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Nurseries—Planting Division*

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Coconut production had been stagnant during the years 1932 to 1945, in the region of 1832 million nuts annually. The Government appointed a Commission on the recommendation of the Coconut Research Institute (CRI) which drew attention to the progressive decline of the coconut industry.

The Coconut Commission reported that due to various factors such as,

(*a*) The progressive ageing of palms,

(*b*) The increase in population,

(*c*) The increased industrial demand for raw materials, and

(*d*) For the maintenance of exports of coconut products.

20,000 acres should be replanted annually. This figure of 20,000 acres was based on the assumption that the economic life span of the coconut tree was 60 years and the acreage in production was said to be in the region of 1.1 million acres. It was thus calculated that one and a half percent of the total area or 17,000 acres were going out of production annually and with new planting and filling of vacancies bringing the total to 20,000 acres. On this Report the Coconut Replanting Programme was initiated by the Ministry of Agriculture and Lands in 1949.

To begin with an average of 180,000 seedlings were issued annually at subsidised rates to replant approximately 3,000 acres of coconut. To implement this programme financial provision was made from a special vote by the Ministry of Agriculture. Up to 1954, 2.2 million seedlings were issued to replant approximately 34,000 acres.

During this period a special vote of Rs. 20,000/- was allocated to the CRI by the Commissioner of Co-operative Development to set up coconut nurseries in some of the approved Coconut Producers' Co-operative Sales Societies. A total of 34 nurseries were maintained during this period. Subsequently most of these societies went into liquidation and the CRI had to wind up activities with the defunct Societies.

As from 1955 the Replanting Scheme gathered momentum when the Government approved a 10-year Replanting Programme with a financial grant of Rs. 5/- lakhs. The programme envisaged a replacement of the existing planted acreage at 1.5 per cent and new planting of suitable lands at 1 per cent per annum.

Subsequently with the 6-year Plan of Development coming into operation and with a total grant of Rs. 8½ lakhs from the Government, 1.2 million seedlings have been issued annually to cover approximately 20,000 acres. The Planting Division has issued a total of 31.5 million seedlings from the inception of this scheme up to 1977 (see Appendix).

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Supply and Demand

The factors which determine supply and demand for seedlings are mainly —

(1) The availability of seednuts,

(2) The price of seedlings,

(3) The market price of copra,

(4) Patterns of rainfall and incidence of droughts,

(5) The levels of taxation,

(6) Government incentives in the form of subsidies, and

(7) The response to schemes for settlement in new areas suitable for coconut.

The demand for seedlings up to 1952 was average. But from 1953, with propaganda and wide publicity given to the scheme, coupled with the reduction in the price of seedlings and the improvement in the copra market, the demand for seedlings rose sharply. As a result the demand for seedlings exceeded supply. The Division was unable to cope with the heavy demand due to lack of adequate financial provision up to 1971. After 1972 the demand for seedlings declined sharply due to the Land Reform Policy of the Government and the droughts that prevailed in 1975 and 1976. The resulting excess of seedlings in nurseries was distributed free to Government and State Institutions. With the various subsidies that are in operation now for the replanting of coconuts the demand for seedlings has been steadily improving.

Planting Material (Seed Coconuts)

Prior to 1949, little or no research had been done in the field of coconut breeding in Ceylon and the rest of the world. Accordingly it was decided that collecting seednuts from selected palms (mother palms) would give the best possible chance of selecting superior progeny. Thus, a scheme for obtaining seednuts from selected high yielding palms was initiated.

On this basis 6,000 palms were initially identified and gradually built up to a mother palm pool of 50,000 palms in 1964. This figure has now been considerably reduced to about 30,000 palms due to changes in ownership resulting from the Government's Land Reform Laws and the redistribution of estates to various concerns such as the Livestock Development Board, Janawasa, Electoral Co-operatives etc. Therefore to supplement the shortfall of approximately 6 lakhs of mother palm seednuts, the Institute resorted to the next best source of seednuts —namely, seednuts from high yielding estate blocks. These are known as block nuts. Mother palm seednuts are purchased from estates at a price which is 25 per cent per 1,000 nuts over the market price of a candy of No. 1 Copra prevailing on the date of selection of nuts. Block nuts are purchased at a price which is Rs. 15/- per 1,000 nuts over the market price of a candy of No. 1 copra on the date of selection of nuts. The monthly market price of copra is obtained from the Coconut Marketing Board. Almost all the mother palms selected by the Institute were located in the North Western Province (N.W.P.).

Presently, seednuts are selected and distributed to nurseries throughout the year. As such, seednuts are received at nurseries even during extremely dry spells of the year at which time they have to be stored for long periods before planting. This has led to a high incidence of failures or non-germinations. Since all mother palms are located in the N.W.P. transport

costs of seednuts to the various nurseries scattered round the island by road and rail are fairly high. This expenditure can be greatly reduced if selection of mother palms are done close to areas where coconut nurseries are established.

There has been some agitation in the recent past among planting circles that planting material selected in one area and transported to different agro-climatic zones do not perform so well as planting material obtained from the locality for which it is intended. While no research information is available on this point, observations made on the performance of local and introduced planting material have favoured the use of locally produced material in the various agroclimatic zones. Climate plays an important part in determining coconut yields and the Institute has to devote attention to selecting types particularly adapted to specific agro-climates. The Coconut Research Board (CRB) may need to give serious thought to accepting different standards in the selection of palms in the dry and semi dry zone areas where production is lower than that obtained in the wet and semi wet zone areas. Besides the advantages of this approach, considerable savings could be made on the transport of seednuts to these areas.

Due to the paucity of planting material and lack of transport facilities the replanting programme has dwindled to about 30 percent of what was originally intended. The present practice has been to transport seednuts by rail to the Northern, Southern and Eastern provinces. But due to the serious shortage of wagons in the (Ceylon Government Railways) C.G.R. seednuts have to be despatched to distant nurseries by road and the process is so slow that seednuts are often received at nurseries at times unsuitable for planting. The localised selection of mother palms will greatly assist the Institute to get over these problems.

The sale of hybrid seedlings will begin in nurseries in the coconut triangle in Maha 1978. 50,000 nuts are to be planted in 4 selected nurseries this year. It is expected that hybrid nuts will be sent to above nurseries as production of this planting material increases.

Seedling Distribution

Seedlings are sold at a subsidised price of -/50 cts each ex-nursery. The cost of production is approximately Rs. 2/65.

Seedlings are issued during two periods—*viz.* April to July and October to January, in the Wet Zone nurseries and October to January only in the Dry Zone nurseries. Seedling applications are entertained at the Institute after a press notification in the local papers giving applicants a period of ten days within which to make their applications. The closing date for seedling applications is about three weeks before the issue of seedlings. This would give us time to process all applications and send out the necessary allocation forms to the applicants. Seedling applicants are given about 10 days' time to make their payments.

When payments for seedlings are received at Head Office in the form of Money Orders, Postal Orders and Cash, receipts and delivery orders are written out immediately and posted to individuals within about three days. Cheques received from the public are sent to the Bank for realization and there is generally a delay of about ten days before receipts and delivery orders are sent to them. A duplicate copy of the delivery order is posted direct to the Nursery Officer for his reference.

A second allocation is usually made to late applicants depending on the number of seedlings still available in nurseries due to cancellations that may occur after the first allocation.

The closing date for removal of seedlings from the nursery is given in the delivery order. Previously the closing date for removal of seedlings was given as 31st July and 31st January for the Yala and Maha Seasons respectively. It is now proposed to advance this date by a month, *i.e.*, to 30th June and 31st December for the two seasons. This would enable the Institute to make a third allocation to very late applicants if seedlings are not removed by permit holders before the monsoons are over.

Previously, the Institute transferred all orders that were not executed before the closing date, to the following season. This practice has led to an accumulation of a large number of outstanding orders from as far back as 1975, amounting to over one lakh of seedlings. As a result, the Institute has been saddled at times with surplus overgrown seedlings that cause other problems in nurseries. Eventually these seedlings are not accepted even when offered free to Government Institutions, as establishing them in the field requires high levels of management, such as watering etc. during dry spells, when these seedlings become available for distribution. Besides the problem mentioned above in the disposal of these seedlings, nurseries which are stocked with overgrown seedlings invariably become ideal breeding grounds for rats, bandicoots and porcupines which also attack younger seedlings that are grown for the next issue season. Further these surplus seedlings occupy valuable nursery space which causes problems in the replenishment of nurseries for the ensuing seasons.

To overcome the problems mentioned above, it is proposed not to extend validity of orders for the next season and also not to refund payments for seedlings unless valid reasons are adduced for the non-removal of seedlings, such as drought etc. It is expected that with the measures now adopted, the Institute will not be saddled with surplus overgrown seedlings.

Seedling Selection

Seedlings are selected at two stages in the nursery *i.e.*, (1) at the fifth month stage and (2) at the seventh month stage.

(1) *Fifth month stage:* Non-germinators and late germinators are pulled out and discarded at the end of the fifth month from planting seednuts. Experiments carried out at the CRI show that there is a significant correlation between periods taken for germination and flowering, *i.e.*, palms that give seednuts which germinate early will give progenies with a relatively early flowering period. These experiments also show that there is a negative and significant correlation between periods taken for flowering and production of nuts, (*i.e.*,) palms that flower early will give higher yield of nuts and copra. Therefore selection done at the fifth month stage after planting in this manner will not only give palms that would flower early but also those that bear more nuts.

(2) *Seventh month stage:* The second stage at which seedlings are selected is when they are about seven months old from planting of seednuts, or when about three leaves have developed. Sturdy, vigorous seedlings, free from pests and diseases are selected at this stage. Experiments carried out at the CRI show that selection of seedlings in this manner results in an increase of 10 to 12 per cent in production. A total of 40 per cent seedlings are culled at these two stages.

Decentralisation of Nurseries

Besides the feeble attempt made in 1954 to decentralise nurseries when about 34 centres were opened to distribute seedlings to the public, no serious thought was given to make this a permanent feature. High costs of transport in the recent past due to the hike in fuel costs has been one of the main reasons for the poor demand for seedlings from the 15 nurseries managed by the CRB.

A programme to decentralize nurseries has been initiated and 35 centres have been established under the guidance of the Institute. The Agricultural Productivity Centres, or the Agrarian Service Centres as they are to be called now seem to be the best equipped to manage small nurseries. The Institute supplies seednuts at 50% subsidy to the Centre and the entire cost of transport of nuts to the nursery site is borne by the Institute. Fifty percent of the cost of seednuts would be recovered by the Institute within one year of the establishment of the nursery.

Shortage of seednuts and lack of transport facilities have seriously hampered this programme. It must be mentioned again that the localized selection of mother palms will help to make this project a success.

Results of the Replanting Programme

A recent study by the CRB to evaluate the impact of the Replanting Programme on coconut production reveals that, Sri Lanka may have had to import coconuts as early as 1980 if the Replanting Programme was not implemented in 1949.

It may be appropriate to quote from the report of the Biometrician of the CRB, in which he states—"It appears that if replanting is completely stopped from 1976, we may have to import somewhere in 1994. Even if the present tempo of replanting is maintained, it appears that imports of coconuts is inevitable before the end of the first decade of the 21st century assuming other conditions such as the rate of domestic consumption and efficiency of extraction of coconut milk etc. remain unchanged."

APPENDIX

Number of Seedlings Issued and Acreage Planted From 1949

	Distribution	
Year	*No. of seedlings issued*	*Acreage*
1949	164,685	2573
1950	251,550	3930
1951	397,057	6204
1952	368,805	5763
1953	463,017	7035
1954	513,060	8017
1955	705,155	11019
1956	7,88,962	12328
1957	1,025,448	16023
1958	1,106,991	17297
1959	1,307,321	20427
1960	1,748,785	27325
1961	2,076,803	32450
1962	1,507,416	23553
1963	1,778,590	27790
1964	1,293,002	20203
1965	1,200,462	18757
1966	1,384,350	21630
1967	1,330,622	20791
1968	1,613,999	25219
1969	1,462,257	22848
1970	1,603,421	25053
1971	1,597,625	24963
1972	1,186,935	18546
1973	904,927	14139
1974	909,200	14206
1975	1,115,729	17433
1976	839,142	13112
1977	874,964	13671
Total	31,520,289	492305