

## **THE ACTIVITIES OF THE PALMYRAH DEVELOPMENT BOARD AND SOME ASPECTS OF AGRONOMIC RESEARCH AND DEVELOPMENT NEEDS OF THE ORGANIZATION**

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The palmyrah palm belongs to the family of plants known as *Palmae* which is a very ancient family of trees, perhaps older than any other flowering plants. The palm, which belongs to the species *Borassus flabellifer* L. occurs throughout the drier areas of tropical Asia and Malaysia being particularly abundant in India and Sri Lanka. The acreage under cultivation in Sri Lanka is estimated at about 60,000 with a total population of more than 10 million palms.<sup>1,2</sup> Two-thirds are in the Jaffna district including the islands off the Jaffna coast.<sup>2</sup> Mannar (especially Mannar island) and Mullaithivu also have considerable acreage and density (Table 1) while in other districts cultivation is rather scattered.

The following products are usually obtained from the palm:

- (i) Sap Products: Sweet toddy, treacle, jaggery, sugar candy, palm sugar, toddy, palmyrah arrack and palm wine.
- ii) Fruit Products: Cordial, panam panam, palmyrah crush, nectar, jam, panattu and panipanattu.
- (iii) Seed Products: Odiyil, kottaikilangu, puran.
- (iv) Leaf and Fibre Products: Leaf handicrafts of various kinds (utility and fancy), baskets, flower bouquets, wall hangers, brushes, naar etc.
- (v) Timber Products: Roof works, rafters, posts, toys, household furniture, electric poles etc.

**Table 1: Acreage and population of Palmyrah in Sri Lanka.<sup>1</sup>**

<b>District</b>	<b>Acreage</b>	<b>Palms</b>
Jaffna	40,000	7,000,000
Mannar	15,000	3,000,000
Mullaithivu	5,000	500,000
Trincomalee	250	50,000
Puttalam	250	50,000
Batticaloa	50	5,000
Vavuniya	50	5,000
Hambantota	50	5,000
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	60,650	10,615,000

## **Goals and Objectives of the Palmyrah Development Board**

The goal of the Board is to develop palmyrah based industries in a systematic and scientific manner, so that optimum use of the abundant resource could be made, resulting in a reasonable income to those who depend directly or indirectly on the palmyrah palm for their livelihood.

The main objectives of the Board are :

1. To rehabilitate and enhance palmyrah cultivation and development
2. To enhance the production and utilization of palmyrah sap, fruit, fibre, leaf, timber and tuber based products.
3. To promote purchases, sales and marketing of palmyrah based products both in the domestic and in the external markets.
4. To undertake development oriented research in respect of the palmyrah palm covering all aspects of cultivation, production and marketing.

The Board is carrying out its activities through five divisions with divisional heads working towards achieving the goals and objectives.

### **The Divisions:**

#### **1. Research**

The main thrusts of the Research Division have been on :

- i) Improving the keeping quality of pulp, sap and tuber based products.
- ii) Diversification of the products from pulp, sap and tuber.
- iii) Improving the processes of production through improved food technology, so that resultant products would be attractive, nutritive and palatable to the consumer.

#### **2. Production**

More than twenty five production centres have been established throughout the island to produce fruit drinks, jams, cordials, alcoholic beverages, pinnattu, sugar, sugar candy, jaggery, treacle, pan-o-puff, palmyrah crunchy, biscuits and confectioneries which are marketed through the Palmyrah Development Board's sales outlets called 'Katpakams'.

### 3. Development

Mainly concerned with seed plantations & establishment of model estates.

Jaffna 1. Singainagar	50 acres
2. Mamunai	500 "
Vavuniya: Puliyankulam	500 "
Mullaithivu: Kolpitty farm	15 "
Mannar : Naruvilikkulam	10 "
Batticaloa : Rajadurai farm	50 "
Hambantota : Weeravella farm	15 "

### 4. Marketing

1. Purchases from individual producers in the community and production units of the base organizations including the export promotion village companies (EPVCs) and women groups.
2. Exporting palmyrah based products such as leaf, fibre and naar based items, palm posha, pan-o-puff, palmyrah crunchy etc.

### 5. Extension

1. Women training programmes on palmyrah based production.
2. Conducting meetings, exhibitions at village and national levels.
3. Disseminating information through various media.

### Research on Cultivation<sup>3</sup>

There is immense potential for horticultural research on this plantation crop to develop an ideotype with short stature, high yield and minimum prebearing period. Though neglect is the hall-mark of the present state of affairs with the palmyrah palm, some systematic cultivation practices are also found to be prosperous. This indicates the need for developing suitable horticultural practices to suit the situations of the palm practices. For instance, foliar feeding may be advantageous when the palms are young, as regular cultivation practices may not be feasible. The luxuriant growth of the palm in sandy soils suggests the possibility of the association of mycorrhiza. The matter may be studied and suitable organisms cultured and supplied as mycorrhiza are known to play a significant role in the fixation and assimilation of nutrients.

Enquiries and observations support the view that palmyrah does not adversely affect the companion crops either by root or shade effects. This aspect requires to be studied. Interesting variations in morphological and yield parameters have been met within the survey conducted.

It is essential to revise the taxonomy of *Borassus*. DNA technology may be used to advantage for judging taxonomic distance. A world wide collection of biotypes and ecotypes can be organized and planted in important research centres. The establishment of a germplasm bank is by far the most essential of the immediate measures to be taken. It will be worthwhile to take up inter-specific breeding to explore the possibilities of developing desirable types. Work on mutation breeding can be undertaken for exploring the possibilities of obtaining useful types.

Antihormonal substances could be tested on palmyrah which might reduce the height and increase flowering ability. If these substances are tested on seedlings on seed beds it might be possible to alter the seed-bed growth period of the young palms. Thus it may be possible for the seedlings to complete a considerable fraction of its life cycle in nurseries. If it leads to a successful venture then it might be possible to get palms which can flower very early compared to the naturally grown palmyrah. This would be a turning point in the propagation of palmyrah palms in future. However, problems associated with transplanting of seedlings must be investigated.

The genes for drought resistance, nitrogen fixation and high photosynthetic yield are unique in palmyrah.<sup>4</sup> These genes are present in palmyrah through natural selection and not through the influence of man. The set of genes for drought resistance should be preserved in palmyrah. Research should be undertaken to further improve these genotypes.

### Embryo Culture and Tissue Culture

Poor germination of palmyrah seeds is a severe handicap in agricultural practice. A more sophisticated, but somewhat drastic, approach is to completely excise the embryo and culture it *in vitro* on an appropriate medium. From the *in vitro* studies so far conducted at the IFS on palmyrah, we have reached a stage of growing the embryo from the mature seed upto the formation of a few cms of tuber. Further research is needed to make the tuber to initiate roots and shoots to make it into a full seedling. There is also the possibility of excising the growing tip of the tuber which carries the shoot apex and grow in appropriate culture media to obtain more meristem cultures. If we succeed in obtaining meristem cultures from palmyrah, then it would be a highly useful technique to propagate the elite mother palms without the loss of purity. This will also provide the necessary base for the development of any molecular level investigations on gene functions and manipulation in this palm.

Palmyrah palm has a number of desirable traits such as tolerance to drought, salinity, pests and diseases and one day it may become possible to transfer these desirable qualities to other important crop plants which lack these qualities. These

will become a reality only after the proper understanding and characterization of these traits with the concurrent development of techniques to identify and transfer genes in this palm. For all these, tissue culture and single cell culturing techniques are important prerequisites.

Another agronomic draw back associated with germination is that once sprouted, the seedlings cannot be transplanted. Certainly the general lack of scientific efforts devoted to the cultivation of this palm is the main cause of the absence of a suitable nursery technique. It remains to be seen whether root pruning (cutting the roots at required length) as widely practised on the oil palm can be applied to the palmyrah also.

### **Training on New Design and Quality maintenance on Palmyrah Palm Handicraft**

The problem encountered in commercial scale handicraft production in Sri Lanka are the lack of variety in design and the low quality of the products. Design consultancy is a bottle neck to attempt to solve these fundamental problems while ensuring that the craft persons earn adequate income. Production on a viable business footing could be achieved only if all these factors are taken into consideration. Another drawback in promoting large scale handicraft production is the lack of quality consciousness and therefore the absence of quality standards. Since the Palmyrah Development Board aims to increase the productivity and income of the rural based craft persons and also export the products in the future, stress must be given for the importance of quality consciousness from the very beginning. A programme of training of trainers is therefore formulated to cover all these aspects. It was carried out in the form of a workshop/seminar where important aspects of design, raw material selection, preparation inclusive of dyeing, proper methods of trimming and finishing, packing for local transport and export were discussed. These types of programmes must be conducted regularly to update the marketing needs.

### **Training Needs for Women**

The Palmyrah Development Board (PDB) as the major promoting organization promotes palmyrah based activities among rural women through various approaches. The women who are presently involved in palmyrah based activities are from disadvantaged groups. Since women have to bear the major burden of domestic chores, they do not have the time and opportunity to acquire skills and training for better jobs. Therefore there is a great need to open up chances for the women to organize into self managed groups and acquire the necessary skills and training through participation. Although there is high participation of women in this industry, there is evidence to the fact that participation is on the decline. Therefore, it is essential to motivate rural women involved in palmyrah industry and make them aware of the need for active participation in the palmyrah based activities.

While the Board has catalysed various economic and income generating projects for the rural women, it has never had the financial and man power resources to bring

out the full potential of the palmyrah palm in providing the people with additional food and nutrition requirements, income and employment for women. It has therefore played a promotional role and provided a support system for the base co-operatives and the women's groups and organisations in the informal sector.

Training programme should be structured to suit the needs and constraints of the participants. The Board guides the rural women workers (producers) to organize themselves into self managed groups. Successful homogeneous women groups have been organized in some parts of the North of Sri Lanka.

Each of the women groups is formally organized and has an established revolving fund. Existing group activities need managerial and organizational skills to deal with the market economy effectively. The development of a nationwide rural network including women's groups poses a challenge to training, communication and co-ordination capabilities, in addition to the need for effective dissemination of information to target population.<sup>5</sup> It is essential to widen the existing women's groups and organize new groups. Women member groups should be rallied round to invigorate them for further engagement of production efforts around palmyrah. Besides those women already in some form of group effort, there are large numbers of women who have lost their spouses during the ethnic conflict and they have to be rehabilitated by involving them into new group effort. The women who are already engaged in an unorganized way in palmyrah based activities have to be formed into new groups, so that their potential and the resource potential could be put to maximum use.

An integrated palmyrah research and development programme will generate employment (part or full time) and diversify the products. Typically these would be on food processing, new handicraft design and quality control and wood processing. The successful development of such a programme depends essentially on technical capabilities, training, providing market outlets and on initial funding. If a successful programme is launched there will be a great potential for the palmyrah palm and a sustainable research and development would be achieved.

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