

HAWAII, LAND OF EXOTIC FRUITS AND NUTS

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INTRODUCTION

Most visitors to the Islands do not realize the Hawaiian Islands are made up of a series of islands in the North Pacific anchored in the southwest by our Big Island (Hawaii) and extending 2000 miles in the northwesterly direction toward Japan with Wake Island at the very tip of the chain. Excepting for the 12 major islands in the southwestern end of this chain and in the vicinity of Honolulu, the other islands are coral atolls, reefs or sand bars on top of volcanic mountain peaks arising from the ocean floor.

Unlike the shifting land masses of Europe, Africa, and the Eastern Americas drifting apart in the Atlantic Ocean, the ocean floor of the Pacific has been relatively stable for millions of years. Thus, the volcanically created Hawaiian Islands have been isolated from the greater land masses of Asia and the Americas for millions of years. This isolation resulted in an endemic plant population in Hawaii found nowhere else in the world. More than 85% of the plant species found in Hawaii are endemic. Others came to these shores in pre-historic time either floating on the surface of the ocean, carried by migrating birds, or were wind-blown. Still others were brought in as food by the seafaring Polynesians as they emigrated to these shores, and by later explorers and adventurers who came since Captain Cook discovered the islands in 1779. One of the most prominent horticulturists during this time was Don Francisco de paula Marin, who settled in the islands in 1791. Unfortunately, in spite of the huge population of endemic plant species, there is no endemic fruit or nut species in Hawaii which is commercially important. The early Hawaiians brought in with them edible crops like taro, breadfruit, coconut, banana, sweet potato, sugar cane, papaya and kukui nut. Don Marin is given credit for having introduced, among other things, coffee, guava, pineapple, avocado, tamarind, mango, and cactus (panini). The Kona orange was introduced in 1792 to the Kona area of Hawaii. During the "Gold Rush" in California, the Kona oranges were even exported to California. The Chinese brought the litchi in 1873 and the macadamia was introduced by the Jordan brothers in 1888 from Australia.

The following list gives the common and scientific names and the source of origin of some fruits and nuts grown in Hawaii, and

are categorized as: I. Plantation crops; II. Semi-commercial or backyard crops; III. Endemic plants; and IV. Other exotics.

Common name	Scientific name	Source
I. Plantation Crops —		
1. Avocado	<i>Persea americana</i>	Trop. America
2. Banana	<i>Musa sp.</i>	Trop. America
3. Citrus		S. E. Asia
a) Grapefruit	<i>Citrus paradisii</i>	
b) Lemon	<i>Citrus limon</i>	
c) Lime	<i>Citrus aurantifolia</i>	
d) Orange	<i>Citrus sinensis</i>	
e) Tangerine	<i>Citrus reticulata</i>	
4. Coffee	<i>Coffea arabica</i>	Trop. Africa
5. Guava	<i>Psidium guajava</i>	Trop. America
6. Macadamia	<i>Macadamia integrifolia</i>	Australia
7. Papaya	<i>Carica papaya</i>	Trop. America
8. Passion fruit	<i>Passiflora edulis</i>	America
9. Pineapple	<i>Ananas comosus</i>	Brazil -
II. Semi-commercial or backyard crops —		
1. Breadfruit	<i>Artocarpus incisus</i> [<i>A. altilus</i>]	Malaysia
2. Cherimoya	<i>Annona cherimola</i>	Trop. America
3. Coconut	<i>Cocos nucifera</i>	Shores of the Indian Ocean
4. Litchi	<i>Litchi chinensis</i>	S. China
5. Mango	<i>Mangifera indica</i>	India
6. Methley plum	<i>Prunus cerasifera</i>	S. Africa
7. Persimmon	<i>Diospyros kaki</i>	E. Asia
8. Poha	<i>Physalis peruviana</i>	S. America
III. Endemic fruits —		
1. 'Akala (berry)	<i>Rubus hawaiiensis</i>	Hawaii
'Akala	<i>Rubus macraei</i>	Hawaii
2. 'Ohelo (berry)	<i>Vaccinium reticulatum</i>	Hawaii
IV. Other exotics —		
1. Barbados cherry	<i>Malpighia glabra</i>	Central America
2. Blackberry	<i>Rubus sp.</i>	S. E. Asia
3. Cacao (Cocoa)	<i>Theobroma cacao</i>	Trop. regions
4. Cactus	<i>Opuntia megacantha</i>	Mexico
5. Carambola	<i>Averrhoa carambola</i>	Malaysia
6. Cashew	<i>Anacardium occidentale</i>	Trop. America
7. Egg fruit	<i>Lucuma nervosa</i>	South America -
8. Fig	<i>Ficus carica</i>	Asia Minor, S. W.
9. Grape	<i>Vitis sp.</i>	S. E. Europe to India
10. Hala	<i>Pandanus odoratissimus</i>	Isles of Pacific, Australia, S. Asia
11. Jaboticaba	<i>Eugenia cauliflora</i>	India, Malaya -
12. Jak fruit	<i>Artocarpus heterophyllus</i>	S. India, Malaysia
13. Java plum	<i>Eugenia cuminii</i>	India, Malaya -
14. Kukui	<i>Aleurites moluccana</i>	Malaysia
15. Loquat	<i>Eriobotrya japonica</i>	Central China
16. Guiana chestnut	<i>Pachira aquatica</i>	Trop. S. America
17. Mangosteen	<i>Garcinia mangostana</i>	Malaya
18. Monstera	<i>Monstera deliciosa</i>	Central America

~ 19. Mountain apple	<i>Eugenia malaccensis</i>	India, Malaya ~
20. Mulberry	<i>Morus nigra</i>	Asia Minor, Persia
21. Naranjilla	<i>Solanum quitoense</i>	Trop. & temperate regions
22. Rose apple	<i>Eugenia jambos</i>	India, Malaya ~
23. Roselle	<i>Hibiscus sabdariffa</i>	Trop. America
24. Sapodilla, chicle	<i>Achras zapota</i>	Central America ~
25. Soursop	<i>Annona muricata</i>	Trop. America
26. Strawberry	<i>Fragaria sp.</i>	Europe
27. Strawberry guava	<i>Psidium cattleianum</i>	Brazil
28. Surinam cherry	<i>Eugenia uniflora</i>	India Malaya
29. Tamarind	<i>Tamarindus indica</i>	Trop. Africa, Trop. Asia
30. Watermelon	<i>Citrullus vulgaris</i>	Trop. Africa

MODERATOR WARNER: Thank you very much. Our last speaker this morning will be Dr. William S. Stewart. He has a PhD from Cal Tech as a plant physiologist. He has worked as a plant physiologist in a number of areas in citrus and has spent three years here in Hawaii with the Pineapple Research Institute. He was called back to Riverside to be chairman of the Horticulture Department in the U. C. Citrus Experiment Station. Later he was Director of the Los Angeles City and County Arboretum. He is now Director of the Pacific Tropical Botanic Garden in Kauai. Today he is going to share some of his experiences with us.

TROPICAL PLANTS ADAPTABLE TO MAINLAND LANDSCAPES

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As you will discover here in Hawaii, the "tropics" are not always just hot, humid, lands that abound in luxuriant vegetation, as in lowland equatorial rain forests, but may have a wide range of climates. For example, there are large areas within the tropics that are deserts with desert plants or, at higher elevations with temperate climates and dry forests; and, going still higher, areas with winter snow, alpine plants and, here in Hawaii, even skiing on Mauna Kea on the island of Hawaii.

In Hawaii, the 50th state of our United States, all of these conditions are represented and all are conveniently accessible. For these reasons it is important to recognize the climatic zone within the tropics where a plant is growing to evaluate where on the mainland it might be adaptable. On the mainland under