MULBERRY UNDER COCONUT

Sericulture Increases Coconut Profitability

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Silk production in Sri Lanka is gaining popularity, primarily as a result of the guarantee available for the purchase of the entire production at a fixed price. The ever-increasing market demand continues to outpace production, providing an ever rising pricing structure.

Mulberry, which is required for rearing *Bombyx mori* for silk production, is a promising crop under coconut. It is already cultivated under coconut in certain parts of the country. It grows well in loamy to gravel soils with a pH range of 5.5 to 6.8. It requires an annual rainfall of 750 mm to 2,500 mm and performs well when there is a good distribution of rainfall. During periods of drought, irrigation can double leaf production. Its ability to tolerate shade allows it to be grown under coconut. It can be accommodated conveniently in avenue plantings of coconut.

The loose loamy soil in coconut lands would allow mulberry to have a deep-seated, well-spread root system. In gravelly soils, deep tillage, trenching and incorporation of organic matter will encourage deep rooting necessary for high leaf production.

Mulberry could be interplanted in adult coconut plantations where light is not limited. Under shaded conditions, the yield will be reduced. About 3,500 to 5,500 planting points could be had in an acre of coconut. Mulberry can be planted in rows 1 m (about 3 1/2') apart and within a row the plants should be 30 cm 1 1/4') apart. A row of mulberry could be established immediately outside the maintenance circle of the coconut palm. The suggested lay out of mulberry in a 7.6 m x 7.6 m coconut plantation is given in Fig. 1.

Mulberry cuttings should be planted in trenches, about 0.5 to 0.75 m (2' to 3') deep where organic matter, fibre dust and top soil are added.

The root penetration in mulberry depends on the growing habit, pruning and cropping systems. It requires a considerable amount of fertilizer, and leaf production is linked to restorative input of both organic and inorganic fertilizers. The crop and bush management systems control the draw on the soil's moisture resources which is 4 to 5 mm per day in active mulberry. The mulberry canopy would provide shade to the soil, thereby conserving soil moisture and reducing weed growth.

The yield of mulberry is leaf oriented and production depends on available moisture and nutrients. It is not difficult to achieve leaf production of 10,000 kg per acre per year. Of course, this depends on the rainfall and the variety of Mulberry and cultural practices undertaken in the land. Although the plant requires a considerable amount of moisture, good cultural practices in the land which enables conservation of soil moisture will allow the plant to see through 2 to 3 months of drought. In fact, droughts generally do not kill mulberry which could go into a period of dormancy in a stress condition. It will be quickly activated with the first showers to produce leaves, which can be harvested in two months. Under weedy conditions, mulberry performs poorly with reduced yields.

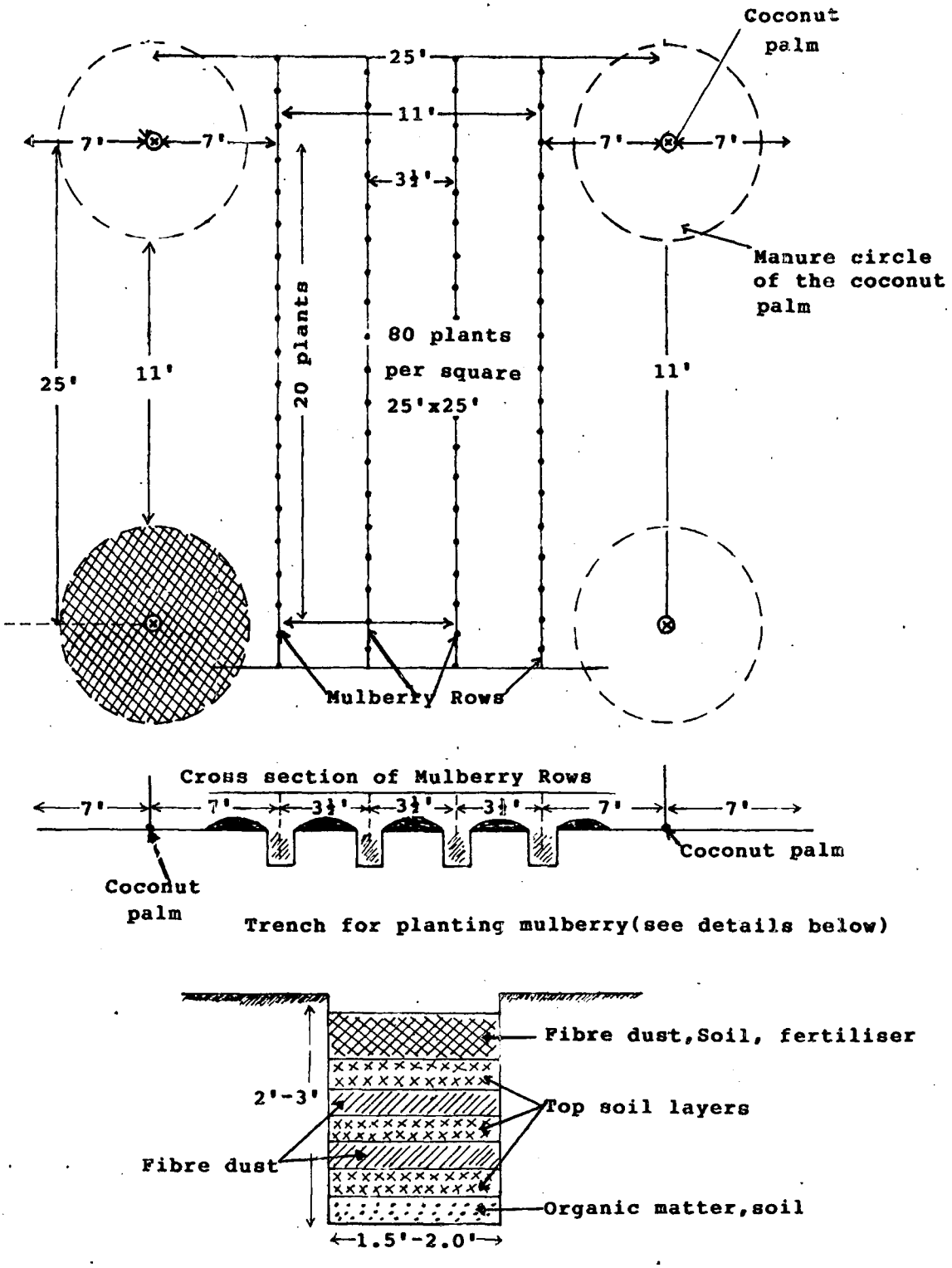


Fig.1 – Suggested system of planting mulberry in a 7.6m x 7.6m (25' x 25') coconut plantation.

Rearing of Silkworms

The success of mulberry intercropping depends on the rearing. It is necessary to use quality disease-free eggs and good techniques should be adopted both during the young and adult stages of the worms, through to pupation.

Silkworm production requires a well-constructed good rearing house where the temperature, humidity and light could be reasonably controlled. It should also be clean. Otherwise diseases, both 'infective' and 'induced' will affect the insects. These diseases are lethal and could destroy the entire culture of insects in a short period of time or adversely affect the expression of gene potential. It is therefore necessary to have good hygienic conditions in the rearing house. The basic equipment required in the rearing house are trays or racks for feeding, the leaf preservation equipment, knapsack or power sprayer, gas mask, rearing nets, sieves, foam pads, forceps in wood, knives, cutting board, plastic pails, mountages for spinning, hygrometer, ant wells etc.

Chemicals such as formalin, bleaching powder etc. will also be required in addition to other consumables such as paraffin, demi-paper and newspapers.

In rearing silkworms, 15 to 20 kg of green leaves is required for 1 kg of green cocoon. Rearing is also relevant to the egg boxes and leaf yield. A box contains 20,000 eggs. Generally, production of 20 to 25 kg of green cocoons per box with a cocoon/shell ratio (C/S ratio) of 18 - 19 is satisfactory. Even higher results are possible but in the coconut growing regions which usually experience somewhat warm and dry conditions, such high yields may not be consistently attainable, until such time new hybrids to produce better cocoons in warm areas are evolved. However, it is notable that yields up to 43 kg per box have been recorded at higher elevations in Sri Lanka with up to 37 to 38 kg per box in mulberry intercropped in coconut lands.

The cocoon price is dependent on the silk content, Unreelable Bad Quality Cocoons (URBQ) and the reelability. Although the cocoon prices in Sri Lanka is the lowest in Asia, sericulture is yet highly profitable.

An estimate for the cost of establishment of mulberry in one acre of coconut and the construction of buildings etc. is given in Table 1.

Advantages of growing mulberry

Mulberry provides a source of excellent fuel for the hearth, producing 2 to 2.5 MT of fuel wood per acre per annum, depending on the cultural practices.

The land use is intensified. A successfully managed mulberry crop under coconut could provide a gross income of Rs. 25,000 to 30,000 per ac at a coast of production of Rs. 8,000 to 10,000 per ac. Intercropping will provide opportunities for employment from about 1.5 to 2 workers per acre. This could be increased to 5 to 10 workers per acre depending on the processing aspect and level of silk production.

Mulberry has a life span of 15 to 25 years and will give a regular income. The income from mulberry could act as a buffer on the fluctuating coconut prices, thereby providing the coconut grower/sericulturist with a stable income.

Observations in areas where mulberry has been intercropped under coconut have shown that the coconut production could be enhanced by as much as 40%. This could be attributed to the increased organic matter in the soil and the shade cast on the soil, both of which increase the ability of the soil to conserve moisture.

The Silk and Allied Products Development Authority will be pleased to provide any technical assistance and training to prospective farmers.

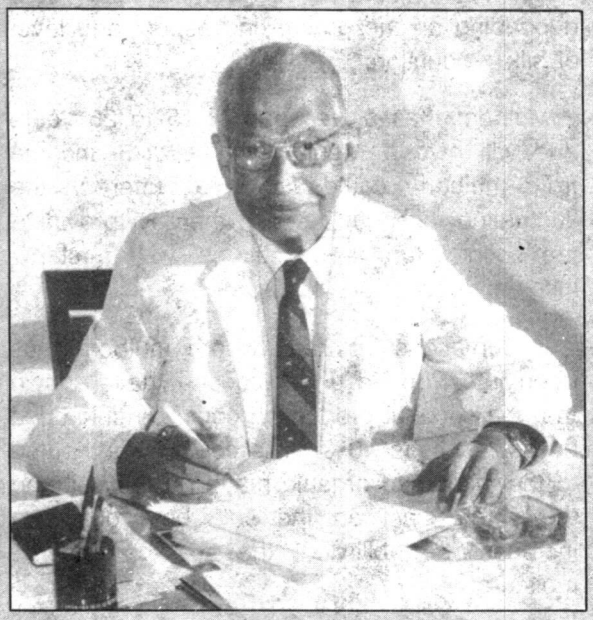
The coconut growers can reap the fruits of sericulture to meet the world shortage of natural silk worth US $ 2 billion.

Table 1 – **Cost of establishment of mulberry in one acre of coconut and maintenance**

Cost of land preparation and planting	...	Rs 6,000
Organic fertilizer and mulching (10 tractor loads)	...	2,000
Inorganic fertilizer and application (2 rounds)	...	2,000
Maintenance for 7 months	...	800
Incidentals	...	200
		Rs 11,000

Rearing building and equipment

Cost of rearing house	...	Rs 10,000
Cost of equipment	...	6,000
Incidentals	...	1,000
		Rs 17,000



MR R I FERNANDOPULLE CHAIRMAN, COCONUT RESEARCH BOARD

We welcome Mr R I Fernandopulle, who was appointed the new Chairman of the Coconut Research Board in March, 1989. He succeeds Dr. D V Liyanage. Prior to this appointment, Mr Fernandopulle was the Chairman of the Coconut Cultivation Board.

Mr Fernandopulle is a veteran coconut planter and pioneer coconut industrialist, with experience of over half a century, both in coconut planting and in the processing industry. He was the first Chairman of the Ceylon Coconut Fibre Board. He also held the position of the Chairman, Coconut Development Authority. An active Rotarian, he was the recipient of a coveted award from the Food and Agriculture Organization for his planting skills.

He is also an Honorary Fellow of the National Institute of Plantation Management, Sri Lanka.