

THE SPICES INDUSTRY IN SRI LANKA

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Introduction

Sri Lanka being an agricultural country is primarily dependent on the agricultural sector for her foreign exchange. Traditionally tea, rubber and coconut have been the major contributors to foreign exchange earnings and still continue to be so. However, in recent years minor export crops have been playing an increasingly important role in Sri Lanka's agricultural exports.

Minor export crops (MECs) are a group of traditional commodities produced and exported in small quantities. They include the spices, cocoa, coffee, arecanut, sesame, mustard, papain, essential oils and cashewnuts. In spite of the small volumes in which they are exported compared to the major exports tea, rubber and coconut, they remain an important component of Sri Lanka's traditional agricultural exports. In recent years they have been playing an increasingly important role in Sri Lanka's economy contributing to 5% of her total export earnings in 1986. Export earnings from MECs have been increasing steadily over the period 1970 to 1985. In constant terms (1970 = 100), value of exports have been increasing reaching a peak in 1982-83 and levelling off thereafter as indicated in figure 1. In real terms export value increased from Rs. 64 millions in 1970 to Rs 1,495 millions in 1982 declining and levelling off to a level of about Rs. 1,360 millions in 1985-86.

The Spices

Amongst the MECs, the spices as a group play a significant role accounting for over 50% of total earnings from them. Spices are defined as "one or other of the various strongly flavoured or aromatic substances of vegetable origin obtained from tropical plants commonly used as condiments or employed for other purposes on account of their fragrance or other qualities"¹ Within the context of this broad definition a large number of substances can be included. But since

trade in spices on any significant scale in Sri Lanka is confined to a few, only the principal ones are discussed in this article. These are cinnamon, cardamom, cloves, pepper, and nutmeg and mace.

Sri Lanka has been a traditional exporter of spices, though in small quantities compared to world standards. In the past the industry as such played only a minor role in the country's economy in terms of employment and income, except perhaps, for cinnamon which was traded as far back as the 14th century A.D. In the last couple of decades spices have become the main cash income earning enterprise of many farmers in the major spice growing areas in Sri Lanka contributing over 75% of the total farm income of over 50% of farmers cultivating these crops.

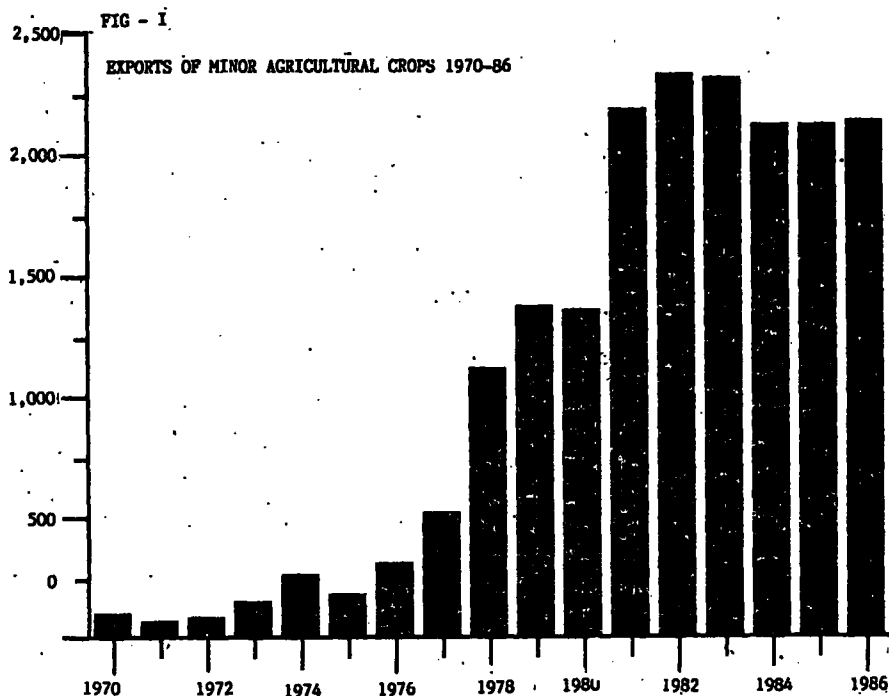
In recent years the spices have also played an important role as a source of foreign exchange earnings to the country contributing Rs. 559 millions in 1985 compared to Rs. 50 millions in 1970, an eleven fold increase. Although Sri Lanka is an important spice producing country in the world, over the period 1975 to 1985 her contribution to world trade, apart from cinnamon, has been very low, being: cinna-

mon 35%, cloves 6%, cardamoms 3%, nutmeg and mace 3% and pepper less than 1%.

Major producing countries

Although spices are cultivated in most tropical countries production on a commercial basis is confined to comparatively few regions, many of them in the Commonwealth. Most countries in South and Southeast Asia are producers particularly of pepper, cinnamon and cassia, cardamoms, cloves and nutmegs as shown in table 1.

India, Malaysia (Sarawak), Indonesia and Brazil are the major producers and exporters of pepper, while Madagascar and Sri Lanka are significant minor producers. The World's supply of cinnamon comes from Sri Lanka, the largest producer and exporter followed by the Seychelles, Madagascar and India. India is the principal world producer and exporter of cardamom with Guatemala, Sri Lanka and Tanzania also being significant. Tanzania and Madagascar are the principal sources of cloves, while Indonesia another major producer absorbs all her own output at present. Sri Lanka, Comoros Islands and more recently Brazil are also important cloves producers. Main suppliers of nutmeg and mace are Indonesia and Grenada which together account for more than 80 to 85% of world exports. Sri Lanka and to a lesser extent China and India are the other impor-



1. Oxford English Dictionary

TABLE 1

LEADING PRODUCERS AND EXPORTERS OF
SPICES IN ORDER OF IMPORTANCE

Pepper	Cinnamon	Cardamom	Cloves	Nutmeg & Mace
India	Sri Lanka	India	Tanzania	Indonesia
Malaysia	Seychelles	Guatemala	Madagascar	Grenada
Indonesia	Madagascar	Sri Lanka	Sri Lanka	Sri Lanka
Brazil	India	Tanzania	Comoros	China
Madagascar			Brazil	India
Sri Lanka				

Sources: *Commonwealth Secretariat Paper "Spices" 1973*
Spices, Survey of World Market, Vol. I, ITC, 1982

tant producers of nutmeg and mace, though the volume of their exports is comparably low.

Production areas in Sri Lanka

The spices grown in Sri Lanka in order of local economic importance (in terms of export volume) are cinnamon, cloves, cardamoms, pepper and nutmeg. While as a group they appear to be concentrated around the intermediate and wet zones, more specifically cinnamon is found around the low country wet zone (LCWZ), cardamoms in the up country wet zone (UCWZ) and mid and up country intermediate zones (MCIZ/UCIZ) and

pepper, cloves and nutmeg in the mid country wet-zone (MCWZ). Historical events are more responsible for the above distribution rather than the suitability of the crop to the agro-ecological region, except for cardamoms which are more suited to the wettest and coolest areas. Accordingly, cinnamon, prior to the advent of the Dutch in Sri Lanka, was principally cultivated in the wet and intermediate mid and up country areas. Evidence of this is still found in the form of wild patches of cinnamon in these areas. With the advent of the Dutch into Sri Lanka in 1658, cinnamon plantations were established in the lower elevations of the country in and around the

Colombo district, the main centre of Dutch activity. Subsequently it appears that the industry was gradually pushed southwards as a result of increasing urbanisation in Colombo and the expansion of coconut.

Similarly the distribution of cloves and nutmeg seems to be associated with their point of introduction into the country, the Royal Botanical Gardens at Peradeniya near Kandy in the MCWZ. In contrast to this, cloves and nutmeg are essentially lowland plants in their countries of origin.

Thus, due to the above reasons cinnamon is principally found in the LCWZ concentrated in the districts of Colombo, Kalutara, Ratnapura, Galle, Matara and Hambantota. Cardamoms are mainly grown in Kandy, Matale, Nuwara Eliya, Kegalle and Ratnapura. Pepper, cloves and nutmeg are grown as "mixed gardens" in the MCWZ, the main growing areas being Kandy, Matale and Kegalle which account for over 80% of total production. Pepper however, is also found scattered all over the wet and intermediate zones.

NATURE OF ENTERPRISE

Cinnamon and cardamoms are found mainly as pure stands in Sri Lanka. It is estimated that out of the total extent under cinnamon approximately 69% is pure crop, 24% mixed and 7% as scattered plantings in home gardens (Sumith de Silva, 1972). Cardamoms, due to its agro-ecological requirements of heavy shade and a cool climate is primarily found as pure stands. This is so particularly in the districts of Matale, Kurunegala, Kegalle and Ratnapura where over 80% of large cardamom holdings are found (table II). In the Kandy and Nuwara Eliya districts where a majority of small holdings are found the culture is primarily pure, although in very small holdings (less than 0.4 ha) it may be found in mix with other home garden crops.

In contrast to cinnamon and cardamoms, cloves and nutmeg are cultivated in "mixed gardens" upto 2 ha in extent.² Mixed gardens are small plots

2. With the establishment of the Dept. of Minor Export Crops in 1972 and the introduction of the MEC Assistance Scheme, pure cultures of these three crops have been emphasized.

TABLE II DISTRIBUTION OF LARGE AND SMALL CARDAMOM HOLDINGS

District	% Large Holdings (over 2 ha)	% Small Holdings (upto 2 ha)
Nuwara Eliya	49	51
Kandy	59	41
Matale	83	17
Kegalle	89	11
Kurunegala	100	0
Ratnapura	100	0

Source: *Sumith de Silva*

of land generally around 2 ha or less in extent and are found in their most intensive forms in the wet zone of the country, where they occupy the unirrigable slopes above the paddy lands. Being small holdings they are highly diversified both in respect of cropping system and seasonality of production. Whilst the crop mix consists of both permanent and short duration crops, notable absentees are cardamoms and citronella. The "mixed garden" farming system offers a highly diversified and economically viable form of land use. This system of farming invariably linked with paddy forms an inseparable structure of the rural farm economy in the MCWZ of Sri Lanka.

Some economic features of the "mixed garden" farming system are briefly described below based on a survey done in the Kandy district by McConnel and Dharmapala in 1973.³

i) **Farm size:** Ranged from 0.4 to 2 ha. Mean size of farms were 1 ha. with over 50% of farms 0.8 ha. or less in extent.

ii) **Number of crops:** The median number of crops was 11 and maximum 18. There was no relationship between farm size and number of crops. The crops found in more than 50% of the farms in descending order of frequency were arecanut, jak, coffee, pepper, coconut, banana, tea, cloves, nutmeg and papaw.

iii) **Trees per ha:** Small holdings tended to have more trees per ha. than larger farms. The average stand computed without weighing for size differences between crops, for example, jak and coffee, was 460 per ha. In addition to small farm size, the factors associated with high intensity cropping are very thick stands of coffee and arecanut.

iv) **Crop yield:** In general individual crop yields are low due to a) high tree densities b) sub-optimal location of single large trees, for example, jak relative to growth and production of other species and c) excess shade as a result of factors (a) and (b) above.

v) **Production:** The distribution of production over time on individual farms measured in terms of a "time concentration index" varying from zero (production every month) to 98.5 (production in one month only) gave a mean value of 28 indicating a good dis-

TABLE III

DISTRIBUTION OF HOLDING SIZES UNDER DIFFERENT SPICES
(CUMULATIVE PERCENTAGES)

Size Class (ha)	(a) Cinnamon		(b) Cardamom		Cloves	Pepper (mixed gardens) % hold.	(c) Nutmeg
	% hold	% area	% hold	% area			
0.4	66	27	37	1		17	
0.40-1.2	92	61	72	7		46	
1.21-2.0	97	73	83	11		70	
2.10-4.0			92	16		89	
4.10-20	100	100	95	22			
20			100	100		100	

Sources: a) *Dept. of Census and Statistics, 1969*
b) *Sumith de Silva, 1974.*

persal of production. Values approaching the maximum were associated with farms growing cloves.

vi) **Labour:** The average labour requirement was 290 man days (full time adult male equivalents) per ha. per year. Hired labour accounted for 30 to 40% of this on small farms and 70 to 80% on large farms. Hired labour is mostly utilised in digging, planting and weeding. Family labour is used exclusively for weeding (7%), harvesting (15%) and processing and marketing (13%).

vii) **Cash incomes:** The two main sources of farm cash income are cloves (42%), and pepper (15%). Other important sources are coconut (12%), banana (5%) and nutmeg and arecanut (2% each). Where tea is present this could bring in as much 12% of the income. Generally high cash income is associated with the production of high value crops such as cloves and is not directly proportional to farm size. However, per ha. returns tend to be highest in farms below 0.6 ha. in size.

It is interesting to note that while pepper comes into bearing in three years, clove and nutmeg takes about six years to come into first bearing and do not give economical yields until the 10th to 12th years. Therefore, the mixed gardens play a significant role

in providing the small holder an income in its early years of establishment as well a good dispersal of income on the long run. Most of the cloves, pepper and nutmeg and mace produced in the country today are mainly from mixed gardens. The "mixed gardens" are therefore, not only an important source of income for the producers, but is also an important source of foreign exchange earnings for the country.

SIZE OF ENTERPRISE

Spices grown in Sri Lanka have traditionally been a small holders crop grown in highly diversified mixed cropping units together with subsistence crops and other cash crops. As a result data on size of holdings, scale of production, total extents, etc. vary depending on the source. What little

³ McConnel, D.J. & K.A.E. Dharmapala; The Economic Structure of Kandyan Forest Garden Farms, Farm Management Report No. 7. UNDP/FAO Agricultural Diversification Project, Peradeniya, 1973.

⁴ Discrepancies exists in statistics from the Dept. of Census and Statistics, the Dept. of Minor Export Crops and FAO statistics.

data that is available is primarily from surveys conducted at different times. Based on these sources table 111 displays the distribution of holding sizes under the different spices in the country.

According to the figures in the above table, two-thirds of cinnamon holdings were less than 0.4 ha. (1 acre) in extent and occupied 27% of the total area under cultivation, while 3% of the holdings were above 2 ha. in extent and also accounted for a similar area in 1969. In contrast to cinnamon a little over a third of cardamom holdings were below 0.4 ha. and accounted for only 1% of the total area under this crop according to de Silva's findings. Much of cardamoms are grown under estate conditions and although only 5% of holdings were over 20 ha. in extent, they accounted for 78% of the area under cultivation.

A similar analysis on holding sizes under cloves, pepper and nutmeg is not possible due to the occurrence of these crops predominantly under mixed gardens. However, a study done by Sappideen (1978) in the Kandy district indicated that almost 50% of mixed gardens that carried cloves, pepper and nutmeg were upto 1.2 ha. in extent, while 90% were below 4 ha. The average size of a mixed holding carrying cloves, pepper and nutmeg was 2.2 ha.

Area under cultivation

Most of the spices with the exception of cardamoms are usually cultivated in small holdings under 0.8 ha. in extent. Furthermore, due to the subdivision and fragmentation of holdings and inaccessibility of many of the production areas arrival at hectareage figures is difficult. This is particularly so in the case of pepper, cloves and nutmeg which are mainly in mixed gardens. Table IV gives the estimated extents under these crops in the main growing regions in the country, and table V total extents under the major MECs for comparison.

According to figures in table V, the spices as a group account for 56% of the total extent under MECs with cinnamon making up almost half the area. Amongst the other MECs cocoa accounts for nearly half their extent.

TABLE IV

EXTENTS UNDER CULTIVATION OF SPICES IN DIFFERENT DISTRICTS (ha)

District	Cinnamon		Cardamom		Pepper		Cloves		Nutmeg	
	Ext.	%	Ext.	%	Ext.	%	Ext.	%	Ext.	%
Colombo	1,026	6	-	-	176	3	122	2	36	1.5
Galle	4,800	30	-	-	154	3	202	3	14	0.5
Hambantota	1,110	7	-	-	50	1	39	1	-	-
Kalutara	848	5	-	-	108	2	106	2	6	
Matara	6,536	40	-	-	128	2	218	3	26	1
Ratnapura	1,456	9	400	8	226	4	700	10	62	3
Kegalle	4		520	11	820	13	1,756	26	497	21
Kurunegala	-		220	5	1,110	18	395	6	116	5
Matale	-		1,006	21	1,360	22	1,074	16	84	4
Kandy	-		2,500	52	1,808	29	2,060	31	1,558	65
N'Eliya	426	3	178	4	186	3	6		6	

Source: DMEC, 1984

PRODUCTION CHARACTERISTICS

Varieties: Perhaps one of the main characteristics of the spice crops in Sri Lanka is the absence of any clearly defined varieties. The main varieties of cardamoms are the Mysore and Malabar varieties and in pepper the Panniyur variety all of which are Indian introductions. Traditional varieties being the norm, propagation of the crops is mainly through high yielding mother trees.

However, with the establishment of mixed gardens that carried cloves, the DMEC in 1972 and a Research station in Matale, there has been some progress made in developing improved strains of cocoa, coffee, cardamom, pepper and papaya. New pepper selections introduced are Panniyur 1 from India, Kuching from Malaysia and a local selection GK 49 (Swarna Lanka). In cardamom a high yielding selection called Vazhukka has been identified, while in cinnamon high yielding selections for bark, bark oil and leaf oil are also available.

Cultivation practices: Under small holder conditions of production, costs of establishment, use of inputs and maintenance are minimal, if not negligible. In the absence of recognised varieties farmers generally raise their own seedlings selecting the most vigorous ones and planting them out.

Weeding is the most commonly adopted practice and is done three to four times a year on average. Soil conservation consisting mainly of cleaning and repairing drains is also done along with weeding about twice a year. Other practices such as fertilizer application, pest and disease control and pruning are almost absent except under large scale production. The latter practice is more commonly adopted on cinnamon plantations for harvesting.

Harvesting: This is the most important practice in the whole production process. The main crop season for cinnamon is from May to July during

(continued on page 10)

which about 50% of the crop is harvested. Cloves and pepper are generally harvested about once a year, the main crop season being January-February for cloves and October-January for pepper when 70% of the crop is obtained. Cardamoms and nutmegs are harvested three to four times a year.

For harvesting family labour is often used, although many producers tend to use hired labour as well. Each labour unit is capable of harvesting 14 to 15 measures of raw cloves, 20 to 25

measures of green pepper and 10 to 25 measures of green cardamoms depending on the intensity of yield. Sometimes the crop is sold "on the tree", when the harvesting is done by the buyer. The reasons for such a practice are many, while it has severe repercussions on the long run production potential of the crop concerned (see box).

Yields: Yields depend on the level of management, the nature of enterprise i.e. whether it is pure, mixed or home

garden and maturity at harvest. Consequently, actual yields are far below potential levels. The DMEC estimates of per hectare yield levels are given in table VI.

Processing: Cinnamon, cloves, pepper and nutmeg are processed by complete sun-drying of the mature produce after harvest. Cloves are dried for a period of 3 to 5 days until uniformly brown. Nutmegs take 4 to 5 days and are fully dried when the kernel begins to rattle on a slight shake. Pepper is dried for 5 to 7 days until a hard, uniformly black product is obtained. Cardamoms too may be processed by sun-drying, but gives a poor quality product. Hence, cardamoms are fire-cured for 30 to 40 hours under carefully controlled conditions to obtain the best colour - light green - demanded by the trade.

In addition to the above main products oil distillation is also done to a smaller scale. The main products are cinnamon leaf oil and bark oil, cardamom oil, pepper oil and clove oil.

Grading: Only very few producers grade their produce after processing. Most producers grade their cinnamon into the grades; coarse and fine, while those with commercial holdings in the Negombo, Jaela and Kottawa areas grade their cinnamon into five grades (C1 to C5). About a third of producers grade their cloves, pepper and nutmegs into two grades - whole, mature, clean, produce and broken, immature, shrivelled produce. Cardamoms as it is better processed than the other spices are graded into three to five grades depending on colour and size of pods.

Costs of production: As noted earlier due to the rather low levels of management costs of production are low, particularly under small holder conditions. Under better management and larger scale of production some costs are incurred primarily for weeding, fertilizer and harvesting. The DMEC estimates the average annual costs per ha. for the different spice crops under a pure stand as follows: cinnamon - Rs.15,000/-; cardamom - Rs.7,500/-; clove - Rs.7,500/-; pepper - Rs. 8,750/- and nutmeg - Rs.2,500/-. In the case of cinnamon costs of harvesting and peeling constitute 60% of the production

TABLE V TOTAL EXTENTS UNDER MAJOR MINOR EXPORT CROPS (ha)

Crop	Extent	% of total
Cinnamon	15,740	26.0
Pepper	5,108	9.0
Cardamom	5,058	8.5
Clove	4,768	8.0
Nutmeg	2,366	4.0
Sub-total	33,040	55.5
Cocoa	12,702	21.0
Coffee	7,482	12.5
Citronella	6,060	10.0
Papain	600	1.0
Sub-total	26,844	44.5
TOTAL	59,884	100.0

Source: DMEC, 1986.

TABLE VI YIELD LEVELS OF SPICES (Kgm. per ha.)

	Cinnamon	Cardamom	Clove	Pepper	Nutmeg	Mace
Level 1*	455	57	170	340	227	23
Level 2	800	175	625	3,500	1,200	170

* Level 1 - Average yields under average levels of management on mixed stands. (DMEC 1986)

Level 2 - Maximum potential yields under average levels of management on pure stands. (Maxie de Silva 1985)

costs while weeding and pruning make up 20% of the costs. Fertilizer and insecticides is the major component of costs in cardamoms.

Income: Incomes depend on yield, grades and prices. Under small holder conditions on average net farm incomes are low due to low levels of production and the absence of proper processing and grading. Under a pure stand cloves and pepper are most profitable crops fetching as much as Rs.30,000/- per ha. and Rs.25,000/- per ha. respectively. Cinnamon on the other hand is the least profitable yielding only Rs.3,000/- per ha. This low level of income from cinnamon is due to the relatively high costs of production of Rs.15,000/- per ha. Cardamom and nutmeg and mace yield around Rs.7,500/- per ha. Under small holder conditions cinnamon and cardamom represent total farm income as these two crops are generally found as pure stands. In mixed gardens carrying cloves, pepper and nutmeg; cloves account for 42%, pepper for 15% and nutmeg and mace for 2% of the total farm income. Table VII summarises the costs and returns of spice crops under a pure stand. The table also includes other major MECs for comparison.

MARKETING

The marketing structure of MECs in Sri Lanka is characterised by its traditionality at the domestic level and the rather high degree of sophistication at the exporters' level. The domestic marketing structure is characterised by a whole series of intermediaries upto the ultimate link at the national level. A detailed description of the marketing structure of spices in Sri Lanka is found in Emmrich (1972) and Sappideen (1978). Apparently, there have been no significant changes since these studies were done except for changes in prices of produce and costs of marketing.

Domestic marketing: The domestic marketing structure is constituted of five main elements, the travelling collector (TC), village merchant (VM), wholesale buyer (WSB), commission agent (CA) and the auction broker (AB).

The TC is the first and most important link in the traditional marketing channel and plays a significant role in the more remote villages where transport and other facilities are deficient. In these areas the small holders still depend on the TC as an outlet for their produce. The TC operates on a small scale collecting small quantities

of produce, the maximum collection for a day being about 10 to 15 kgm. The TC makes direct cash payments to the producer for the produce and disposes off the collected produce the same day to the next link in the marketing channel.

The VM is another important first link, operating a small shop located at a central spot in the village. His services are available at all times providing the producer an opportunity to sell small quantities of produce at any time. The activities of the VM not being confined only to the spice trade, provides the producer the opportunity of combining his sales with the purchase of other commodities. One significant difference between the TC and VM is that while the former goes to the producer in search of produce, the latter purchases only what produce is brought to the shop.

The TC and VM both dispose off their produce to WSB in the town nearest their area of operation. The VM however, unlike the TC does not sell his produce daily, but prefers to accumulate his stocks until a favourable price prevails in the market depending on his liquidity position. According to Sappideen (1978), the prices received by producers by marketing through the VM is lower than that received from the TC.

TABLE VII - AVERAGE COSTS AND RETURNS PER HA. OF SOME MAJOR MEC'S.

Crop	Avg.yld. (Kgs)	Avg.FGP (Rs/kg)	Gross Income (Rs)	Avg.Cost (Rs)	Net Income (Rs)
Cloves	170	220	37,500	7,500	30,000
Pepper	340	100	33,750	8,750	25,000
Cardamom	57	260	14,750	7,500	7,250
Cinnamon	455	40	18,000	15,000	3,000
Nutmeg	227	35	8,000	2,500	5,500
Mace	23	66	1,500	0	1,500
Cocoa	398	62	24,500	5,000	19,500
Coffee	340	66	22,500	6,250	16,250
Papain	114	132	15,000	11,250	3,750
Citronella	57	110	6,250	5,000	1,250

The wholesale trade in the spices marketing structure operates at two levels: (i) the small town WSB located in the main areas of production and (ii) big town WSB in the main towns in the growing districts. Irrespective of the scale of operation the primary function of the wholesale trade is to bulk the produce received from producers, TCs and VMs into large lots to be dispatched to the trade in Colombo.

Source: DMEC, 1986

- Emmrich, C.O. & S.M.J. Bandara; Marketing of selected spices in Sri Lanka, Marketing Paper no.1,2,3, UNDP/FAD, Peradeniya, 1972.
- Sappideen, T.B.; Marketing of Spices in Sri Lanka, Economic Review, vol. 4, nos. 2 & 3, May/June 1978, Peoples Bank, Colombo.

Commission agents and brokers operate in Colombo and deal with a variety of produce such as tea, rubber, coconut and other sundry products. There are a number of CAs, but six ABs operating in Colombo. The latter group comprises the Colombo Brokers Association and conduct the auction sales for sundry produce weekly in the sales room of the Ceylon Chamber of Commerce. CAs unlike the ABs do not handle any produce as such, merely mediating between buyers and sellers.

Direct sale from the producer to the CA or AB is the most efficient marketing channel since all other intermediaries are by-passed and the maximum market price for the product obtained. This necessitates a large volume of produce and high capital and is frequently adopted by large holders and estates. The CA and AB charge their clients a small fee for their services comprising of a commission, handling charges and other sundry expenses.

The exporter is the final link in

domestic marketing structure. Exporters generally obtain their requirements of produce either through the CA or AB. Direct purchases from big WSB occur in a few cases where such transactions have been conducted over a period of time and firm personal connections and confidence established. Most exporters usually buy against firm orders from foreign clients, preferably on contract.

Wholesalers also sell small quantities of produce to retailers, although the volume of trade is small except for pepper. Some wholesalers also do retail sales to direct to consumers.

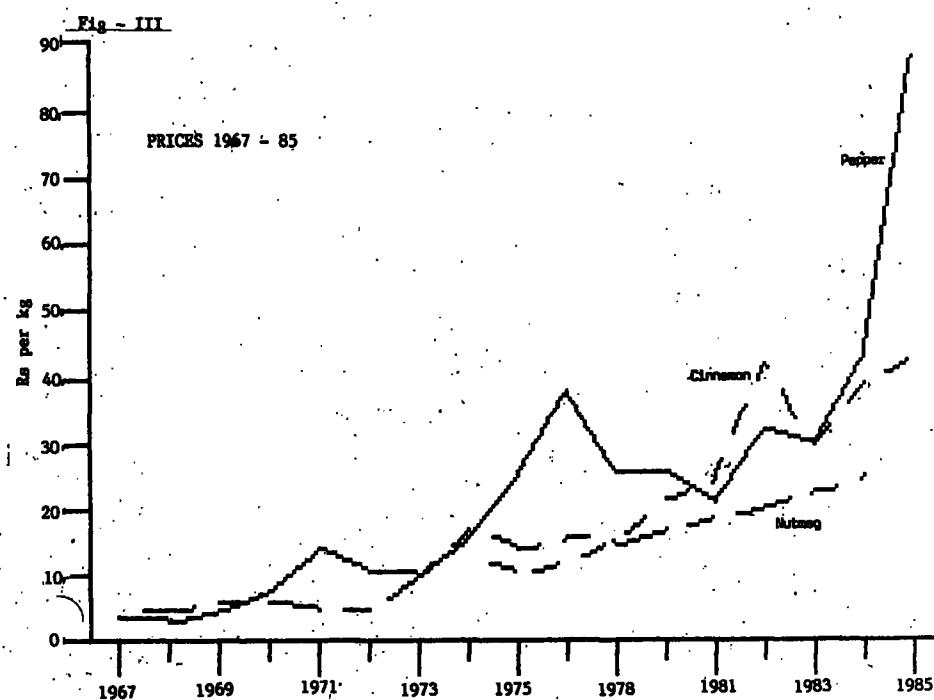
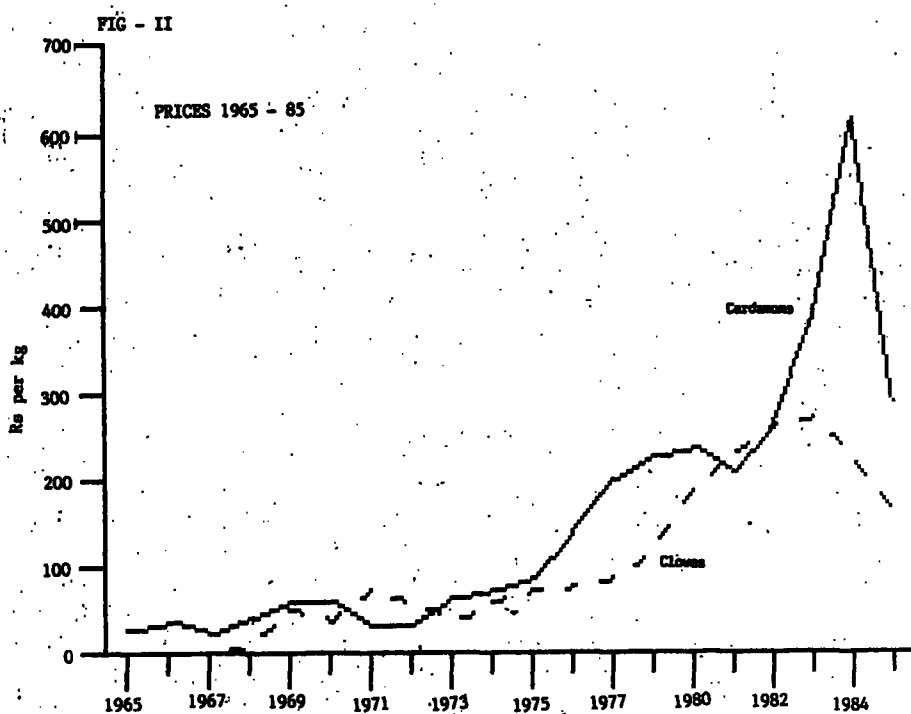
EXPORTS

Prices : Large increases in prices have been a significant feature of the spices market over the last twenty years, (figs. 2 & 3). According to the figs. 2 & 3 prices of all spices have increased steadily over the period 1965 to 1985, although the rate of increase over 1975-85 has been more rapid than over 1965-75. Average prices increased by 137% for cinnamon, 121% for cloves, 113% for cardamoms, 76% for pepper and 40% for nutmegs during the period 1981-85 compared to 1974-80.

Increase in overseas demand associated with firm orders from foreign buyers coupled with a drop in local production levels are the main reasons for the increase in prices of cardamom. In the case of pepper poor weather conditions, in India and Brazil, two of the world's leading producers, resulted in low exportable supplies and a consequent rise in prices over the last three years. It was estimated that in 1985 the shortfall in world supplies of pepper was around 15,000 metric tons due to stagnant global production. Consequently, further increase in pepper prices are possible.

Volume: The bulk of spices produced in Sri Lanka are exported except for pepper where domestic consumption is of some importance.⁶ Fig. 4 illustrates

6. According to the DMEC, estimated levels of domestic consumption for cinnamon is 9%, cloves 15%, cardamoms 15%, nutmeg 2%, and for pepper 30%, although there is no basis for these estimates.



tes the export volumes of spices over the period 1970 - 85. Export quantities on average increased by 26% over the period 1970-75 to 1976-80 and by 22% over the period 1976-80 to 1981-85. A three year moving average of export volumes over the period 1970 to 1985 indicates an increasing trend with a four year cycle.

Values: Total value of exports have also increased steadily over the period 1970-85 consequent to both increases in export volumes and prices. In real terms export value increased from Rs. 50 million in 1970 to Rs. 792 million in 1981, declining and fluctuating thereafter at a level of about Rs.650 million in the mid 1980's (fig. 5).

Major markets: The major markets for Lanka's spices are Europe, USA, Latin America, Middle East, Canada and some countries in South and South East Asia. Latin America has been the major market for cinnamon over the years, although in 1985 a major portion of exports were also made to Australia, USA, Middle East and Europe. Cardamom exports are predominantly to Middle East markets where it is popularly used to flavour tea. In the case of cloves, pepper and nutmeg and mace, exports are made to a variety of markets mainly in Europe, USA, Middle East, Canada and other South Asian countries.

GROWTH AND DEVELOPMENT OF THE INDUSTRY

The DMEC was established in 1972. Amongst its objectives were the promotion and development of cultivation and processing of MECs, organisation of cultivation of these crops and the promotion of new practices and new crops with export potential. It is not the task in this section to evaluate the degree of achievement of these objectives, but to briefly discuss the performance of the sector over the years.

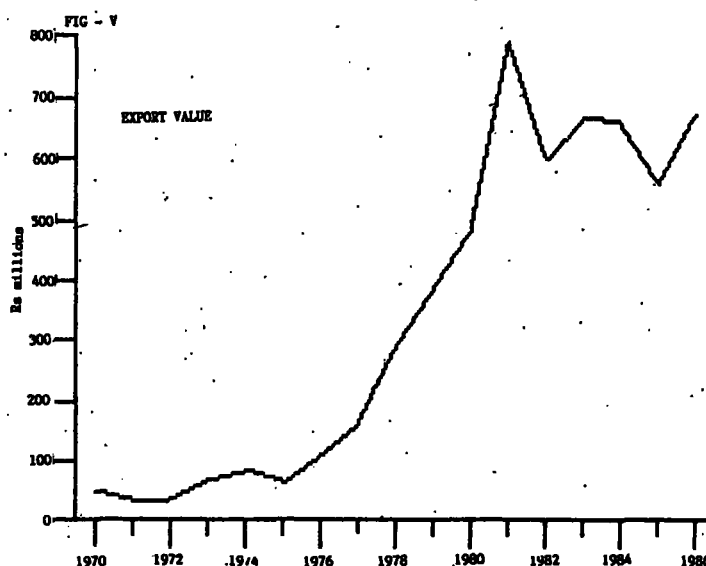
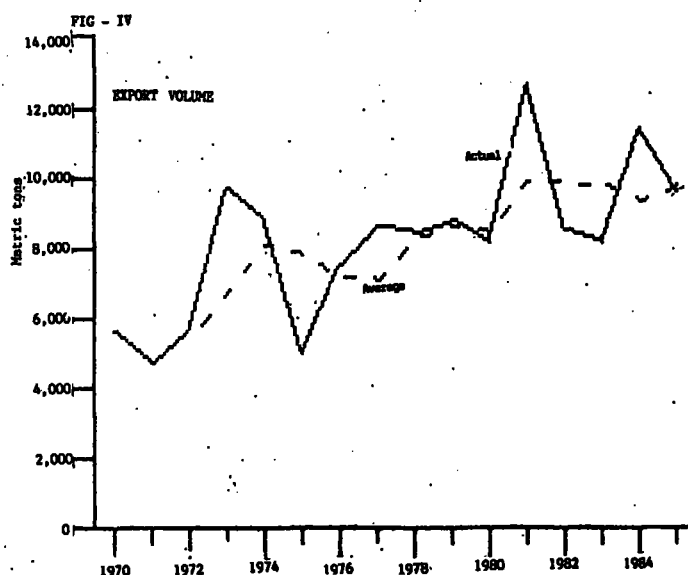
Expansion in area: Perhaps one of the most significant observations is the rapid expansion in the area under the MECS over the last one and half decades. The estimated extents under the different MECs and the distribution of spice crops in the main growing regions of the country are given in tables IV and V.

The Five Year Plan (1972-197) had a target of 20,000 ha of new plantings

of the main MECs with 54% of this area being under spices. This target was to be achieved through the Minor Export Crops Assistance Scheme (MECAS), which was announced to the public in September 1972. The achievement over the Plan period in terms of actual areas planted under this scheme was only 8036 ha or 40% of the target, although planting permits were issued for 12,140 ha. (60%). With respect to individual spice crops planted extents were very small in relation to targets, being 41 ha. for cardamom,

429 ha. for cloves, 563 ha. for pepper and 191 ha. for nutmeg. There were no new plantings of cinnamon, permits being granted only for replantings and rehabilitations.

Prior to the MECAS there was a Crop Diversification Subsidy Scheme (CDSS) introduced by the Ministry of Plantation Industries in 1970 for un-economic tea and rubber lands and implemented by the Tea Controller and Rubber Controller respectively. Under this scheme an additional extent of 1743 ha. were planted with MECS,



71% of the extent being under spices (1246 ha.). The CDSS was terminated in 1977 as the demand for this scheme was low following the introduction of payment of a guaranteed price for green tea leaf and an improvement in the prices of natural rubber. Thus in 1978 the estimated extent under MECs was 47,440 ha. of which the spice crops occupied 25,440 ha. or 54% of the area.

The MECAS has been in operation since inception with revisions made in 1978 and 1986 (see next section). Under this scheme as at the end of 1984 permits had been issued for 30,685 ha. of new plantings of MECs which included 1364 ha. for cinnamon, 1929 ha. for cardamom, 227 ha. for cloves, 7203 ha. for pepper and 56 ha. for nutmeg. These permits were for pure stands of these crops. In addition permits were also issued for 4085 ha. of homegardens and 571 ha. of mixed crops.

In addition to the MECAS new plantings of MECs were also envisaged under the Integrated Rural Development Projects (IRDP) which came into operation from 1978. Many of the districts where the IRDPs were implemented were main MECs producing areas and consequently, the development of the MECs sector became an important component of the programme. Under the IRDPs an estimated 4400 ha have been planted with MECs in the districts of Kurunegala, Matara, Nuwara Eliya, Matale and Badulla. Of this extent 1590 ha. (36%) constitute spice crops.

However, although permits were issued for such an extent of new plantings, it does not necessarily reflect actual extents under cultivation due to a number of factors such as droughts, plant casualties, delays in obtaining subsidies, lack of planting materials, etc.

There are also considerable plantings of MECs by individuals who obtain their planting requirements through private nurseries. In addition to this the DMEC has also issued a large number of plants for various government sponsored tree planting campaigns, etc. There is also the establishment of new home gardens and mixed gardens with MECs. As a result of all these complexities a reliable estimation of actual extent under MECs is an illusion. The DMEC estimates are themselves approximations updated

annually taking into consideration the above factors and hence, may be widely divergent from actual figures. Keeping these limitations in mind, the present extents under the MECs as given by the DMEC can only be an indication of the scale of the sector.

Minor Export Crops Assistance Scheme: One of the main activities of the DMEC is the implementation of the MECAS already mentioned above. The MECAS is the primary instrument which aims at stimulating the rapid expansion in cultivation of MECs in Sri Lanka. Under this scheme assistance is given in cash and/or kind depending on the crop and its method of cultivation.

Subsidies in cash and kind are given by the DMEC and long term loans are available through the People's Bank.

The scheme was first introduced with the establishment of the department in 1972. Though the level of subsidy provided by the department on the scheme was small compared to those for tea and rubber, by 1977 the scheme had become less appealing and had many deficiencies. The scheme was therefore, revised in 1978, the revision embodying not only increased rates in subsidies but also included cash subsidies for other MECs which hitherto had not received them.

Cash subsidies were originally limited only to pure stands in extents of 0.2 ha. or more. In November 1981 mixed plantings in home gardens below 0.2 ha. were also made eligible for cash assistance. This change caught up immediately with small holders so much so that in 1982, 24% of the total extent (670 ha.) that was granted permits was for homegardens, increasing to 44% in 1983 and 53% or 2044 ha. in 1984.

A second innovation in the MECAS was the inclusion of a mixed cropping system for cash assistance. In 1984 when this change was introduced, permits were granted for 570 ha. of mixed gardens or 15% of the total extent of MECs granted permits. Whilst appreciating the concern of the DMEC towards the small holder (who otherwise may not have enjoyed the benefits of the MECAS), one can only be pessimistic about the perpetuation of the mixed home garden type of enterprise which has its own inefficiencies and weaknesses as enumerated above.

The MECAS was re-revised in 1986 with considerable increase in the level of the cash subsidy compared to 1978 levels. Table VIII presents a comparative summary of the scheme as implemented over the period 1972-86. Coffee and pepper are the most popular crops established under the scheme accounting for one third to half the total value of total subsidy disbursed over the period 1975-84. The achievement in terms of expansion

in the cultivated area as a result of the scheme is as discussed above.

Completing the MECAS for expansion, replanting and rehabilitation of plantings, the Department also offers a subsidy for establishing and repairing of oil distilling units and other processing facilities for MECs. Spice oils have a very lucrative market overseas, whilst the importance of maintaining a high standard of quality produce needs little emphasis. Therefore, this additional assistance should make a significant impact in the spice processing and distilling industry in the country.

Research: The research activities of the DMEC have been along three major lines; (i) plant breeding and selection (ii) agronomy (iii) mixed and intercropping experiments. The results of continuous work on plant breeding and selection has been the release of 3 selections of pepper and one in cardamom as discussed above. Research is continuing on other crops and promising results have been obtained on many strains and selections.

Under the mixed cropping experiments the most significant achievement of the Department has been the establishment of the "DELMIX" model at the mid-country Research Station at Delpitiya. This model attempts to simulate the traditional mixed home gardens described above, but in a more systematic manner. The model consists of a mix of crops ranging from San Ramon coffee and pepper (being the most dominant), Robusta coffee,

lime, arecanut, banana, coconut, nutmeg, clove, mango, jak, breadfruit and avocado in order of numbers of plants. More details on the model along with its economics are given elsewhere.⁷

Conclusions

The MECs are a very important component of the agricultural sector in Sri Lanka. The MECs can be broadly categorised into i) the spices and ii) other MECs. The spices command 56% of the total area under MECs, account for 50% of total foreign exchange earnings and provide an estimated ten million man days of employment per year. Statistics indicate that the MECs will continue to play a significant role in Sri Lanka's economy. Export trends and prices have been favourable compared to the traditional plantation crops, over the last two decades, and are likely to be so in the future.

In recognition of the potential of the MECs sector in Sri Lanka, the DMEC was established in 1972. The main objectives of the department were outlined earlier. While the department has made some progress over the years, there are still many areas in which it is deficient and needs improvement. The importance of good and reliable statistics to help plan production and draw up adequate policies for the future of the industry needs little emphasis. An efficient domestic marketing system is a vital link to the production process and to meet the demands of changing world market situations. High quality produce of international standards is of tremendous importance if the sector is to gain the maximum benefits from international trade.

A Ministerial pronouncement at the inaugural auction in February 1983 stated "The only way to fight low commodity prices is to increase the value added before exporting. We should not let go of our commodities until we have obtained the maximum value possible". It is hoped that the DMEC has accepted this challenge and will make greater endeavours to strengthen and expand this very important sub-sector of agriculture in Sri Lanka.

TABLE VIII IMPLEMENTATION OF THE MECAS, 1972-1986

Crop		Level of Subsidy	(Rs per ha.)
Cinnamon	RP	750	6,250
	RH	-	-
Cardamom	NP	2,250	3,750
	RP	-	3,750
Pepper	NP	750	6,250
Cloves	NP	2,000	2,500
Nutmeg	NP	2,800	2,500

Source: DMEC, 1972, 1978 and 1986

NP = new planting
RH = rehabilitation
RP = replanting

7. de Silva, M.P. and W.H.E.Premaratne: Evaluation of Delpitiya Mixed Crop Model, Agro-Economics Report No. 2, Economics Unit, DMEC, Peradeniya, 1985