

## The Avocado in Sri Lanka

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Sri Lanka (formerly Ceylon) is a large island near the southeastern coast of India, approximately three hundred miles long in the north-south dimension and about 150 miles in width. This country has played a major role in world history as European colonial powers in the earlier days sought its treasures of spices, coffee, tea, and precious stones. The Portuguese controlled the island from 1505 until 1656 when the Dutch expelled them. The British attained control of the spice trade and the island in 1796. Following British control, the island of Ceylon finally attained independence in 1974, whereupon the name was changed to Sri Lanka. Lanka was an old name associated with the country. Sri Lanka, or "magnificent" Lanka, now reflects a new approach to government by the people. Spices such as cinnamon (*Cinnamomum zeylanicum*), pepper (*Piper nigrum*), nutmeg and mace (*Myristica fragrans*), and cloves (*Eugenia (Syzygium caryophyllata)*) were the basis for many battles and international manipulations throughout past centuries. The introduction of coffee by the Dutch in 1658 provided a major crop for many years. The destruction of the coffee by a rust in 1870 resulted in a decline in the entire economy until early in the present century when tea was shown to be a feasible replacement for the coffee crop. Ceylon tea now has become a trademark in world commerce. Presently, it is one of the major export crops of Sri Lanka; though spices are still of considerable importance in the general economy. Rubber was introduced in 1876, but has never attained a position of major importance.

Sri Lanka enjoys a generally tropical climate as it lies between 5° and 9° north of the equator in the Indian Ocean. A high mountain range in the middle of the land mass provides a considerable variation in climatic conditions ranging from almost desert-like plains in the north to dense rainforests in the south. Rain shadows result in microclimates such that almost any plant species of economic importance can be adapted somewhere on the island. The generally elevated temperatures of the tropical locale result in lush growth where and when adequate moisture is available. Thus, throughout the centuries many crop plants have been produced in quantity and many specific products such as the spices have proved well adapted for exploitation. Toward this objective, the British established a great botanical garden in the more equable climate of the highlands of the Kandy Valley. The Royal Peradeniya Gardens originated in 1821 primarily as the brainchild of Sir Stamford Raffles, a famous British naturalist and statesman (1781-1826). Presently, it consists of 60 hectares (148.3 acres) primarily of tropical and subtropical species of timbers, ornamental, and important fruit crop plants from world-wide sources. There are approximately 10,000 trees, some specimens more than 100 years old and many of considerable size. One specimen of the Java Fig Tree (*Ficus benjamina*) covers an area of 1600 sq. meters (5,248 sq. feet). There are over 200 species of palms in the garden. This garden provided the basis for

the classical horticultural book, *Tropical Planting and Gardening*, by H. F. Macmillan (1947), who was its director from 1912 to 1925.

Near the Peradeniya Garden is the University of Peradeniya and the offices of the Ministry of Agriculture. This ministry has played a major role in the modern developments in avocado in Sri Lanka. While very little statistical information is available on the status of avocado in Sri Lanka, it is apparent from casual observations of the great quantities of fruit in the market in February-March and by conversation with many people that today the avocado is a common commodity in the trade and is enjoyed by a great number of the local people.

The date of the first introduction of avocado into Sri Lanka is not known with certainty. Early records of the gardens at Peradeniya, the Hakgala Gardens near Newara-Eliva, and the gardens of the Royal College, Colombo, mention alligator pear plants available for sale (4, 10). A search through the early reports of Tropical Agriculturist revealed that "...Mr. Arlt planted two trees in the Royal College ground (Colombo) in 1883... and yesterday was able to gather eight of the fruit..." (1). Shortly thereafter other reports state: "From lower Haputale, Mr. Maartensz has sent us from the famous Macaldenia Gardens some very fine avocado pears..." (2, 3). These are the earliest reports of well identified avocado trees which have been uncovered. A previous report in 1884 mentions the introduction of the botanical relative *Persea manmu* (1). In 1909, apparently the avocado fruit was common in some areas as it was discussed casually in an article: "Other names for the avocado pear is 'Alligator pear' and 'butter fruit' (3). It is called a salad fruit... and is not as sweet as dessert fruits generally are..." (3). Still another report in 1909 indicates "...Plants of (*Persea gratissima*) are usually available at Royal Botanical Garden Peradeniya..." (4). Thus, the avocado has been known in Ceylon for many years.

The period of modern horticultural treatment of the avocado began in the "Racetrack Nursery" across the road from the Royal Peradeniya Gardens. Here, in 1939-40, Mr. A. V. Richards of Ceylon introduced some avocado varieties from California and collected local clones for trial. Richards was a student in Subtropical Horticulture at UCLA under the late Professor R. W. Hodgson in 1935-36 when he developed his basic knowledge of avocado, citrus, and other subtropical fruits. Upon return to Ceylon he brought with him some avocado varieties from California including the Fuerte. Richards became the first Director of Horticulture at Peradeniya. An early account of the avocado in Ceylon was provided by Richards in 1947 (9). He described the bud grafts of Lyon, Puebla, and Button which had been established in the Royal Botanic Garden, Peradeniya, as the result of importations from Armstrong Nurseries in California May 12, 1927. Later introductions included Gottfried, Trapp, and Pollock from the U.S.D.A., Washington, D.C., and the variety St. Anne from the Department of Agriculture, Trinidad, B.W.I. Budwood of Winslow and Collinson from Washington, D. C. had failed. Still other introductions of seed of Puebla and Marmon, obtained from "California Avocado Growers Association" December 20, 1922, had germinated and were planted in the Garden. One budgraft brought to Ceylon by Richards in April "has been multiplied." The article mentions some generalities about avocado culture and evaluates the varieties briefly. The Gottfried proved to be an early variety in May followed in maturity by Puebla, Pollock, and the late maturing St. Anne in August-September. Mention is also

made of the Royal Botanical Garden "Purple Hybrid," a local selection.

Richards propagated several of the introduced clones and planted them under three different climatic conditions. The experimental plot at Peradeniya was across the road from the Royal Botanical Garden. Some of the trees still remain in this plot. Here at an elevation of 1500 feet near the town of Kandy, there are also found today many dooryard trees, some of considerable size, all probably the result of propagations by Richards or as seedlings from his original nursery trees.

A second trial planting was established at a somewhat higher elevation near the community of Hellbode at approximately 3000 feet. Hellbode lies south of Kandy in the center of the tea country. Here, the avocados are presently found primarily as isolated dooryard trees or as hedgerow plantings along the winding highway. Again, most of the trees probably are seedlings from the original introductions, as few specimens have any suggestion of a bud union. Variability among the trees is very evident. Some have excellent crops, some are without fruit. The fruits are variable in size, reddish brown or green, and highly suggestive of West Indian origin.

The third experimental avocado planting was made at Mirahawatta at an elevation of 4500 feet. Unfortunately all traces of this planting and its records have been lost.

Aside from the trees known to be planted by Richards, there are numerous specimens scattered in nearly all areas of Sri Lanka which are thriving to various degrees, depending primarily upon their moisture supply. The drier area of Jaffna in the north apparently provides a small supply of avocado fruit on occasion. Two very fine trees are reported from the Arid Lands Experiment Station near Maradankatiawala at 500 feet elevation. Here, an overflow pipe of a water source provides adequate moisture to support the two fine avocado specimens growing under a rather distinctive arid climatic condition. As new water sources are anticipated for the agricultural development of this low elevation arid zone, it would appear reasonable to test the avocado more extensively in the area.

A Ceylon government report in 1941 stated, "Ten of the best budded varieties grown in California were imported some years ago by the Department of Agriculture and planted at Peradeniya. Their rootstocks were probably not suited to the local conditions, for the plants began to decline in vigour; but when the budwood was taken from them and worked on the local West Indian seedlings the budded plants grew vigorously. Many of them have now come into bearing and the quality of the fruit is far superior to that of the local variety" (5).

The best known town in the highlands of Sri Lanka is Kandy. This city of perhaps 50,000 people is a center of many activities. It has been of major importance as the seat of governments in historical times. The valley in which it is located was easily secured by military control of the three major passes which enter the valley. Kandy is also famous as a religious center, as the great Buddhist Temple of the Tooth is the prominent physical feature along the lovely central lake. This lake is the focus of all the activities of the valley. While the higher surrounding hillsides are green with a carpet of tea plantations, the lower valley areas are well populated. Here the dooryards are filled with beautiful ornamental trees such as frangipani, *Cassia fistula*, jacaranda, and others, among which are great specimens of jackfruit (*Artocarpus integrifolia*), the

mango (*Mangifera indica*), papaya, and numerous avocados. The avocados are nearly all seedlings and highly variable in character. Collectively, they provide a substantial amount of fresh fruit in the Kandy public market during the season. The majority of the avocado trees in Kandy are probably of West Indian origin.

Off-season fruits from isolated trees were available in small quantity in February. These fruits as well as other species—wood apple (*Feronia limonia*) and bael fruit (*Aegle marmelos*) and mandarin (*Citrus reticulata*) — all botanical relatives of Citrus, are seen in the Kandy market stalls stacked neatly in conical or cylindrical piles.

Avocado fruit is common in the diet of Sri Lankans, but primarily as a dessert fruit generally served with sugar. One finds the fruit in nearly all the markets and roadside fruit-stands. The very neat and attractive arrangement of the fruit products in these markets is an impressive sight. The fruits are placed symmetrically in shallow or deep baskets, the pile terminating in a well arranged pyramid, each fruit pointing in a specific direction. Alternate pyramids of avocado, mangosteen, avocado, mango, avocado, papaya, etc., provide a distinctive character of the "green grocer" in these markets.

A recent renewal of horticultural interest in the avocado as a commercial crop has been initiated by the Ministry of Agriculture in cooperation with the office of FAO located in the Botanical Garden at Peradeniya. Plans are presently in progress to expand research on avocado which will include the introduction of disease-free clones and rootstock materials from Florida, Hawaii, and California. Evaluation of local seedling populations is planned. Mr. M. E. R. Pinto, a senior horticultural officer with the FAO office, has recently made a world tour of avocado growing countries to obtain propagating materials and technical information for the pursuance of the program at Kandy.



*Avocado and cherimoya fruit display in market at Kandy, Sri Lanka.*



Mr. M.E.R. Pinto, horticulturist, FAO Peradeniya Garden, beside original Nabal introduction, Racetrack Nursery, Kandy, Sri Lanka.

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