres in Kerala State and 10,000 acres in Mysore State.

The State-wise break-up of the targets of the additional areas to be covered and the additional production expected from the concerned States given in Table 22 along with particulars of the various developmental measures proposed.

Requirements of Fertilizers, Improved Seeds, Plant Protection Material, etc. This information is given in Table 23. The rooted cuttings are intended to cover the additional area of 12,500 acres as well as for replacement of unthrifty vines. The fertilizer requirements are intended to cover 1,00,000 acres in the existing yielding areas in Kerala and Mysore States.

It is proposed to produce and distribute a total quantity of 12,70,000 rooted pepper cuttings per year in the States of Kerala, Mysore, Assam and West Bengal during the Fourth Plan period.

The production of rooted cuttings would be enough for planting the new area proposed as well as to replace the unthrifty vines in the existing gardens. Research work so far carried out on manuring of pepper has indicated that application of 2 oz. of Ammonium Sulphate plus 4 oz. of Superphosphate plus 4 oz. of Muriate of Potash results in increased yields. Also plant protection measures have been found out for the control of 'wilt' disease, and 'Pollu' attack in pepper gardens. During the Fourth Plan period, an area of 1 lakh acres is proposed to be tackled both under manurial and plant protection measures in the States of Kerala and Mysore by supplying manures and plant protection equipments, etc., on a subsidised basis. Details regarding the State-wise requirements of planting materials and fertilizers are given in Table 23.

Details of Measures and Machinery required for Achieving both the Short-term and Long-term Objectives of the Development Programme. The following are the details of the short-term and long-term measures proposed for achieving the additional production (Table 24) :

1. Production and distribution of rooted pepper cuttings	}	Long-term
2. Loans for new plantations		
3. Adopting improved manurial and plant protection measures	}	Short-term
4. Demonstration plots		
5. Organisation of co-operative marketing societies		

The nurseries for production of rooted cuttings are to be established in important pepper growing areas in the States of Kerala, Mysore, Assam and West Bengal. The required materials will be collected from high-yielding types in these regions. The targets proposed under each of these measures are also given in Table 22. The financial assistance towards these measures will have to be in the existing pattern as for other agricultural crops.

Financial Requirements. These are given in Table 27.

Review of Present Pattern of Financial Assistance and other Relevant Information. The few schemes sanctioned during the Third Plan were financed jointly by the State Governments and the Government of India. The pattern adopted is that while the non-recurring expenditure is met by the State Governments in full, the recurring expenditure, is shared equally between the State Governments and

TABLE 22. STATE-WISE BREAK-UP OF THE PHYSICAL TARGETS FOR THE PLAN PERIOD (1966-71)

Sl. No.	Particulars	Kerala						Mysore					
		1 yr.	2 yr.	3 yr.	4 yr.	5 yr.	Total	1 yr.	2 yr.	3 yr.	4 yr.	5 yr.	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1.	Additional area (in acres)	1200	1200	1200	1200	1200	6000	1200	1200	1200	1200	1200	6000
	Production (in metric tonnes)	...	...	...	240	240	480	...	...	...	240	240	480
2.	Manurial and plant protection measures (Area in acres)	18000	18000	18000	18000	18000	90000	2000	2000	2000	2000	2000	10000
	Production (in metric tonnes)	720	720	720	720	720	3600	80	80	80	80	80	400
3.	Long-term loans for new plantations (area in acres)	1000	1000	1000	1000	1000	5000	500	500	500	500	500	2500
4.	Demonstration plots (Nos.)	250	250	250	250	250	1250	100	100	100	100	100	500
5.	Marketing organisations (Nos.)	3	3	3	3	3	15	...	...	...	...	...	...

Table 22 Concluded

Assam						West Bengal					
1 yr.	2 yr.	3 yr.	4 yr.	5 yr.	Total	1 yr.	2 yr.	3 yr.	4 yr.	5 yr.	Total
(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)
1.	80	80	80	80	400	20	20	20	20	20	100
2.	16	16	...	...	...	4	4	8
3.
4.
5.

Note:—The additional area of 12,500 acres is expected to bring about an additional production of 1,000 metric tonnes only at the end of the Fourth Plan, while the improved agronomical practices proposed to be undertaken in an area of 1 lakh acres would bring about an additional production of 4,000 metric tonnes at 80 to 100 lb. per acre.

TABLE 23. REQUIREMENTS OF SEEDS, FERTILIZERS, ETC., FOR FOURTH PLAN (1966-71)

Sl. No.	Particulars	Kerala						Mysore						
		Years						Years						
		1	2	3	4	5	Total	1	2	3	4	5	Total	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
1.	Production of rooted cuttings (Nos.)	600000	600000	600000	600000	600000	3000000	600000	600000	600000	600000	600000	600000	3000000
2.	Ammonium Sulphate (metric tonnes)	400	400	400	400	400	2000	45	45	45	45	45	45	225
3.	Superphosphate (metric tonnes)	800	800	800	800	800	4000	90	90	90	90	90	90	450
4.	Muriate of Potash (metric tonnes)	800	800	800	800	800	4000	90	90	90	90	90	90	450
5.	Fungicides (metric tonnes)	100	100	100	100	100	500	20	20	20	20	20	20	100
6.	Insecticides (metric tonnes)	100	100	100	100	100	500	20	20	20	20	20	20	100
7.	Sprayers (Nos.)	100	100	100	100	100	500	20	20	20	20	20	20	100

Table 23 (Concluded)

Assam						West Bengal					
Years						Years					
1	2	3	4	5	Total	1	2	3	4	5	Total
50000	50000	50000	50000	50000	250000	20000	20000	20000	20000	20000	100000
...
...
...
...
...
...

TABLE 24. MEASURE-WISE BREAK-UP OF PHYSICAL TARGETS FOR THE FOURTH PLAN PERIOD (1966-71)

	Plant protection (in acres)						Eradication of Katte disease (in acres)						Manurial demonstration plots (Nos.)					
	Year						Year						Year					
	1st	2nd	3rd	4th	5th	Total	1st	2nd	3rd	4th	5th	Total	1st	2nd	3rd	4th	5th	Total
Kerala	1000	1000	1000	1000	1000	5000	1200	1200	1200	1200	1200	6000	100	100	100	100	100	500
Mysore	500	500	500	500	500	2500	1000	1000	1000	1000	1000	5000	100	100	100	100	100	500
Madras	100	100	100	100	100	500	100	100	100	100	100	500	50	50	50	50	50	250
						<u>8000</u>						<u>11500</u>						<u>1250</u>

TABLE 25. REQUIREMENTS OF SEEDS, FERTILIZERS, ETC. FOR FOURTH PLAN (1966-71)

Particulars	Kerala						Mysore					
	1st yr.	2nd yr.	3rd yr.	4th yr.	5th yr.	Total	1st yr.	2nd yr.	3rd yr.	4th yr.	5th yr.	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1. Production of seedlings	816000	816000	816000	816000	816000	4080000	680000	680000	680000	680000	680000	3400000
2. Insecticides D.D.T., Parathion, etc. (in metric tonnes)	4	4	4	4	4	20	2	2	2	2	2	10
3. Fertilizers for demonstration plots N, P, K in metric tonnes	1.5	1.5	1.5	1.5	1.5	7.5	1.5	1.5	1.5	1.5	1.5	7.5

Table 25 Concluded

Madras						West Bengal					
1st yr.	2nd yr.	3rd yr.	4th yr.	5th yr.	Total	1st yr.	2nd yr.	3rd yr.	4th yr.	5th yr.	Total
(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
1. 70,000	70,000	70,000	70,000	70,000	3,50,000	1,36,000	1,36,000	1,36,000	1,36,000	1,36,000	6,80,000
2. 0.4	0.4	0.4	0.4	0.4	2.0	—	—	—	—	—	—
3. 0.75	0.75	0.75	0.75	0.75	3.75	—	—	—	—	—	—

TABLE 26. ESTIMATES OF FINANCIAL REQUIREMENTS DURING FOURTH PLAN (1966-71)

State	Years					Total	Share of the committee (50 %)	Share of the State Govt. (50%)	Total
	1966-67	1967-68	1968-69	1969-70	1970-71				
1. Cardamom Development Scheme, Kerala	52922	52922	52922	52922	52922	264610	132305	132305	264610
2. Cardamom Development Scheme, Mysore	42840	42840	42840	42840	42840	214200	107100	107100	214200
3. Cardamom Development Scheme, Madras	10060	10060	10060	10050	10060	50300	25150	25150	50300
4. Cardamom Development Scheme, West Bengal	10520	10520	10520	10520	10520	52600	26300	26300	52600
Total	116342	116342	116342	116342	116342	581710	290855	290855	581710

Kerala, Mysore and Madras for the Fourth Plan (ad hoc) Rs. 5,00,000

Abstract :

Kerala	—	Rs. 2,64,610
Mysore	—	2,14,200
Madras	—	50,300
West Bengal	—	52,600
(ad hoc)	—	500,00
Total		10,81,710

TABLE 27. FINANCIAL REQUIREMENTS OF FOURTH PLAN (1966-71)

(Rs. in lakh)

Sl. No.	Items	Kerala					Mysore						
		1 yr.	2 yr.	3 yr.	4 yr.	5 yr.	Total	1 yr.	2 yr.	3 yr.	4 yr.	5 yr.	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1.	Establishment of nurseries	1.15	1.15	1.15	1.15	1.15	5.75	1.15	1.15	1.15	1.15	1.15	5.75
2.	Plant protection, equipments, etc.	0.80	0.80	0.80	0.80	0.80	4.00	0.20	0.20	0.20	0.20	0.20	1.00
3.	Demonstration plots	0.10	0.10	0.10	0.10	0.10	0.50	0.04	0.04	0.04	0.04	0.04	0.20
4.	Long-term loans	1.20	1.20	1.20	1.20	1.20	6.00	0.60	0.60	0.60	0.60	0.60	3.00
5.	Marketing organisations	0.20	0.20	0.20	0.20	0.20	1.00	...	...	...	...	...	...
6.	Subsidy towards fertilizers (Super-phosphate)	0.50	0.50	0.50	0.50	0.50	2.50	0.10	0.10	0.10	0.10	0.10	0.50
							<u>19.75</u>						<u>10.45</u>

Table 27 (Concluded).

Items	Assam					West Bengal						Abstract		
	1 yr.	2 yr.	3 yr.	4 yr.	5 yr.	Total	1 yr.	2 yr.	3 yr.	4 yr.	5 yr.	Total		
	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)		
1.	0.45	0.45	0.45	0.45	0.45	2.25	0.18	0.18	0.18	0.18	0.18	0.90	Kerala	19.75
2.	...	...	...	...	...	...	...	...	...	...	...	...	Mysore	10.45
3.	...	...	...	...	...	...	...	...	...	...	...	...	Assam	2.25
4.	...	...	...	...	...	...	...	...	...	...	...	...	West Bengal	0.90
5.	...	...	...	...	...	...	...	...	...	...	...	...
6.	...	...	...	...	...	2.25	...	...	...	...	...	0.90		
														33.35 lakh

the Centre. With the constitution of the Indian Central Spices and Cashewnut Committee, the responsibility of the Centre in this regard will hereafter devolve on this Committee. No change in this pattern of financial assistance, and in the pattern for subsidies is considered necessary during the Fourth Plan period so far as pepper development schemes are concerned.

TABLE 28. FINANCIAL PROVISION FOR THE FOURTH PLAN
(1966-71)

Measures	Total provision in lakh Rs.	Share of the Committee Rs.	Share of State Governments Rs.
1. Expansion of area	9.00	4.50	4.50
2. Fertilizer measure (25 per cent subsidy for super, phosphate)	5.00	2.50	2.50
3. Plant protection			
(a) Fungicides (25 per cent)			
(b) Pesticides (25 per cent subsidy)			
(c) Sprayers (50 per cent subsidy)			
4. Improved seeds			
5. Demonstration plot	5.00	5.00	—
6. Production and marketing survey	3.00	3.00	—
7. Subsidies for the setting up of co-operative marketing organisation	5.00	5.00	—
8. Setting up of factories under co-operative sector	10.00	10.00	—
9. Publicity and propaganda	5.00	5.00	—
Total	42.00	35.00	7.00

General Remarks. It has been reported that in certain foreign countries as in Europe and in the Middle East a distinct preference for white pepper has been developing in recent years and that the prices in these foreign markets for white pepper are 50 to 75 per cent higher than those of black pepper. A trade delegation sponsored by the Spices Export Promotion Council to the Middle East and Europe has recently reported that in view of the above preference we should explore the possibilities of producing white pepper in our country on economical basis. It is obvious that India will have to produce white pepper also to an appreciable extent if she is to retain her foreign markets especially in the Middle East and Europe. The Spices Export Promotion Council at its meeting held on 10th June, 1963 recommended that the Indian Central Spices and Cashewnut Committee should take suitable steps to evolve an economical conversion process for preparing white pepper from black pepper as there had been doubts whether it would be possible to prepare white pepper on a commercial scale. A scheme has been prepared to be taken up in Kerala State to find out the economics of producing white pepper in our country.

Nearly 20 per cent of the total area is confined to pure plantations of pepper and such areas are concentrated mostly in the district of Cannanore in Kerala State. Since it is well-known that pepper has never received the required attention with regard to manuring and plant protection measures which are highly essential for obtaining satisfactory yields, it is worthwhile launching a Package Programme in a block of 5,000 acres in this district. Such a programme can be combined with advantage, with a similar programme for intensive development of other important plantation crops growing in the same area, viz., arecanut and coconut.

CHILLIES

No separate scheme has been proposed.

TURMERIC

Since no results of economic value are now available as a result of systematic research carried out on the crop, there is no scope for any developmental work at this stage. But, some work is necessary on the improvement of drying and processing for which a suitable project will be worked out in consultation with Agricultural Marketing Adviser.

TREE SPICES

TABLE 29. STATE-WISE BREAK-UP OF PHYSICAL TARGETS OF ADDITIONAL AREA AND PRODUCTION DURING THE FOURTH PLAN (1966-71)

Crop	Kerala						
	Year						
	1st	2nd	3rd	4th	5th	Total	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	
1. Clove	Area (in acres)	100	100	100	100	100	500
	Production (in metric tonnes)	...	...	...	...	...	...
2. Nutmeg	Area (in acres)	50	50	50	50	50	250
	Production (in metric tonnes)	...	...	...	...	...	...
3. Cinnamon	Area (in acres)	20	20	20	20	20	100
	Production (in metric tonnes)	...	...	...	...	...	...

Table 29 (Concluded)

	Madras						Mysore					
	Year						Year					
	1st	2nd	3rd	4th	5th	Total	1st	2nd	3rd	4th	5th	Total
	8	9	10	11	12	13	14	15	16	17	18	18
1.	50	50	50	50	50	250	50	50	50	50	50	250

2.	20	20	20	20	20	100	30	30	30	30	30	150

3.	15	15	15	15	15	75	15	15	15	15	15	75

Note:—No additional production could be anticipated from these fresh areas under clove and nutmeg during the Fourth and Fifth Plan periods and the plants would commence bearing only after about 10-12 years. However, the additional area brought under cinnamon would give an estimated additional production of 20 metric tonnes by the end of Fifth Plan period.

TABLE 31. FINANCIAL REQUIREMENTS FOR THE FOURTH PLAN
(1966-71)

States	Years					Total
	1966-67	1967-68	1968-69	1969-70	1970-71	
1	2	3	4	5	6	7
1. Kerala	48,750	48,750	48,750	48,750	48,750	2,43,750
2. Madras	44,000	44,000	44,000	44,000	44,000	2,20,000
3. Mysore	24,750	24,750	24,750	24,750	24,750	1,23,750

Table 31 (Concluded)

State	Share of the Committee (50 per cent)	Share of the State (50 per cent)	Total
	8	9	10
1. Kerala	1,21,875	1,21,875	2,43,750
2. Madras	1,10,000	1,10,000	2,20,000
3. Mysore	61,875	61,875	1,23,750

This represents recurring expenditure on the staff for seedling production, contingencies and subsidies on seedling production.

Abstract :	Kerala	...	2,43,750
	Madras	...	2,20,000
	Mysore	...	1,23,750
	Total		5,87,500

CASHEWNUT

It is not considered possible to give region-wise and measure-wise figures at this stage because in the case of cashewnut, available estimates are at present on State-wise basis and the projections for the Fourth and Fifth Plan periods are based only on increase resulting from new areas brought under the crop apart from the normal yields

expected from existing plantations. However, having regard to the fact that already there is a deficit in the internal production and the same will be continuing during the Fourth and Fifth Plan periods also and that a certain amount of reduction in the yield is inevitable on account of disease and pest infestation and putting down of trees for use as firewood and for planting other more remunerative crops, it would be wise to provide for some increase in area under the crop during the Fourth and Fifth Plans. It is not possible to expect that any appreciable extent of good lands would be available for the purpose because agricultural development activities are being taken up in respect of a variety of crops several of which may be more remunerative. As cashewnut has the advantage of being tolerant even to poor soil conditions, it may be possible to find such poor land including waste land and forest areas. In view of the limited area available for expansion of cashewnut and providing for inevitable short-falls in production as stated above, it would seem reasonable to provide for new areas to be brought under the crop to the extent of 3.5 lakh acres at the end of the Fourth and Fifth Plans. The State wise targets for this increase in area will have to be worked out in consultation with the State Governments.

Substantial forest areas have been brought under cashewnut in a number of States, more particularly Kerala, Madras, Mysore and Maharashtra. It appears there is considerable scope for increasing plantations in such areas in future as well. The extension of cashewnut in such areas also requires to be encouraged by the grant of loans as at present. As cashew plantations in forest areas are generally in large compact blocks and capable of producing sufficient quantities of rawnuts for feeding one or more economic processing factories, they offer best scope for locating processing factories of suitable sizes. Besides this, the facilities available in the Forest Departments for protecting these plantations, from depredation can also be utilised. It is, therefore, considered that the setting up of processing factories of suitable capacity in large compact cashew plantations in forest areas whether under the Forest Departments or through forest co-operatives should be attempted during the Fourth Plan, wherever possible. The provision of Rs. 10 lakh suggested for this purpose in the Section Improvement of Marketing could be partly utilised for this also.

State-wise, Region-wise and Measure-wise Requirements of Fertilizers. Short-term measures like manuring and plant

protection have to be undertaken in order to ensure sustained production at the expected level from the existing plantations as well as new plantations. Manurial requirements for cashewnut have not yet been scientifically worked out. However, on an *ad hoc* basis, it may be estimated that about 21 lb. of Ammonium Sulphate, 1 lb. of Superphosphate and $\frac{1}{2}$ lb. of Potash would be required per bearing tree per year. The fertilizers will have to be applied only where such applications may be most fruitful. Subsidies will have to be given on the same basis as for other agricultural crops according to the general pattern for subsidies adopted during the Third Plan period.

Cashewnut is subjected to attack by a number of pests and diseases. Investigations on these have been taken up only recently. Although no control method have yet been prescribed, according to the present observations, spraying with 1 per cent fungicide (Bordeaux mixture or any other copper fungicide) and with pesticides like 0.1 per cent DDT or BHC could be recommended. For the above mentioned two measures, viz., fertilizers and plant protection, the requirements during the Fourth Plan may be estimated as under :

TABLE 32. AREA TO BE COVERED BY FERTILIZER MEASURES DURING THE FOURTH PLAN PERIOD AND THE QUANTITY OF FERTILIZERS REQUIRED

	1st yr.	2nd yr.	3rd yr.	4th yr.	5th yr.	Total
Area (in acres)	1,000	1,000	1,000	1,000	1,000	5,000
Ammonium Sulphate (in tonnes)	72	72	72	72	72	360
Superphosphate (in tonnes)	36	36	36	36	36	180
Muriate of Potash (in tonnes)	18	18	18	18	18	90

Provision will have to be made for distributing the above mentioned quantities during the Fourth Plan period. These requirements will have to be added to the fertilizer under the agricultural development plan and provision will have also be made for the required amount of short-term loan and subsidy of the standard pattern, viz., 25 per cent in the case of Superphosphate to be shared equally between the Central and State Governments. In the case of other fertilizers, the entire requirements will have to be met

TABLE 33. AREA TO BE COVERED UNDER PLANT PROTECTION MEASURES DURING THE FOURTH PLAN PERIOD AND THE QUANTITY OF FUNGICIDES, PESTICIDES AND SPRAYERS REQUIRED

	First yr.	Second yr.	Third yr.	Fourth yr.	Fifth yr.	Total
Area (in acres)	2,000	2,000	2,000	2,000	2,000	10,000
Fungicide (in tonnes)	9	9	9	9	9	45
Pesticides (in tonnes)	1	1	1	1	1	5
Sprayers (Nos.)	20	20	20	20	20	100

on short-term lean basis. Financial provision has to be made for plant protection measures on the basis of general pattern prescribed, viz., 25 per cent subsidy to be borne equally by the Central and State Governments.

Along with fungicide and insecticides, it would be necessary also to provide for the distribution of sprayers on the existing financial pattern, viz., 50 per cent subsidy to be borne equally by the Central and State Governments.

Improved Seeds. At present, the planting material required is raised from nuts selected from good bearing trees with reference to sizes, etc. There is no arrangement for the scientific selection of suitable seednuts of good quality. Research work relating to the selection of seed material suitable for particular areas is still in progress. We are not in a stage where large scale production of good quality seedlings can be undertaken through Government or private nurseries for distribution to growers. The existing arrangements will, therefore, have to be continued during the Fourth Plan period.

A provision of Rs. 5.00 lakh has been made for the item of fertilizers and manures plant protection and improved seeds.

Setting up of Demonstration Plots. Cashewnut is generally a neglected crops which received not much of attention from the growers after it is planted. Because of its capacity to thrive in poor soil and under varying climatic conditions, it somehow grows inspite of this neglect. But the yield is considerably reduced in these trees. Systematic methods if adopted for the purpose of cultivation and

care of this crop, will no doubt increase the production to a great extent. Proper cultivation and manuring, catch pits and providing irrigation when and where necessary will step up the yield. Recently research work has been undertaken on many of the aspects and results are awaited within a short period. It is important that all these practical results are demonstrated to the cultivators for adoption. It is, therefore, proposed to start 12 demonstration plots in cultivators' plantations distributed as follows :

Kerala	...	3
Madras	...	2
Mysore	...	2
Andhra Pradesh	...	2
Maharashtra	...	2
West Bengal	...	1
Total		<u>12</u>

In addition to these demonstration plots each Regional Research Station on Cashewnut crop will also have one plot each for demonstration purposes. A provision of Rs. 5 lakh has to be made towards this item of work.