

Avocado Materials in Southeast Asia

C. A. Schroeder

Department of Biology, University of California, Los Angeles.

The avocado is well known in many of the countries of Southeast Asia, where some of the West Indian types were introduced at an early date by the Portuguese directly from Central America. Seedling progeny of these early introductions have been multiplied to provide dooryard trees for families throughout Sri Lanka, Singapore, Malaysia, and Indonesia. Very few formal orchards of avocado are to be seen. The fruits are commonly found in most of the markets and are sold along the main highways. They are widely used by most of the local people; but primarily as a dessert fruit, generally served with sugar.

The objective of several European countries during the past three centuries was to colonize a number of the Southeast Asian areas, particularly between 1700 and 1800, for the basic purpose of controlling the lucrative spice trade, the commodities of which were grown in these tropical areas. The Dutch, British, and Portuguese engaged in several confrontations regarding the control of these spice-producing countries. The Dutch and British, in particular, developed outstanding horticultural achievements in the lands they dominated by the introduction and improvement of the crop plants. The development of horticultural crops such as spices, pepper, nutmeg, together with coffee, tea, and later rubber and the African oil palm, resulted in unusual horticultural accomplishments as these major crops were cultured in or adapted to the specific localities. Together with the knowledgeable horticulturists from the mother countries, there were botanists who looked over the local flora as well as the crop plants to ascertain and investigate their commercial and botanical properties. These men have left a wealth of information and materials which are slowly becoming known in modern horticulture.

The avocado (*Persea americana* Mill.) was commonly known to a limited extent in world trade; and, indeed, became of some importance in Southeast Asia during the past century. The avocado originated in Central America and southern Mexico, where one finds many close botanical relatives in the family Lauraceae, including several species such as *P. lingue*, *P. indica*, *P. scheideana*, *P. skutchii*, and *P. borbonia*. Likewise, other less botanically related genera such as *Phoebe*, *Sassafras*, and *Nectandra* have been recognized in our horticultural programs; and have provided materials of interest and value to our industries and research.

It is of interest to the avocado horticulturist that many botanically related forms are also found in Southeast Asia flora. These are little known in the Western world, and some probably never have been introduced into California. Most of these Asian botanical relatives probably are unsuitable for direct use in our avocado industry, but some may have potential value either in the breeding programs or perhaps could be developed as

a rootstock source for our common avocado of commerce. The opportunity to study some of these botanical relatives of the avocado has warranted at least a brief report on a few forms which could possibly be utilized for avocado investigations in California.

A major source of information on the plants of Southeast Asia, especially those in the family Lauraceae, is the works of Dr. A. J. G. H. Kostermans, a Dutch botanist who has been associated for 27 years with the very famous Dutch Royal Garden in Bogor, Indonesia. This garden, founded in 1823, is located about forty miles south of Jakarta. Within the garden are growing many of the species of Lauraceae collected by Dr. Kostermans, whose specialty has been a life-long study of this particular plant group. Associated with the Bogor Royal Garden is the Herbarium, which includes more than two million herbarium sheets. This extensive assemblage of plants from Southeast Asia represents the efforts of many prominent botanists who collected in that part of the world. Dr. Kostermans is, without doubt, among the better known of these men.

It was my pleasure and great opportunity to meet and visit with Dr. Kostermans at the Herbarium in February, 1982 to learn firsthand of his many observations on the family Lauraceae as he has known it in Southeast Asia. Dr. Kostermans has collected most of the Lauraceae specimen sheets, and has actually introduced many of the species presently growing in the Garden. The following accounts of only a few species are presented to call attention to some forms which may be of possible value to avocado industries in various parts of the world.

Most of the accounts by Kostermans are found in the Indonesian journal *Reinwardtia*, which is published by the Herbarium.

The genus *Persea* is not widely represented in Southeast Asia (1). Recent investigations, however, have concluded that at least one species under the botanical name of *Michelus* is indeed comparable to *Persea* and should be included under the latter name. *Persea rimosa* (*Michelus rimosa*) is the example. Ridley (3), in his Flora of the Malay Peninsula, lists 16 genera within the family Lauraceae among which are *Alseodaphne*, *Northophaebe*, *Michelus*, *Phoebe*, *Actinodaphne*, *Litsea*, *Neolitsea*, *Lindera*, and *Cassytha*. Kostermans (2) describes the *Alseodaphne* Nees (Lauraceae) as consisting of 50 species of small to middle size trees. Most of these are rather well adapted to wet tropical forests. Some are durable timber used for seawater piles. One species of particular interest, *Alseodaphne langugenosa*, is a tree 25 meters high with an ellipsoidal fruit 2.5 x 4 cm. This species is said to have been utilized successfully in grafting of avocado. Another species is *A. longipes*, a tree reaching 10-12 meters providing another good timber. *A. oblanceolata* is also valued as timber and provides a yellow fruit. Both *Alseodaphne* and *Northophaebe* may be considered different from *Persea*; but are extremely closely related, according to Kostermans (2). Other species such as *Alseodaphne dura*, a timber tree used for seawater piles, and *A. longipes*, a tree 10-12 meters used for construction, are examples of plants with large stature which might be considered as possible rootstock sources for avocado. The other genera—*Beilschmedia*, *Dehasia*, *Endiandra*, *Litsea*, *Phoebe*— are likewise of general interest. *Endiandra*, for example, becomes a very large tree with a large fruit comparable to the common avocado. *Endiandra* is also found in New South Wales, Australia, where it is presently under investigation as a possible rootstock for avocado (4).

Actinodaphne is a wet forest tree of considerable size which has an unusual leaf arrangement in closely spaced whorls with wide bands of clear space between whorls. This species also may prove to be of value as a potential avocado rootstock.

Literature Cited

1. Becker, C. A. and R. C. Bakhuizen von der Brisk. 1963. Flora of Java. Nordhoff, Netherlands.
2. Kostermans, A. J. G. H. 1973. A synopsis of *Alseodaphne* Nees (Lauraceae). *Candollea* 28: 93-136.
3. Ridley, H. N. 1924. The Flora of the Malay Peninsula III. Asher and Co., Amsterdam.
4. Schroeder, C. A. 1979. An avocado relative from China. *Calif. Avocado Soc. Yearbook* 63: 90-93.