Assessment of the Palmyrah Resource Profile in the Districts of Puttalam, Anuradhapura, Hambantota and Eastern Province

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Research Study No.96 October 1997

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FOREWORD

Palmyrah is one of the resources with a substantial economic potential not yet fully exploited. The lack of information about this sub-sector has become a constraint for preparing a systematic plan towards realizing its benefits. As such, this study is an attempt by the HARTI to assess the available palmyrah resources in a limited number of districts such as Puttalam, Anuradhapura, Hambantota, Ampara, Batticaloa and Trincomalee. Being a commissioned study of the Palmyrah Development Board, it was conducted by Messers J.K.M.D. Chandrasiri, M.S. Senanayake and Miss. K. Maheswaran of this Institute.

The study has covered some basic information about the palmyrah trees, including quantity of palms in different sizes and sex, utilization of their potential, types of ownership of palmyrah lands and also other characteristics such as associated crops and animal husbandry. This information would definitely provide a sufficient database for any future development activity in this sector.

Dr. S.G. Samarasinghe
DIRECTOR/HARTI.

ACKNOWLEDGEMENT

We are indebted to many personnel, institutions and officials who extended their support to enable us to prepare this report. Among them the farm families and Grama Niladharis who gave us basic information on the relevant subject in the study areas receive our thanks.

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Our thanks are due to Mrs. U.P.C. Ramyalatha of HARTI who did the Word Processing of the draft and Mr. Palitha Gunaratne who prepared the final script for publication and also Mr. Malinda Seneviratne, former Editor, HARTI who edited the final draft. We also remember with gratitude others at the HARTI who provided various services in completing this study.

The District Secretaries and also the Commissioners of the Agrarian Services Department in the study districts provided us invaluable services in arranging the field survey. We also remember Mr. Monagurusamy, District Secretary, Batticaloa who gave his wholehearted support to correct some data obtained from the Batticaloa District.

We thank especially Mr. T. Thirulinganathan, Consultant, Palmyrah Development Board for helping to make this study a success by providing the necessary guidelines.

We acknowledge the support and encouragement extended by Mr. D.G.P. Seneviratne, former Director of the HARTI to carry out this study.

Finally, I would like to extend my gratitude to Dr. S.G. Samarasinghe, the present Director of HARTI, for taking necessary actions to publish this study report.

AUTHORS.

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CHAPTER ONE

Introduction

1. General

This study was conducted by the Agrarian Research and Training Institute* in response to a request made by the Palmyrah Development Board. This is one of three interrelated studies undertaken by the institute. The other two studies are: (1) A Socio-economic study on the impact of the palmyrah tree on employment generation and the incomes of its beneficiaries. (2) Financial profile for the development of the palmyrah industry.

The major objective of the study was to collect detailed information on the palmyrah palm. This is an exercise that would enhance the completion of the other two studies. Further, identification of available palmyrah resources is envisaged to be an important step in the process of developing the palmyrah sub-sector.

1.2 Type of Information

In this study greater attention was paid towards the collection of the following information:

(a) Number of palms and density in each area coming under the study.

(b) The ownership pattern, size and class distribution and soil and water conditions of lands under palmyrah.

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* The name of the Institute was changed as Hector Kobbekaduwa Agrarian Research and Training Institute from February 1995.

(c) Characteristics of the palmyrah palm such as age, sex, the stage of flowering and the utilisation of the palm for different purposes.

(d) How the palmyrah palm was established and what the other crops and animals in the palmyrah lands are.

1.3 Study Area

The study covered six districts belonging to four provinces in the country namely North-Western, North-Central, Eastern and Southern. The districts covered by the study were Puttalam, Anuradhapura, Hambantota, Ampara, Batticaloa and Trincomalee.

1.4 Time of Data Collection

Data was collected in the districts of Puttalam, Anuradhapura and Hambantota in January and February 1992 and in the districts of Ampara, Batticaloa and Trincomalee in March and April 1992.

1.5 Methodology

Sample design, data collection instruments and methods of data analysis are described in this section.

1.5.1 Sample Design

The multi-stage purposive sampling procedure was applied in the study. Random sample selection could not be done due to the absence of a sampling frame associated with palmyrah. It is also impossible to prepare a sample frame because of inadequate information. Therefore, selection of samples at every stage was done purposively in consultation with knowledgeable personnel in the field such as Government Agents, Assistant Government Agents and Grama Niladharies.

There are three stages associated with sample selection. As the districts to be studied were recommended by the Palmyrah Development Board (PDB) the first stage sample unit was the AGA division. All the AGA

divisions of the districts with more than 1000 adult palmyrah palms were selected. The number of AGA divisions selected with their names are indicated in Table A-1.

In the second stage one Grama Niladhari division (village) from each AGA division was chosen. The Grama Niladhari divisions or villages thus identified were considered representative of the palmyrah density in each of the AGA divisions to which the selected villages belonged. The names of the sample villages selected are indicated in Table A-2.

At the final stage land holdings with palmyrah were selected as a Primary Sample Unit (PSU) and a questionnaire was administered to obtain further information.

1.6 Sample Size

At the outset the sample of the study was fixed at 250 land holdings per district on resource availability such as time and funds. However, the number had to be changed regarding Puttalam, Anuradhapura and Hambantota at the data collection stage, at which point the researchers had gained better knowledge on the size of the palmyrah population in these districts. In the case of the Eastern districts the sample size was somewhat less than what was anticipated because data collection was done by the officers of the Department of Agrarian Services without the continuous supervision of the research team. The number of sample units selected from each district and AGA division is indicated in Table A-2.

1.7 Data Collection

Detailed information on the palmyrah palm was obtained from sample land holdings by the application of a questionnaire.

To document the palmyrah population, all the palmyrah palms not less than one foot in height in all the Grama Niladhari divisions of the selected AGA division were counted.

Data collection work in Puttalam, Anuradhapura and Hambantota was done by graduates who were recruited as casual investigators and who especially

trained for the purpose. In the Eastern Province districts, data collection was done by the divisional officers of the Department of Agrarian Services.

1.8 Data Analysis

Tabular analysis with simple descriptive statistical measures such as the mean were applied to analyze the data obtained from the sample.

The results of the sample survey were then projected to the district, using the scaling up method i.e percentages are used as a basis for making inferences about a whole universe from a sample.

1.9 Use of Terms

In this study "land holding" was defined as an area under a said unit of management. In cases where there were several parcels of land owned by one operator but not adjacent to each other and were in different places within the village, they were considered as separate sample units. The land holdings which had at least two palmyrah trees were taken for the enumeration.

As this is a study on palmyrah palms, lands in which palmyrah was available were called "palmyrah land holdings". Certain other terms like "palmyrah land holders" or "palmyrah land owners" were also used. In many cases palmyrah is not purposively grown. So it appears that the use of these words may not be strictly correct. But since the study was conducted only in lands where palmyrah was available the above terms were used for descriptive purposes.

CHAPTER TWO

Palmyrah Palm and Land

2.1 The Palmyrah Spread

The study revealed that there were 699,116 palmyrah palms in all the six districts, that were covered by the study. Table 1 shows the district-wise distribution pattern of the palmyrah population. Accordingly, the palmyrah population in the Batticaloa district was the largest. Next came Trincomalee District. The population was very low in Hambantota.

Table 1:

The Palmyrah Population in Each District

District	No.of palms
1. Puttalam	145,018
2. Anuradhapura	39,049
3. Hambantota	1,988
4. Ampara	55,500
5. Batticaloa	230,561
6. Trincomalee	227,000
TOTAL	**699,116**

2.2 The Density of Palmyrah

In certain districts, palmyrah was a common palm found in every AGA division. For example, in Trincomalee, Batticaloa, Puttalam and Anuradhapura the spread of the palmyrah palm was observed in every AGA division although it was at different levels of density. In Hambantota and Ampara Districts palmyrah was limited to a few AGA divisions. Especially in Hambantota they were very sparse, being found only in three AGA divisions.

Table 2:

The Total Acreage of Palmyrah Land and the Density of Palmyrah in each District

District	No.of palms	Total acreage	palms per acre
Puttalam	145,018	7,251	20
Anuradhapura	39,049	2,297	17
Hambantota	1,988	19	104
Ampara	55,500	2,312	24
Batticaloa*	230,561	6,986	33
Trincomalee	227,000	10,318	22

Note: The palmyrah acreage in each district was calculated by using the total number of trees and the per acre density obtained from the survey.

* In Batticaloa, the number of palms indicated was counted under authority of the GA there. The acreage in the same district was estimated with the help of the figures on palms per acre taken from the ARTI study and the number of trees taken from the GA's enumeration. According to the GA's enumeration there are only 1,549 palmyrah acres and 149 trees per acre in Batticaloa. The difference in the figures in different surveys is due to different methods of calculation.

Table 2 gives details on the total acreage of palmyrah and its density in each district. The highest density (104 trees per acre) and lowest acreage (19 acres) were both recorded in Puttalam, indicating a dense spread. In all other districts, the density ranged from 17 to 33 trees per acre.

2.3 The Sizes of Land Holdings and their Distribution

The average size of a palmyrah land holding was 2.5 acres, but at the district level, the picture is completely different. In Puttalam, it was 4.6 acres and in Hambantota 0.3 acres. Although, the average holding size in Ampara and Trincomalee seemed to be high, it falls down to 0.6 acres and 1.1 acres respectively, when the larger land holdings in the sample of each district are excluded.

Table A-3 depicts the distribution pattern of palmyrah land holdings in each district by class size. In the whole study area around 42 percent of the holdings were below the one acre size class and nearly 54 percent were between one and five acres. The district-wise picture was somewhat different. For example, in Hambantota, 88 percent of the holdings were below the one acre size class. On the other hand, in Puttalam 52 percent of the holdings were 2 acres and more in extent.

Table A-4 indicates the distribution of area under palmyrah by size class of holdings. Accordingly a substantial area belonged to the class 20 acres and over. This picture varied according to the district. For example, in Anuradhapura and Hambantota, a major portion of the land consisted of holdings between one and five acres. In both districts, the percentage figure was 62 or a little more. With regard to Ampara and Trincomalee districts, which indicates that 83 percent and 43 percent of the land area respectively, belonged to the land size category of 20 acres and over. This picture changes when the very large land holdings in the samples are exempted. Then the land area of the land size category between 1 and 5 acres will be 52 and 76 percent respectively in the two districts.

2.4 The Land Ownership Pattern

Tables A-5 and A-6 indicate the ownership pattern and area of palmyrah land holdings respectively. As the tables depict as much as 90 percent of the palmyrah land holdings and 67 percent of such land area were under private ownership.

State institutions owned around one percent of the holdings and 19 percent of the land area. A considerable amount of holdings (7 percent) and area

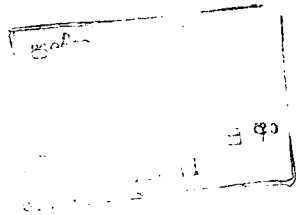
(13 percent) came under the state "tanks and canals". In the Anuradhapura district a large area of land was under forest cover or came under the category undistributed land and tank reserves; that is 26 percent of the palmyrah holdings and 38 percent of the palmyrah land area. One major reason for this situation in this district was the establishment of palmyrah on tank bunds and along the canals.

2.5 Tenure Systems of the Palmyrah Lands

Most of the palmyrah land holdings (82 percent) and area (68 percent) were under the singly owned category. Table A-7 and Table A-8 give details on the distribution of palmyrah land holdings and area by tenure. As much as 15 percent of the holdings came under the category "possessing under a permit". In Ampara, where colony lands was prominent in terms of land tenure, more than half of the palmyrah holdings were with permit holders.

2.6 The Residency Pattern of Palmyrah Land Owners

As Table A-9 indicates, 82 percent of the palmyrah land owners live in the land itself. This is a factor which is of advantage in encouraging palmyrah resource use for various products. However, in certain districts, like in Puttalam, where comparatively larger land holdings were available, some of these lands were looked after by watchers, or employees residing in the lands. In such cases, the owners were within a one mile distance from the land. In Puttalam, 26 percent of the land owners lived more than one mile away from their land.



CHAPTER THREE

The Availability and Use of Palmyrah Resources

3.1 The Height of Trees

Table 3 shows the distribution of palmyrah palms in each of the six districts according to their height. As observed in many of the districts, most of the palms were lesser than 7 feet in height. This was so in Puttalam, Anuradhapura, Hambantota and Batticaloa. This implies that there was a considerably younger palmyrah population in these districts.

Table 3:

The Distribution of the Palmyrah Population in Each District by Height

District	No. of palms					
	Less than 7 feet	%	More than 7 feet	%	Total	%
Puttalam	88,461	61	56,557	39	145,018	100
Anuradhapura	21,086	54	17,963	46	39,049	100
Hambantota	1,113	56	875	44	1,988	100
Ampara	24,420	44	31,080	56	55,500	100
Batticaloa	122,197	53	108,364	47	230,561	100
Trincomalee	111,230	49	115,770	51	227,000	100
TOTAL	**370,531**	**53**	**328,585**	**47**	**699,116**	**100**

3.2 Flowering

Table 4 gives details on the flowering and non flowering palms over 7 feet in height. Accordingly approximately 72 percent of those above 7 feet flowered. In certain districts, i.e Trincomalee and Ampara, the proportion was larger. This indicates the availability of palmyrah palms that can be used for toddy, or sweet toddy.

Table 4:

The Distribution of the Palmyrah Population Over Seven Feet in Each District and Extent that were Flowering

District	No.of palms above 7 feet	No.of palms flowered	%
Puttalam	56,557	33,934	60
Anuradhapura	17,964	11,138	62
Hambantota	875	149	17
Ampara	31,080	23,310	75
Batticaloa	108,364	78,022	72
Trincomalee	115,770	90,301	78
TOTAL	**328,585**	**236,581**	**72**

3.3 Sex

As table 5 shows, of the palms which were flowering, approximately 42 percent were male. Hambantota was the only district that recorded a higher proportion of male trees that were flowering - 54 percent.

Table 5:

The Distribution of Palmyrah Population in Each District by Sex

District	No.of palms flowered	No.of male palms	%	No.of female palms	%
Puttalam	33,934	15,610	46	18,324	54
Anuradhapura	11,138	4,567	41	6,571	59
Hambantota	149	80	54	69	46
Ampara	23,310	7,226	31	16,084	69
Batticaloa	78,022	35,890	46	42,131	54
Trincomalee	90,301	38,829	43	51,472	57
TOTAL	**236,581**	**99,364**	**42**	**137,217**	**58**

3.4 Use of Trees for Tapping

The study itself commenced prior to the flowering period of the palmyrah palm in Puttalam, Anuradhapura and Hambantota and toddy tapping was not observed during this period, i.e. January and February 1992. However, this situation was overcome by devising a method to glean information relating to toddy tapping figures of the previous year.

In any event, the use of palmyrah palms for toddy tapping was marginal in the study area. As Table A-10 reveals, only 6 percent of the male palms and 4 percent of the female palms from flowering palmyrah trees were used for tapping. However, the district-wise records show that in the Batticaloa district, 30 percent of the male and 19 percent of the female palms are tapped. In the Trincomalee District, the number of trees recorded as being tapped is higher compared with certain other districts. In Trincomalee, generally more palms than the recorded number seem to have been used for tapping, but the unstable situation has resulted in many palms being left untapped, since many tappers are confined in refugee camps. In Hambantota no tapping has been recorded.

3.5 Uses and the Availability of Palms for Fibre

Palms which are of a certain age category (usually between 7 -20) and have particular qualities can be used for extracting fibre. Still palms are only marginally used for this purpose. This is done in limited areas. Table A-11 reveals details on the usage of palms for fibre and also on their availability for this purpose. According to this, the number of palms which seem to be in use in any district for fibre, was not more than 5 percent of the palms over 7 feet in height. About 30 percent of the palms above 7 feet, were still suitable for extracting fibre. The potential of the palms available for this purpose changes with time. The records support the view that there might be an increase in the amount of palms suitable for fibre within the next decade in the study area as the palms below 7 feet in height were predominant.

3.6 Use of Palmyrah Leaves

Table A-12 gives details on the involvement of sample land holders in cutting and using of palmyrah leaves and also on the number of palms used for this purpose in each district. Table A-13 gives information on the frequency in the cutting of leaves.

As the relevant tables reveal, around 31 percent of the sample land holders in the study area are involved in cutting leaves. In Batticaloa, more than 50 percent of the land holders are involved in cutting leaves. In Anuradhapura, it was less. However, not more than 6.3 percent of the trees are used for cutting leaves.

As given in Table A-13, as much as 66 percent of the sample land holders had cut leaves once a year and 23 percent twice a year.

CHAPTER FOUR

Characteristics of the Palmyrah Lands

4.1 The Composition of the Palmyrah Lands

Of the land holdings studied, only in a few cases was palmyrah the sole crop grown or established in the land. Generally, in the study area, approximately in 10 percent of the land holdings with palmyrah, it was the only crop available. In many cases palmyrah was a palm which grew naturally and it was often grown in coconut lands. The land holdings with the palmyrah-coconut mixture was recorded to be 44 percent of the whole study area. The proportion of such land was quite high in the districts in close proximity to the sea (see Table A-14) for details. Forty six percent of the land holdings had a mix of palmyrah and other types of trees (see Table A-15 for details).

4.2 The Growing of Palmyrah

Generally, palmyrah is a tree naturally spread, but in some areas it has been grown for specific purposes: to strengthen tank bunds and bunds of canals, to stop strong wind, to prevent soil erosion and to demarcate boundaries of lands. Of the whole study area, palmyrah palms were purposely grown in 36 percent of the sample land holdings. In the districts of Ampara, Trincomalee and Hambantota, the establishment of Palmyrah through growing is observed in a very large percentage of the land holdings (see Table A-16 for more details). In Hambantota, the frequency is higher with regard to the growing of palms to protect land from strong wind and sea waves. In Trincomalee and Anuradhapura many trees have been grown to demarcate lands.

According to Table A-17; which depicts the ways palmyrah is cultivated; 95 percent of the land holdings of palmyrah were cultivated by the land owners themselves. Three percent of the trees were grown under the

direction of an organization or as campaign. In Hambantota, a considerable proportion of the land holdings, i.e 25 percent, has been cultivated in this way. In certain occasions, these campaigns have been organised by administrators and politicians.

4.3 The Nature of the Spread of Palmyrah in Land Holdings

Table A-18 depicts how the palmyrah is spread in the land holdings. Around 45 percent of the land holdings are recorded as having a total spread of palmyrah. In 29 percent of land holdings, they were limited to fences. In certain districts like Trincomalee, Batticaloa and Ampara, of the total land holdings reported to having a higher percentage of palmyrah palms planted on the fence.

4.4 Soil Type

Table A-19 shows the soil types of the palmyrah lands. Fifty six percent of the land holdings studied had sandy soil. In the palmyrah land holdings in districts with close proximity to the sea, sandy soil was the prominent soil type. In interior districts like Anuradhapura, clay soil was prominent (45 percent).

4.5 The Water Level

As Table A-20 shows, 70 percent of the palmyrah lands in the study area had water within 10 feet below ground level. In 36 percent there was water within 5 feet. As most of the palmyrah lands were spread near the beach the water levels were within a few feet of the ground level.

4.6 Rearing of Animals

According to Table A-21, animals were reared in 42 percent of the palmyrah land holdings. In Batticaloa, Ampara and Trincomalee, animals were reared in more holdings compared with the average of these districts. Land holdings with poultry farming and cattle rearing were respectively higher than the others when the type of animals reared was considered.

ANNEX

Table A-1:

The Number and Names of the AGA Divisions Selected for the Study

District	Total AGA divisions	No.selected	Names
Puttalam	13	5	Puttalam Arachikattuwa Mundalama Vanathavillu Kalpitiya
Anuradhapura	18	6	Kahatagasdigiliya Ipalogama Thirappane Horowpathana Medawatchiya Rambawa
Hambantota	11	2	Hambantota Tissamaharama
Ampara	16	5	Alayadivambu Pothuvil Kalmunei Karathiwu Thirukkovil
Batticaloa	10	7	Koralai Pattu Koralai North Eravur Pattu Manmunei West Manmunei Manmunei South West Manmunei S.E. Pattu

Trincomalee	11	10	Kantale Thambalagamuwa Padavi-siripura Town and Gravets Kinya Muttur Gomarankadawala Seruwila Eachalampattu Morawewa

Table A-2:

Names of the Sample Villages Selected from Each AGA Division and the No. of Land Holdings or Sample Units Taken for the Study

Districts	AGA Divisions	Sample Villages	No.of Sample Units selected from each village
Puttalam	Puttalam	Manathivu	19
	Arachikattu	Battulu-oya	42
	Mundalama	Poonapitiya	80
	Vanathavillu	Serakkuliya	75
	Kalpitiya	Aanawasala	74
TOTAL			**290**
Anuradhapura	Kahatagasdigiliya	Rathmalgaswewa	37
	Ipalogama	Kunchikulam	20
	Thirappane	Periyakulam	39
	Horowpathana		44
	Medawatchiya		40
	Rambawa		48
TOTAL			**228**

Hambantota	Hambantota	Hambantota	37
	Tissamaharama	Kirinda	06
TOTAL			**43**
Ampara	Alayadivambu	Thothtam	40
	Pothuvil	Khoorrari	43
	Kalmunei	Thamishaparavi	40
	Karathiwu	Mavadipalli	38
	Thirukkovil	Thampattal	46
TOTAL			**207**
Batticaloa	Koralai Pattu		36
	Koralai North		36
	Eravur Pattu		35
	Manmunei West		33
	Manmunei		36
	Manmunei South West		36
	Manmunei S.E. Pattu		36
TOTAL			**248**
Trincomalee	Kantalei	Peraru	25
	Tambalagamuwa	Pudukudirippu	27
	Padavi-siripura	Old-Medawatchi	25
	Town and Graverts	Selvanaya Puram	25
	Kinya	Kuda kinya	23
	Muttur	-	25
	Gomarankadawala	Galkadawala	25
	Seruwila	Thanganager	25
	Eachalampattu	-	23
	Morawewa	Rottawewa	16
TOTAL			**239**

Table A-2.1:

The Distribution Pattern of Palmyrah Population in Each AGA Division

District	AGA Divisions	Palmyrah Population
Puttalam	Puttalam	10,004
	Arachikattu	4,700
	Mundalama	39,542
	Vanathavillu	8,042
	Kalpitiya	82,730
TOTAL		**145,018**
Anuradhapura	Kahatagasdigiliya	5,046
	Ipalogama	11,841
	Thirappane	2,296
	Horowpathana	5,871
	Medawatchiya	2,259
	Rambawa	4,340
	Others	7,396
TOTAL		**39,049**
Hambantota	Hambantota	1,505
	Tissamaharama	483
TOTAL		**1,988**
Ampara	Alayadivambu	15,000
	Pothuvil	10,000
	Kalmunei	7,000
	Karathiwu	11,000
	Thirukkovil	4,500
	Others	8,000
TOTAL		**55,500**
Batticaloa	K.P.N. Vaharai	36,728
	K.P.,Valaichenai (T)	60,842
	M.N.,Batticaloa	51,428
	K.P., Valaichenai (M)	1,025
	K.P., Chenkalady (M)	6,025

	Eravur (M)	4,217
	Kattamkudy	3,075
	Araipattai	17,250
	M.S.& E.P.,Kaluwanchikudy	33,752
	P.P., Vellavely	7,365
	M.S.W. Paddipolai	8,154
	M.W., Vavunativu	700
TOTAL		**230,561**
Trincomalee	Kantale	17,000
	Tambalagamuwa	22,000
	Padavi-siripura	9,000
	Town and Graverts	13,000
	Kinya	23,000
	Muttur	35,000
	Gomarankadawala	19,000
	Seruwila	33,000
	Eachalampattu	5,000
	Morawewa	12,000
	Others	39,000
TOTAL		**227,000**
TOTAL IN ALL DISTRICTS		**699,116**

Table A-3:
The Distribution Pattern of Palmyrah Land Holdings in Each District According to Size Classes

Land Size (Acres)	Puttalam	%	A'pura	%	Hambantota	%	Ampara	%	Batticaloa	%	Trincomalee	%	Total	%
1/2 <	70	24	-	-	35	81	98	47	36	14	52	22	291	23.1
1/2 < 1	31	11	24	10.5	03	07	60	29	108	43	41	17	267	21.3
1 < 2	39	13	61	26.9	03	07	32	15	36	14	90	38	261	20.8
2 < 5	72	25	112	49.3	02	05	14	7.6	44	18	51	21	295	23.5
5 < 10	44	15	24	10.5	-	-	02	01	18	07	04	02	92	7.3
10 < 20	24	08	07	3.0	-	-	-	-	03	02	-	-	34	2.7
20 >	10	04	-	-	-	-	01	0.4	03	02	01	0.4	15	1.2
TOTAL	290	100	228	100.0	43	100	207	100	248	100	239	100	1255	100
Averagesize (acres)	4.6		2.5		0.3		3.7 *0.6		1.7		2.0 *01.1		2.8	

* Without considering the holdings over 20 acres - only one regarding the respective districts.

Table A-4 :
The Distribution Pattern of Palmyrah Land Area According to Size Class in Each Districts

Land Size groups (Acres)	Puttalam	%	A'pura	%	Hambantota	%	Ampara	%	Batticaloa	%	Trincomalee	%	Total	%
1/2 <	23.5	2	-	-	3	23	19	3	4	01	12	02	61.5	2
1/2 < 1	07.5	1	14	2	2	15	31	4	41	10	24	05	119.5	4
1 < 2	44.5	3	68	12	4	32	33	4	42	10	97	21	288.5	8
2 < 5	210	16	288	51	4	30	35	5	136	32	107	23	780	18
5 < 10	240.5	18	134	23	-	-	12	1	118	28	28	06	532.5	14
10 < 20	309	23	70	12	-	-	-	-	32	08	-	-	411	11
20>	491	37	-	-	-	-	636	83	43	11	200	43	1370	43
TOTAL	1326	100	574	100	13	100	766	100	416	100	468	100	3563	100

Table A-5:
The Ownership Pattern of Palmyrah Land Holdings in Each District

Ownership	No. and percentage of holdings													
	Puttalam	%	A'pura	%	Hambantota	%	Ampara	%	Batticalo	%	Trincomalee	%	Total	%
Privately owned	253	87	167	73	39	91	195	94	240	96.7	230	96.23	1124	89.6
State Institution	02	01	-	-	01	02	4	2	02	0.8	1	0.42	10	0.8
State owned land or land belonged to irrigation tank or canal	28	10	59	26	01	05	2	1	-	-	3	1.26	93	7.4
School or other public premises	07	02	02		01	02	05	-	-	01	0.4	2 0.83	14	1.1
Others	-	-	-	-	-	-	6	3	05	2.0	3	1.26	14	1.1
TOTAL	290	100	228	100	43	100	207	100	248	100	239	100	1255	100

Table A-6:
The Ownership Pattern of Palmyrah Land in Each District

Ownership	Puttalam	%	A'pura	%	Hambantota	%	Ampara	%	Batticaloa	%	Trincomalee	%	Total	%
Privately owned	1041	79	349	61	09	68	126	16.5	407	97.6	456	97.6	2388	67.0
State Institution	15	01	-	-	.9	07	68	83.4	-	-	3	0.7	657	18.4
State owned land or land belonged to irrigation tank or canal	233	18	218	38	.6	05	1	-	-	-	1.5	-	454	13.0
School or other public premises	37	02	07	01	2.5	20	-	-	2	0.5	3.5	0.7	52	1.4
Others	-	-	-	-	-	-	1	0.1	7	1.9	4	0.9	12	0.3
TOTAL	1326	100	572	100	13	100	766	100	416	100	468	100	3563	100

Table A-7 :
The Distribution of Private Palmyrah Holdings by Tenure

Tenure System	Puttalam	%	A'pura	%	Hambantota	%	Ampara	%	Batticaloa	%	Trincomalee	%	Total	%
Singly owned	223	88	154	92	12	31	147	75.3	232	96.7	153	66	921	82.0
Joint ownership	13	05	03	02	-	-	5	2.5	01	0.4	-	-	22	2.0
Possessing a permit	10	04	10	06	21	54	37	19	04	1.7	75	33	157	14.0
Encroached	07	03	-	-	02	05	-	-	-	-	-	-	9	0.8
Leased/ Mortgaged	-		-	-	02	05	3	1.5	-	-	02	01	7	0.6
Share Cropped	-	-	-	-	-	-	1	0.5	03	1.3	-	-	4	0.3
Others	-	-	-	-	02	05	2	1.2	-	-	-	-	4	0.3
TOTAL	253	100	167	100	39	100	195	100	240	100	230	100	1124	100.0

Table A-8:
The Distribution of Palmyrah Land Area by Tenure (acres)

Tenure system	Puttalam	%	A'pura	%	Hambantota	%	Ampara	%	Batticaloa	%	Trincomalee	%	Total	%
Singly owned	925	88	97	95	5	51	77	10.2	398	97.1	369	81.06	1871	67.9
Joint ownership	72	07	1	01	-	-	6	0.8	1	0.2	-	-	80	2.9
Possessing a permit	37	04	4	04	4	38	21	3	5	1.2	84	18.50	155	5.6
Encroached	6	01	-	-	0.2	02	-	-	-	-	-	-	6.2	0.2
Leased/ Mortgaged	-	-	-	-	0.2	03	0.4	-	-	-	02	0.44	2.6	0.1
Share Cropped	-	-	-	-	-	-	0.1	-	6	1.5	-	-	6.1	0.2
Others	1	-	-	-	0.8	06	636	86	-	-	-	-	638	23.2
TOTAL	1041	100	102	100	10.2	100	741	100	410	100	455	100	2759	100

Table A-9:

The Type of Residency of the Palmyrah Land Owners in Each Districts

Type of Residency	Puttalam	%	A'pura	%	Hambantota	%	Ampara	%	Batticaloa	%	Trincomalee	%	Total	%
Land itself	149	61	25	51	36	92	150	79	202	81	198	83	760	82.2
Within one mile from land	30	13	14	29	03	8	38	20	44	18	34	14	78	8.4
One mile away from land	64	26	10	20	00	-	3	1	02	01	8	03	87	9.4
TOTAL	243	100	49	100	39	100	191	100	248	100	240	100	925	100

Table A-10:
The Use of Flowered Male & Female Palms in Each District for Tapping

	Puttalam				Anuradhapura				Hambantota			
	Male	%	Female	%	Male	%	Female	%	Male	%	Female	%
Tapped	02	0.01	04	0.02	183	4	53	0.8	0.0	-	0.0	-
Untapped	15,608	99.99	18,320	99.98	1384	96	6,518	99.2	0.0	-	0.0	-
Total flowered	15,610	-	18,324	-	4567	-	6,571	-	80	-	69	-

contd.

	Ampara				Batticaloa				Trincomalee				Total			
	Male	%	Female	%	Male	%	Female	%	Male	%	Female	%	Male	%	Female	%
Tapped	22	0.3	643	4	3751	30	2789	19	505	1.3	515	1	4463	6	4004	4
Untapped	7204	99.7	15,441	96	8751	70	11888	81	38,324	98.7	50957	99	74,354	94	103193	96
Total flowered	7226	-	16,084	-	1262	-	14677	-	38,829	-	51,472	-	78,814	-	107197	-

Table A-11:
Palmyrah Trees Used for and Suitable for Fibre

	Puttalam	Anuradhapura	Hambantota	Ampara	Batticaloa	Trincomalee	Total
No.of palms used for fibre	2827	-	10	432	378	579	4227
Percentage of the palms over 7 feet	5	-	0.03	1.4	1	0.5	1.6
No.of palms presently suitable for fibre	24,319	4,850	166	5905	11702	32,416	79,353
Percentage of over 7 feet	43	27	19	31	-	28	30.5

Table A-12:
Palmyrah Palms Used for Cutting Leaves for Various Purposes in 1991

	Puttalam	Anuradhapura	Hambantota	Ampara	Batticaloa	Trincomalee	Total
No.of families in the sample involved in cutting leaves	61	18	16	87	146	64	392
Their percentage in sample	21	08	37	42	59	27	31
No.of palms used for cutting leaves	476	79	140	495	776	945	2911
Their percentage over total no. of trees	1.9	1.7	30.5	9	39.7	16	6.3

Table A-13:
The Frequency of Cutting Leaves from Palms in Each District

	Puttalam		A'pura		Hambantota		Ampara		Batticaloa		Trincomalee		Total	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%
Once a year	23	38	15	83	02	13	57	65	114	78	44	77	260	66
Twice a year	15	25	3	17	06	37	28	32	25	17	15	23	92	23
Thrice a year	16	26	-	-	08	50	2	3	4	3	-	-	30	08
More than thrice a year	07	11	-	-	-	-	-	-	3	2	-	-	10	03
TOTAL	61	100	18	100	16	100	87	100	146	100	64	100	392	100

Note: Information is for the year, 1991.

Table A-14:
The Composition of Palmyrah Lands in the Districts

Description	Puttalam	%	A'pura	%	Hambantota	%	Ampara	%	Batticaloa	%	Trincomalee	%	Total	%
Palmyrah only	40	14	41	18	06	14	9	4	15	5	21	9	132	10
Palmyrah and Coconut	186	64	16	7	27	63	136	66	123	50	62	26	550	44
Palmyrah & other trees	64	22	171	75	10	23	62	30	110	45	156	65	573	46
TOTAL	290	100	228	100	43	100	207	100	248	100	239	100	1255	100

Table A-15
The Distribution of Crops on Land Holdings with Palmyrah & Mixed Crops

	Puttalam		A'pura		Hambantotòa		Ampara		Batticaloa		Trincomalee	
	No	%	No	%	No	%	No	%	No	%	No	%
Jak	05	02	18	08	-	-	14	07	36	14	55	23
Bread Fruit	-	-	-	-	-	-	04	02	10	04	03	01
Mango	24	08	33	14	02	05	66	32	70	28	105	44
Tamarind	07	02	19	08	-	-	10	05	09	04	52	22
Orange	03	01	08	04	01	02	25	12	26	10	29	12
Lime	04	01	06	03	01	02	20	10	16	06	33	14
Woodapple	05	02	15	07	-	-	02	01	04	02	27	11
Cadju	26	09	09	04	01	02	10	05	22	09	22	09
Delum	05	02	06	03	01	02	22	11	20	08	11	05
Green gram	01	0.3	17	07	-	-	02	01	05	02	01	0.4
Cowpea	02	0.6	19	08	-	-	01	0.5	04	02	01	0.4
Gingelly	-	-	-	-	-	-	-	-	-	-	01	0.4
Kurakkan	-	-	-	-	-	-	-	-	-	-	-	-
Wheat	-	-	-	-	-	-	-	-	-	-	03	01
Paddy	14	05	60	26	-	-	08	04	35	14	25	10
Chill	07	02	11	05	-	-	06	03	10	04	02	0.8
Onion	07	02	-	-	-	-	02	01	16	06	03	01
Tobacco	-	-	17	07	-	-	22	11	-	-	08	03
Vegetables	09	3.1	26	11	-	-	04	02	16	06	42	17
Plantain	07	02	38	17	04	09	59	28.5	35	14	40	17
Kohomba	06	02	33	14	09	09	40	19	66	27	-	-
Palu	03	01	17	07	-	-	-	-	-	-	01	0.4
Weera	01	01	15	07	-	-	-	-	-	-	-	-
TOTAL	290	-	228	-	43	-	207	-	248	-	239	-

Table A-16:
The Ways Palmyrah is Established in Land Holdings

Description	Puttalam	%	A'pura	%	Hambantota	%	Ampara	%	Batticaloa	%	Trincomalee	%	Total	%
By cultivation	01	0.3	59	26	21	49	139	67	77	31	152	64	449	36
Naturally	289	99.7	169	74	22	51	68	33	171	69	87	36	806	64
TOTAL	290	100	228	100	43	100	207	100	248	100	239	100	1255	100

Table A-17:
The Means Through Which Palmyrah is Grown on Land Holdings

Land owner	01	100	55	94	12	50	136	98	76	99	155	99.36	435	95
By an organisation	-	-	4	6	06	25	2	1	-	-	-	-	12	3
Others	-	-	-	-	06	25	2	1	1	1	01	0.64	10	2
TOTAL	01	100	59	100	24	100	140	100	77	100	156	100	457	100

Table A-18:
Type of Spread of Palmyrah in Land holdings in Each District

Description	Puttalam	%	A'pura	%	Hambantota	%	Ampara	%	Batticaloa	%	Trincomalee	%	Total	%
Everywhere	191	66	91	40	21	49	94	45.4	93	37	73	31	563	45
Limited to fences	14	5	59	26	10	23	77	37.3	97	39	112	47	369	29
Limited to one or few parts	85	29	78	34	12	28	36	17.3	58	24	54	22	323	26
TOTAL	290	100	228	100	43	100	207	100	248	100	239	100	1255	100

Table A-19:
The Type of Soil in Palmyrah Lands

Description	Puttalam	%	A'pura	%	Hambantota	%	Ampara	%	Batticaloa	%	Trincomalee	%	Total	%
Sandy soil	210	72	-	-	40	93	138	66.6	207	83	103	43	698	56
Sandy-Brown	63	22	55	24	02	5	58	28.2	32	13	6	3	216	17
Red Soil	03	1	71	31	01	2	5	2.4	2	1	50	21	132	10.5
Clay Soil	14	5	102	45	-	-	5	2.4	5	2	56	23	182	14.5
Rocky Soil	-	-	-	-	-	-	1	0.4	2	1	24	10	27	2
TOTAL	290	100	228	100	43	100	207	100	248	100	239	100	1255	100

Table A-20:
The Distribution of Palmyrah Lands in Each District According to the Depth of Their Water Levels

Depth below ground level (feet)	Puttalam	%	A'pura	%	Hambantota	%	Ampara	%	Batticaloa	%	Trincomalee	%	Total	%
0 - 5	229	79	109	48	08	19	52	25	15	6	33	14	446	36.6
6 - 10	61	21	48	21	17	40	91	44	150	60	67	27.6	434	34.0
11 - 20	-	-	57	25	14	32	64	31	78	32	98	41	311	24.1
21 - 35	-	-	14	6	04	9	-	-	5	2	40	17	63	5.3
36 & more	-	-	-	-	-	-	-	-	1	0.4	1			
TOTAL	290	100	228	100	43	100	207	100	248	100	239	100	1255	100

Table A-21:
Palmyrah Holdings in Which Animals are Reared and Their Distribution According to the Type of Animals

Description	Puttalam	%	A'pura	%	Hambantota	%	Ampara	%	Batticaloa	%	Trincomalee	%	Total	%
Land holdings with animals	57	20	30	13	05	12	146	71	188	76	99	41	525	42
Holdings according to different animals														
Cattle	09	16	04	13	-	-	79	54	156	83	68	69	316	60
Goats	06	11	03	10	-	-	71	47	136	72	33	33	249	47
Poultry	34	61	04	13	01	20	118	81	172	91	92	93	421	80
Pigs	28	49	02	7	04	80	8	5	07	4	-	-	49	9