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HISTORY OF PLANT INTRODUCTIONS TO POHNPEI, MICRONESIA AND THE ROLE OF THE POHNPEI AGRICULTURE STATION¹

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Ragone, Diane, David H. Lorence, and Timothy Flynn (*National Tropical Botanical Garden, 3530 Papalina Road, Kalaheo, HI 96741 USA*). HISTORY OF PLANT INTRODUCTIONS TO POHNPEI, MICRONESIA AND THE ROLE OF THE POHNPEI AGRICULTURE STATION. *Economic Botany* 55(2):290–324, 2001. The history of plant introductions to tropical countries can often be determined by studying the history of their botanical gardens, arboreta, and agricultural experiment stations. Pohnpei has been a center for plant introductions in Micronesia for more than 100 years. Beginning in the 1830s foreign visitors and settlers brought in new crops and ornamental plants. Purposeful introductions to support agricultural development took place during the colonial regimes of Germany, Japan, and the United States. The illustrious history and significant role played by the Pohnpei Agriculture Station—once one of the foremost centers in the world for the study of tropical agriculture—and its current situation are discussed. For the first time ever, a comprehensive list is provided of 433 plant species, hybrids, cultivars, and varieties introduced to the island, including 403 taxa grown at the Station.

KAPIDELONGODOHN SOANGSOANGEN TUHKE NAN DEKEHN POHNPEI OH PWUKOAH KESEMPWAL EN AGRICULTURE STATION EN POHNPEI. *Kawewehpen poadeppen kapidelongodohn soangsoangen tuhkekan nan kahndekehkan kalapw wiawi sang petehkpen en wehi pwukan arail wasahn nak en tuhke, kasansal en tuhke, oh ropirop en tuhke. Pohnpei wia wasahn neknek en tuhke kesempwal sangete sohnpar 100 samwalahro. Tepda nan pahr 1830, mehn likihkan oh sohn seilok kan kapidelongodo soangsoangen tuhke en mwenge oh mehn kalingan. Tuhke mehn wia keir-dahn wehi pil wiawi nan mwein Sehmen, Sapahn, oh Amerika. Nan daropwe wet mie kawewehpen poadepod oh pwukoah kesempwal en Pohnpei Agriculture Station—me rahn teio kin wia ehu wasa keieu kesempwal nan sampah ong ni ropirop en tuhke oh ia mwomwen wasa rahn wet. Daropwe wet pil kilelehdi eden soangsoangen tuhke 433 kapidelongodohng Pohnpei iangahngki meh 403 me pweida oh kak diarek nan Agriculture Station en Pohnpei.*

Key Words: Micronesia; Pacific history; plant introductions; Pohnpei.

Often it is of crucial conservation importance to be able to reconstruct the plant introductions to a tropical locale. Such historical reconstruction can be strongly complicated in island nations that have a convoluted colonial history where there was little or no overlap between successive national regimes. However, in many cases botanical gardens, arboreta, and agricultural experiment stations provided some continuity in the face of massive political change. By focusing on the history of such botanical institutions, often the botanical history of the country as a whole can be learned. An example of this is the Micronesian island of Pohnpei.

Pohnpei (formerly Ponape) is located 7° north

latitude and 158° east longitude in the eastern Caroline Islands approximately 4800 km southwest of Honolulu. Roughly circular in shape, this high volcanic island is the third largest in Micronesia (after Guam and Babeldaob) and the largest of the Caroline group. It has a land area of 344 km², most of which is steep, rugged mountains bisected by deep valleys. One of the wettest places in the world, annual rainfall averages around 4800 mm with estimates ranging from 7500 mm to as high as 10 000 mm in the mountainous interior. The island proper is surrounded by a barrier reef 3 km offshore, an 181 km² lagoon with fringing reefs, and extensive mangrove swamps bordering the shoreline. The high rainfall and deep, weathered soils support a rich array of plant diversity both native and introduced. In addition to Pohnpei island proper, Pohnpei State includes eight permanently inhab-

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Fig. 1. The abandoned building that housed the Japanese Tropical Research Industries Institute from 1926 to 1945.

ited outer islands—all coral atolls with lagoons—with a combined land area of only 8.24 km².

A member state of the sovereign nation of the Federated States of Micronesia (FSM)—with Chuuk, Kosrae, and Yap—Pohnpei was formerly colonized by Spain, Germany, and Japan. After World War II, the island was administered by the United States as a United Nations trusteeship (Trust Territories of the Pacific Islands).

The capital of the Federated States of Micronesia, Pohnpei has a population of approximately 35 000 people, a third of whom live in the island's principal town, Kolonia, which has been the seat of various governments since 1887, including the current Pohnpei State Government. The town covers about 450 acres (182 ha) of land on a peninsula on the northern side of the island (Ashby 1993:302). Strategically located on the main road heading from town southwest to Nett and Sokehs districts and Paliker—the capital of the FSM—is an intriguing historical and botanical site, the Pohnpei Agriculture Station.

Visible from Main Street is a grove of massive breadfruit trees planted in neat rows and a palm-bordered entry road leading to a small

complex of structures housing the Pohnpei Agriculture Department and the crumbling hulk of a three-story concrete building. This is one of only three buildings in town to survive bombing during the Pacific War. Condemned in 1976 it was subsequently used for storage and is now abandoned (Ashby 1993:313). Commonly referred to as the Japanese Weather Station, few island residents or visitors are aware of the illustrious history of this building and the grounds surrounding it (Fig. 1). In the 1930s the station was one of the foremost centers in the world for the study of tropical agriculture (Peattie 1988: 135).

The station covers 9.3 ha (TTPI 1964) and in addition to the breadfruit and palm plantings are mature, established plantings of numerous fruit, timber, spice, and other economic and ornamental plants. In 1987, the senior author first visited the station to look at the breadfruit collection. Unfortunately, none of the breadfruit trees were labeled (Ragone 1997:41). This also proved to be the case for the other plants at the station—only a few had hand-printed labels identifying the plant. A search for plant introduction records and provenance reports in the station files yielded no results.



Fig. 2. Mixed-crop demonstration area in 1996 with taro, cassava, vegetables, and herbs.

In 1996, during a field expedition to Pohnpei to collect native and useful plants for the living collections of the National Tropical Botanical Garden, Adelino Lorens, Chief of the Agriculture Department, asked our assistance in identifying the plants at the station. On December 9–10, we systematically inventoried the established, mature plants at the station, focusing on trees, shrubs, and spice plants. Field plantings of vegetables, bananas, and root crops were not examined (Fig. 2). We photographed each plant and collected herbarium vouchers of selected plants and unfamiliar species. Specimens were deposited at the herbarium PTBG. Temporary tags with the scientific and common name were affixed to each plant or group of plants. Appendix I includes the 72 plants we inventoried at the station in 1996. Mabberley (1997) was used as the reference for non-Pohnpeian common names.

Inventorying and identifying the plants at the station was the easiest part of the project. The difficult, yet most fascinating, aspect was determining the origin and history of these plants.

The narrative of the agriculture station and this small remote island is intertwined with the expansion of the colonial powers into the Pacific region.

HISTORY OF PLANT INTRODUCTIONS

EARLY CONTACT PERIOD (1830–1886)

The island's first reported sighting by westerners is attributed to Quiros sailing in 1595 from the Solomon Islands to Manila, but it may have been seen as early as 1529 by a Spanish vessel sailing from the Moluccas to Mexico (Hezel 1983:16, 34). Westerners began to visit Pohnpei beginning in the late 1780s and traffic increased markedly from the 1830s to the 1880s when the island became a popular stop for whaling ships. Missionary activities began in 1852 with the establishment of an American Protestant mission (Hezel 1983:143). During the early years of contact new plants such as tobacco, mango, soursop, chili peppers, cassava, bamboo, citrus, and new varieties of traditional crops—sugar cane, bananas, and yams—were introduced (Bascom 1965:102, 109, 111, 113, 119, 136).

SPANISH PERIOD (1886–1899)

Commercial and trade activities throughout Micronesia during this period were dominated by German companies and Germany claimed Pohnpei in 1885. Since Spain had discovered the islands, it vigorously disputed Germany's claims to the Mariana and Caroline Islands and an appeal was made to Pope Leo XIII for arbitration (Hezel 1983:312–313). Spain was awarded the Carolines but Germany was granted freedom of trade and the right to establish coaling depots and naval stations in the islands. The Spanish flag was raised in July 1886 and a colony, which eventually became the town, Kolonia, was established in April of 1887 (Ashby 1993:299). There was no formal program of plant introductions during the Spanish period (1886–1899) although many important economic and ornamental plants were introduced such as cacao (Bascom 1965:115, 119; Glassman 1952:67), sweet potato, pumpkins, papaya, pineapple, guava, watermelon, corn, coffee, pride of Barbados, and abacá (manila hemp) (Bascom 1965:107, 119). Several varieties of yam, one of the primary subsistence crops on Pohnpei, were also introduced during this period (Bascom 1965:102).

GERMAN PERIOD (1899–1914)

Following the Spanish-American War all of Spain's possessions in Micronesia were liquidated, with Guam and the Philippines becoming possessions of the United States. Germany purchased the other Mariana Islands and all of the Marshall and Caroline Islands for 25 million pesetas or about U.S. \$4.2 million (Hezel 1995: 95). On 12 October 1899, Germany once again raised its flag on Pohnpei. Colonial administrators were mandated to turn the islands into economically productive colonies to provide sources of raw materials and serve as markets for German goods (Ashby 1993:74).

The verdure of Pohnpei's vegetation suggested that the island would have great potential for economic development (Petersen 1976:202). To that end, coconut plantations were established on hundreds of hectares for copra production. Efforts were also made to develop coffee, cocoa and Manila hemp as commercial crops. An agricultural experimental farm was established on the banks of the Donwenu River (Hanlon 1981: 63), the site of the present-day agriculture station. German administration officials throughout Germany's colonies in Africa and the Pacific made efforts to improve agricultural operations. This was done through gardens run by district officers from which young plants were given to natives and planters. These activities were centralized at the Botanical Center in Berlin which collected, exchanged, and distributed plant materials throughout the colonies (McKinney 1947: 120).

Plants were brought in from areas as diverse as California, Germany, Guam, Guatemala, Hawaii, Hong Kong, Philippines, Rabaul, Samoa, Singapore, and Yap. A total of 69 types of plants—27 of which were unique introductions—were recorded as introduced. Many unspecified ornamentals and vegetable varieties were also introduced as well as plants that would produce wax or lacquer. Documented introductions included ornamental plants such as ylang ylang and lantana; fruits such as mangosteen, durian, pineapples, mango, litchi, cocoa, citrus, avocado, bananas, and even figs, grapes, peaches, and apricots from California; vegetables and staple crops such as taro, pumpkins, cucumbers, beans, onions, lettuce, peanuts, and rice; fiber plants such as Manila hemp (abacá), cotton, and

kapok; and various rubber trees (Bascom 1964; U.S. Navy 1944a; Reichstag 1900–1910).

Albert Hahl, the District Administrator until 1901, is credited with introducing coffee, cotton, cocoa, rubber, hemp, vanilla, and other plants (Hezel 1995:96). During his administration, close to 30 successful plant introductions were made (Reichstag 1900–1902). The attempt to introduce nutmeg from the Banda Islands and numerous other plants was unsuccessful because the long voyage from Berlin to Pohnpei took a heavy toll with many seeds dying in transit. Of a shipment of 82 kinds of plants sent in 1900–1901, including nutmeg, fewer than 20, mostly legumes, survived the journey and were successfully grown on the farm. The number of introductions markedly decreased after the first two years of activity with the exception of 1904–1905 when 17 kinds of plants, especially fruit trees, were planted at the farm and experimental plantings of Manila hemp, cocoa, coffee, catechu, and rubber plants were expanded elsewhere on the island. A deadly typhoon in April of 1905 devastated the island, leveling all buildings except a church and two houses and stripped every tree bare (Hezel 1995:101), dealing a punishing blow to agricultural production. Despite German colonial efforts to develop agriculture in the islands, by 1913 “A real agricultural experimental setup and agricultural service does not yet exist in the territory.” (McKinney 1947:120). This situation changed dramatically under the Japanese.

JAPANESE PERIOD (1914–1945)

A third foreign flag rose over Pohnpei in 1914 when Japan seized Germany's island holdings in Micronesia (Hezel 1995:148). At the 1919 Versailles Peace Conference Japan was granted legal control of Micronesia under a League of Nations mandate (Hezel 1995:155–156). The expansion of the Japanese empire in Micronesia was accompanied by a major increase in population due to military garrisons and migration of civilian colonists to the region. The first census taken in 1920 counted 400 Japanese and 4100 native islanders on Pohnpei (including the outer islands and Kosrae) (Yanaihara 1976:30). By 1945, there were 14 000 Japanese compared to 5500 islanders on the main island (Bascom 1965:5; Peattie 1988:304). There was a critical need to develop Pohnpei economically and stimulate agricultural production to make the island

self-sufficient in produce and provide essential raw materials for export to the home islands. This was especially important once Japan was cut off from her normal sources of supply due to the Pacific War. The South Seas Government provided regular reports on the mandated islands to the League of Nations through 1938 (U.S. Navy 1944a:21). In 1937, it reported that on Pohnpei there were 7610 ha planted in coconuts and 1367 ha planted to other crops (U.S. Navy 1944a:124–125). The latter included 808 ha of vegetables including 520 ha of cassava (manioc tapioca), 542 ha of fruits, and 17 ha of miscellaneous crops. Most of the vegetables were grown for local consumption, whereas cassava was grown for starch production and exported to Japan. After the 1937 harvest, the once-extensive cassava fields were converted to sugarcane with only small quantities grown for local consumption (Bascom 1965:110).

The impressive successes in agricultural production were supported by extensive agricultural experimentation and development of new crops suited to Pohnpei's wet climate. This work was carried out at new facilities—the Tropical Industries Research Institute, Ponape Branch—built on the site of the former German agricultural station in June 1926 (Bascom 1965:87; Mayo 1954; TTPI 1964). The Institute was established on Koror, Palau in 1922 as the South Seas Industrial Experiment Station. Branch stations were also established on Babeldaob, Palau in 1923, Saipan in 1930, and Yap in 1937 (Mayo 1954). Each station was staffed with trained experts, many of whom were graduates of the leading schools of agriculture in Japan (Peattie 1988:135). Their responsibilities included introduction and propagation of new varieties of economic and subsistence plants, demonstration of planting and growing methods, research, soil and plant pathology, insect and disease control, and general experimentation.

The Pohnpei station became the largest and most active largely through the efforts of one man, distinguished agronomist Moritaro Hoshino, who came to the island in 1927 and set about making Ponape the center of Japanese agricultural research in Micronesia (Peattie 1988:135). During his first year most of the work was devoted to rice experiments, medicinal plants, and vegetable crops (Mayo 1954). A number of medicinal plants, notably benzoin, cajuput, coca, ipecac, jaborandi, jalap, strophanthus, white san-

dalwood, and Tulu and Peruvian balsam, were reported to be thriving in 1932 but were not yet mature (U.S. Navy 1944a:126).

One of the few non-Japanese visitors who managed to visit the mandated islands in the 1930s was the journalist and adventure writer, Willard Price (1944:234), who wrote about his visit to Pohnpei in 1935.

... And fruits, flowers, exotic trees! One might imagine himself in the Garden of Allah as he wanders through the experimental farm at Ponape. Here are plant immigrants from all lands. It is like a world convention of growing things ... corn from Kansas, chestnuts from Polynesia, cashew nuts from India, cloves and nutmeg from Celebes, alligator pears from Hawaii, lichee nuts from China, Brazil nuts from Brazil, oranges from Borneo, aloes from Africa. Java has sent many delegates: the sapodilla plum, coromandel, gooseberry, vanilla, pepper, cinnamon. And here are rubber trees, mahogany, teak, sago palm, oil palm, peacock palm, sugar palm. There is a whole garden of drug trees—caiupute, tamarind, benzoin and the like. Altogether in this farm there are 238 fruits, vegetables, grasses, shrubs and trees that have not formerly been native to Ponape. . .

Hoshino's skill with plants and extensive hybridization experiments with economic crops such as rice, cassava, and pineapples earned him the nickname "Burbank of Japan" (Mayo 1954; U.S. Navy 1944b:19). Hoshino's regard for the plants in the station was demonstrated when he risked his life during a bombing raid in 1944 to change the name tags on the trees from Japanese to English so the Americans would know what the varieties were (Mayo 1954). Although heavy bombing in late February 1944 destroyed all of Kolonia but three buildings, one of which was the three-story building housing the Institute, most of the station plantings survived as documented in photographs taken after the bombing (Hanlon 1981:113). The Japanese surrendered Pohnpei in September 1945 and a small American force assumed control with administration of the island now the responsibility of the U.S. Navy Department. By the end of the year all Japanese had been repatriated back to Japan, including Hoshino and other agriculturists (Ashby 1993:101).

To assist with the administration of Pohnpei, the Navy commander there directed that all civilian and military records be preserved (Ashby 1993:102). Knowing little about the islands now

under its jurisdiction, the U.S. Naval Command in the Pacific requested the U.S. Commercial Company to carry out an extensive economic survey of Micronesia in 1946 to determine the resources and economy of the region and propose policies and a program for its economic rehabilitation and development (Bascom 1965: iii). This was a large interdisciplinary research project involving a team of more than 20 specialists, including five anthropologists, geographers, economists, horticulturists, botanists, entomologists, nutritionists, soil scientists, and geologists.

The botanical team spent only four days in August 1946 on Pohnpei (Fosberg 1946:5). Observations were made and specimens collected of the plants cultivated in the area, weeds, and wild plants of direct utility to the natives. Unfortunately, cultivated plants at the station were not collected by the survey team. Bascom (1965: iv), an anthropologist, visited the island for four months in 1946 from April 29 to August 23. His resulting report, *Ponape: A Pacific Economy in Transition*, is one of the best sources of information about the status of the island at that time, with extensive material on history, culture, economy, and agriculture, including an overview of 87 plant introductions. Bascom noted "In addition to a botanical garden containing tropical trees and plants from many parts of the world, the grounds contained stands of imported varieties of cinnamon, clove, nutmeg, vanilla, coffee, cocoa, mango, mangosteen, citrus, cashew, and litchee nuts. . ."

Glassman (1952:1) visited the island three years later, June–September 1949, to make a study of the flora supported by the Office of Naval Research and the Pacific Science Board of the National Research Council. His flora documented 128 plant introductions to the island, primarily cultivated economic and ornamental plants. He reported that under the previous Japanese administration several hundred kinds of plants of commercial and aesthetic value were grown at the Agriculture Station, and that most of the plants in the station were introduced from Japan, Formosa, Palau, and Malaysia, with some brought from Hawaii and Saipan. While he did not enumerate the plants in cultivation at the station, he recorded 42 plants on the station grounds and included a list of names and uses for some 20 plants (Glassman 1952:22)

With the exception of these publications and

formerly classified U.S. Navy Department Civil Affairs Guides, published information about the agriculture station is minimal or difficult to find. As noted earlier, agriculture department files on Pohnpei contain no plant introduction records for the agriculture station. Fortunately, detailed information on Micronesia, including the station, can be found in archives for the Trust Territory for the Pacific Islands (TTPI). The TTPI was established in 1947 by an agreement between the United Nations Security Council and United States. Administration of the TTPI was transferred from the U.S. Navy to the Department of Interior in 1951 and headquarters were established on Saipan. The TTPI ended in 1986 when the U.N. Trusteeship Council and U.S. Congress approved a Compact of Free Association between the United States and the newly created, independent nation of the Federated States of Micronesia.

TRUST TERRITORY OF THE PACIFIC ISLANDS ARCHIVES

In the early 1980s, staff of the TTPI High Commissioner devised a program to preserve the records of the Trust Territory. With the assistance of the University of Hawaii Hamilton Library all government files were surveyed, microfilmed, and a computer index to the records was created. Over 2000 reels were sent to the U.H. library and sets were duplicated and sent to archives in Saipan, Pohnpei, Palau, and Majuro. The Trust Territory also donated to the U.H. Library the photograph collection, films, videotapes, audiocassettes, and a large map collection. The complete Trust Territory Archives are housed in Hamilton Library at the U.H. Manoa campus in Honolulu (U.H. Library Pacific Collection 1994).

These archives proved to be an invaluable source of information related to the Pohnpei Agriculture Station, without which the history and origin of the plant introductions would have certainly disappeared. A search of the U.H. Pacific Collection and Trust Territory Archives turned up a list of more than 200 plants introduced before 1944 (Ashizawa n.d.), a detailed report on the history of agricultural development in Micronesia and experimental plantings (Mayo 1954), and several lists of plants, some including maps of plant locations, at the station from 1948–1975 (Anon. 1948; Anon. 1953–54; Anon.

1975; Robert and Alexander 1972; Sproat 1960; TTPI 1964).

In the early 1950s the Trust Territory High Commissioner instructed his staff to conduct a survey for the relocation of plantings and compile information about them (Mayo 1954). This report is invaluable to the history of agricultural development and plant introductions in Micronesia and cautions about how easily agricultural and historical information can disappear. Members of the U.S. Commercial Company survey teams had access to information about the plants and agricultural investigations conducted at the station but did not elaborate upon them. For example, MacMillan (1946:46) noted that "The station appears to have been more in the nature of a plant introduction garden, to which useful tropical plants of many kinds were brought for planting, display, and to be made available for study. *The list of introductions which has come into our hands is long and varied* (emphasis added). However, in the course of time, a great many of these have either died or disappeared and not been replaced, and others have been maintained as example or token plantings, very few of which seem to have concerned the Japanese as commercial possibilities."

The list of introductions to which MacMillan refers was never published nor was an inventory made of the plants at the station in 1946. These records were apparently not available just a few years later. Mayo (1954) thought that most of the literature and information that had been compiled was destroyed during the war. He went on to say that "one of the big problems facing the agricultural personnel in the islands today is lack of information on what has been done in the way of agricultural development in the past. There is not a great deal in the way of documentary material to which we can refer and we are dependent to a large degree upon memory reporting by persons who were associated with the work that was done during previous regimes for the information we include here. . ."

His report is comprised of two sections. Part 1 is 15 pages covering the agricultural history of the mandated islands, especially agricultural experiment stations and commercial plantings of crops. Part 2 is a 39-page listing of experimental plantings made by the Japanese at the Palau Experimental Stations and findings on the status of these plantings. The report was compiled with the assistance of Yasuhei Ashizawa, the Director

of the Tropical Industries Research Institute on Palau from 1936–1944. He, along with all other Japanese nationals in Micronesia, was repatriated back to Japan after the war, but the TTPI was able to enlist his assistance with the plant relocation project.

The most valuable find in the archive was an undated, typed seven-page document "Plants Introduced to the Ponape Agriculture Station by Japanese—Tropical Industries Research Station compiled by Yasuhei Ashizawa, formerly in charge of agricultural investigations in the Trust Territory." Based on circumstantial evidence, it appears that this list was compiled as part of Mayo's report. It is not known whether this is the list to which MacMillan (1946) referred.

The list was comprised of the scientific names of 229 plant species, hybrids, or varieties along with origin and use of each plant. The original list contained numerous misspellings and incorrect botanical names and there is no way to determine whether the names were correctly applied. Nevertheless, correct names and spellings are provided here wherever possible (Appendix I). The plants were introduced from 15 areas, primarily the home islands, Pacific islands or regions under the control of Japan at that time. In several instances, plants were introduced from multiple areas (i.e., papaya from Hawaii, Saipan, and Rabaul). Twenty-one percent (49 plants) were of local origin from the island of Pohnpei. These included 23 species that were native (17 species) or introduced (6 species) in pre-contact times by the islanders, as well as fruits, vegetables, and ornamental plants introduced earlier by Spanish, German, and other visitors. More than 60 percent of the Japanese-introduced plants came from the Celebes (18), Japan (39), Java (42), Rabaul (20), and Taiwan (Formosa) (30).

Plants were listed by 12 categories of use (Table 1) with eight categories of ornamental plants (beautiful foliage plants, bending (sic) and pot plants, ferns, orchids, curious plants, flowering creepers, flowering trees, and little trees and shrubs. While extensive, Ashizawa's list was not definitive because 35 plants documented as growing at the station in 1948 or 1949 were not listed (Anon. 1948; Glassman 1952). Fruit and timber trees in particular were not included. It is unfortunate that no inventory of plants growing at the station in 1946 was compiled and published as part of the U.S. Commercial Company

TABLE 1. PURPOSE AND USE OF PLANTS INTRODUCED BY THE JAPANESE TO THE POHNPEI AGRICULTURE STATION ACCORDING TO Y. ASHIKAWA.

Category of use	Number of plants
Beverages	9
Drugs	45
Dyestuffs & Tans	8
Edible Fruits	16
Green Manure Crops	8
Gum & Lacquers (Latex)	6
Oil Plants	6
Ornamental Plants	91
Palms	35
Spices & Fragrances	12
Sugary Plants	2
Taste (Masticatory)	1

Economic Survey. In addition to Hoshino's list of plant introductions, the plants at the station were all labeled in English with the scientific name, variety, and date of introduction (Bascom 1965:115). The scope of the survey and time constraints under which the participants were operating make this an understandable, but nonetheless regrettable, lapse in documentation. This is especially ironic in light of Navy reports that the agriculture station was considered a real asset and extremely important to the continuing agriculture on the island; and that it was recommended that competent personnel collect and preserve records, equipment, and plant materials after occupation of the island by American forces (U.S. Navy 1944c:5).

AMERICAN PERIOD (1945–1986)

Carrying on the tradition of agricultural experimentation at the station begun by the Germans in the early 1900s and continued during the Japanese period, the Trust Territory Agricultural Program focused on plant improvement projects. From 1950–1953 extensive field trials were conducted at the station, with varying success, on vanilla, black pepper, cacao, three root crops, 27 cover and green manure crops, 15 kinds of vegetables, and seven kinds of fruit trees (TTPI 1950). A listing of plants in cultivation at the Agriculture Station in 1953–1954 gave the scientific names, and in most cases the common names, for close to 100 plants, including an unspecified number of citrus varieties.

The program for the improvement of food

crops in the Trust Territory was to: (a) develop established subsistence crop species by selection, propagation, and distribution of high yielding, rapid maturing, disease-resistant varieties, and demonstration and training in better cultivation practices; (b) introduce different varieties of plant species already in the Territory to improve taste, yield, rapid-maturing, disease-resistant qualities, etc.; and (c) introduce new species of plants not found in the Territory for propagation and testing for suitability and eventual elimination or distribution (TTPI 1964). The first half of the 1960s saw a level of activity at the station that almost equaled that achieved under Hoshino's direction. A hundred new species and varieties of economic plants and approximately 100 species of ornamental plants were introduced, tested, eliminated, or distributed to farmers or plant fanciers. Distribution of improved varieties of economic crops or nutritious fruits and vegetables included: coconuts, hybrid cacao, black pepper, yellow-fleshed sweet potatoes, papaya, and budded citrus (sweet orange, tangerine, Persian lime, pommelo, etc.). Origins of introduced plants included Central America, Fiji, Guam, Hawaii, Japan, Malaya, New Guinea, Philippines, Puerto Rico, West Indies, and the United States. However, a comprehensive list of these introductions was not provided in that report. An earlier list of introductions for 1960 did give details for 22 plants introduced from the University of Hawaii Experiment Station that year. Several of these, all fruit trees, were new to the island: white sapote, ice cream bean, strawberry guava, and Williams bananas (Sproat 1960).

A map of the station for 1964 shows the locations for plantings of breadfruit cultivars, mango, Norfolk pine, avocado, nutmeg, cacao cultivars, citrus, mahogany, bananas, coffee, black pepper, guavas, mangosteen, papayas, timber tree species, and unspecified specimen trees. A large portion of the station grounds was dedicated to cacao, yet no trees were observed during our inventory in 1996. A 1972 report documented 25 trees and shrubs growing at the station and also in several areas in Kolonia (Robert and Alexander 1972). Fourteen of these were located during our inventory of the station in 1996. The last report we could find documenting station plantings was more than 20 years ago in 1975 when seeds and plants of numerous palms and 25 kinds of ornamentals, fruits, and timber

TABLE 2. THE NUMBER OF PLANT TAXA, FAMILIES, AND GENERA INTRODUCED TO THE ISLAND OF POHNPEI AND THE NUMBER OF TAXA CULTIVATED AT THE POHNPEI AGRICULTURE STATION.

Category	Number
Introduced to Pohnpei	
Taxa	433
Families	102
Genera	298
Cultivated at Pohnpei Agriculture Station	
Taxa	403

trees were distributed from plants growing at the station (Anon. 1975).

SUMMARY OF PLANT INTRODUCTIONS

Many of the 433 new plants (Table 2; Appendix I) introduced to Pohnpei in the past 150 years fundamentally altered the island's natural landscape and made significant contributions to the subsistence and cash economy of the island. The island has been enriched and beautified by new crops and ornamental plants as well as negatively impacted by plants such as lantana which have now become invasive weeds. Introduced timber trees, black pepper, vegetables, cassava, chili peppers, papayas, pineapples, sugarcane, many varieties of coconuts, yams, taro, citrus, and bananas along with myriad ornamental

TABLE 4. NUMBER OF PLANT TAXA INTRODUCED TO POHNPEI FROM 1830–1986 INCLUDING TOTAL NUMBER OF TAXA AND UNIQUE NUMBER OF TAXA INTRODUCED DURING EACH PERIOD.

Period of introduction	Total taxa	Unique taxa
Early contact period (1830–1886)	9	2
Spanish period (1886–1899)	12	1
German period (1899–1914)	69	27
Pre-Japanese (before 1914, period not specified)	28	28
Japanese period (1914–1945)	233	176
American period (1945–1986)	74	39
Period of introduction not available	113	113

plants are now widely grown, contributing to diversified subsistence agriculture and the beauty and charm of the island. The center of introductions was the agriculture station and an impressive 403 plant species, varieties, cultivars, or hybrids were tested or cultivated there. Included in that total are 23 species that were native or introduced in pre-contact times by the islanders. New plants were brought from 33 different islands or countries (Table 3), both tropical and temperate. Twenty-one plants were introduced from more than one geographical area.

The history of plant introductions parallels the history of contact and colonization as Pohnpei was passed from Spanish to German to Japanese to American hands (Table 4). A total of 60

TABLE 3. ORIGIN OF PLANTS INTRODUCED TO POHNPEI AND NUMBER OF PLANTS FROM EACH AREA.

Origin	Number	Origin	Number
Bali	1	Malaya	8
Berlin	3	Mariana Islands (Saipan)	6
Borneo	1	Marshall Islands	1
Brazil	1	Mortlock Islands	1
California	5	New Caledonia	1
Celebes	18	Nukuoro Island	2
China	1	Palau (including Anguar)	15
Chuuk (Truk)	3	Philippines (Manila)	4
Fiji	5	Polynesia	1
Guam	1	Rabaul	20
Guatemala	1	Ryukyu Islands	3
Hawaii	25	Samoa	1
Hong Kong	5	Singapore	1
India	2	Tahiti	1
Japan	39	Taiwan (Formosa)	31
Java	42	Yap	1
Kosrae (Kusaie)	3		



Fig. 3. A view of the breadfruit collection from the roof of the Japanese Weather Station.

plants (i.e., betel palm, coffee, cacao, black pepper, cassava, mangoes, coconuts, yams, pineapples, papayas, bananas, pumpkins, tobacco, vegetables, etc.) were introduced during more than one period, proving their utility and desirability. Although the American Period (1945–1986) was chronologically the longest, we could only verify the introduction of 74 plants. This figure is undoubtedly low because documentation about plants tested at the station since 1954 is sketchy at best.

STATUS OF BREADFRUIT COLLECTION

Ironically, information on the breadfruit collection, the initial focus of this inquiry about the Station's plant introductions, is limited. The presence of the collection indicates that recommendations by participants in the Economic Survey of Micronesia regarding this important crop plant were followed, at least in part. According to MacMillan (1946:37) "the breadfruit tree was one of the most important native plants needing study. In many of the inhabited islands of the atolls, the breadfruit is barely represented, and then only by poor specimens returning a small yield. High grade stock suitable for introduction should be sought out and increased to meet these

needs." Fosberg (1946:14, 23) recommended that long-term studies be carried out on the species and varieties of economic plants of Micronesia including breadfruit, yams, and pandanus. He thought that the agriculture station would be an excellent location for these collections. He emphasized the need to keep accurate records regarding the origin, native name, and uses of each plant and that plants should be carefully numbered—failure to do so would defeat the whole program. These were perceptive words indeed.

In 1950 the District Agriculturist reported that there was a good collection of breadfruit trees of various bearing seasons at the station (TTPI 1950). The goal was to lengthen the bearing season by selecting trees which produce fruit at different times of the year and more trees were to be collected for this project. The map of the station in 1964 (TTPI 1964) shows the breadfruit introductions as one of the largest collections at the station. According to M. N. Sproat, the director of the station from 1962–1972, the collection consisted of Pohnpeian and Chuukese varieties, all planted to the west of the main entrance road (Fig. 3). The trees were planted in the early 1960s and eight varieties from Tahiti

were later planted to the east of the entrance road. As many as 50 trees may have originally been established and in 1967 all the trees were labeled and identified. No records exist as to what, if any, evaluation was done on the collection, although some of the better varieties were distributed to island residents. Several trees were cut down in 1986–1987 to make room for the Pohnpei Public Library. When the collection was mapped in 1996, only 23 trees remained; although most of the remaining trees were large and healthy, one had fallen over and one tree was topped. During a follow-up visit in September 1999, two more trees were observed to have fallen over and were lying in place. Only two of the eight Tahitian cultivars originally planted have survived. These were identified as 'Afara' (Ragone 619, 620 PTBG) and 'Piipia' (Ragone 621, 622 PTBG).

The breadfruit collection is a valuable genetic resource for the Federated States of Micronesia and needs to be maintained, conserved, and studied. Its value was proved in the 1970s when introduced South Pacific cultivars were distributed to island residents. For example, a Tahitian cultivar now grown on the island is considered easy to cook, with a soft fruit, and good for older people and children. The Tahitian cultivar 'Afara' has an excellent fruit quality, yet is not growing anywhere else on Pohnpei.

CURRENT SITUATION OF AGRICULTURE STATION

Plant introductions, variety trials, and other station operations such as agricultural extension and training began to decline in the early 1970s primarily due to insufficient financial support for agricultural programs (Petersen 1976:269–270). The political and cultural reasons discussed by Petersen for the failure of agricultural development in Pohnpei since the heyday of the Japanese period are too complex to address in this paper. He summed up the situation in 1975 as being at an impasse as long as farmers chose wage labor with the government; as long as the agriculture department operated with an inadequate budget; and as long as the marketing situation and transportation problems were unresolved (Petersen 1976:278). He hoped that political change would lead to economic independence for the island. This, however, did not prove to be the case and his recommendations that money be put into agriculture, transporta-

tion, and marketing rather than into a pyramidizing wage-labor bureaucracy did not happen. In fact, since the compact of Free Association with the United States the state and federal bureaucracy in Micronesia has ballooned, and sufficient financial resources are still not available for agricultural programs. Only over the past two years has the Pohnpei State Government begun reducing the size of bureaucracy and government.

The Agriculture Department has experienced downsizing in personnel and severe budget reductions for many years, seriously constraining station operations and agricultural programs. Most of the plantings at the station have been neglected and in some cases, abandoned. In 1999, the staff was reduced and most Agriculture Department operations were moved from Kolonia to a site in Madolenihmw District. At the same time that Agriculture Department operations at the station were being abandoned, Governor Del Pangelinan officially designated the site as the Pohnpei Botanical Garden and Visitor Center and planning is underway to determine how to develop the site as a visitor destination. U.S. Commercial Company Survey team members cautioned that supporting an experiment station required a substantial commitment for facilities and staff (MacMillan 1946: 47). Fosberg (1946:17) was prescient about the fate of the station: "It should be emphasized that experiment stations cost money. No good purpose would be served by founding such institutions, staffing them, and then letting them die from lack of support."

If the station is to be abandoned as an agricultural experiment station—a decision that cannot be lightly made—perhaps its future value is one of historical preservation and education. Pohnpei is increasingly looking to tourism for economic development and promoting the island's natural, cultural, and historical resources. A restored, maintained, and actively used station should be the centerpiece for this. The current plantings, labeled with permanent tags and accompanied by a map and interpretive brochure, could form the basis for tours for residents, especially school children, as well as visitors who want to explore the station and learn about its history and plants. Extensive new plantings of native and useful plants of Pohnpei should be an integral part of the station.

The situation for the station plantings, sadly,



Fig. 4. Grove of clove (*Syzygium aromaticum*) trees in the spice area.

is dire. On a recent visit in September 1999, only the grounds around the entrance road where the breadfruit collection, palms, and spice trees are located are being maintained (Fig. 4). The rest of the site is choked with thigh-high grasses and weeds and most of the fruit trees need pruning and fertilizing. The once majestic stand of 70 mangosteen trees (Fig. 5) has been reduced to fewer than 12 trees, all of which show evidence of wind damage. The extensive black pepper and traditional crops demonstration areas have been bull-dozed and are now overgrown with weeds (Fig. 6). Proposed plans for the property include maintaining the existing groves of breadfruit and expanding the Tahitian breadfruit/spice plant area to include plantings of crops grown by Pohnpeians. Installation and care of any new plantings in this area are contingent on volunteer support. Most of the 9.3 ha site is slated for development with the construction of tennis courts, fitness center, convention center, traditional meeting hall, bird aviary, and parking spaces for 225 vehicles. The scope of the project and the construction of new facilities and infrastructure make preservation of what remains of the timber and fruit tree plantings a challenge.



Fig. 5. Healthy stand of 70 mangosteen (*Garcinia mangostana*) trees growing at the Station in late 1980s.

The plantings of palms, fruit, timber, and other economic and ornamental trees and plants on the grounds of the former Pohnpei Agriculture Station are a state and national treasure. They represent what once was the finest collection of useful and economic plants in all Micronesia and possibly the entire Pacific. Their historical value is even greater since the story of the Agriculture Station is intertwined with the events

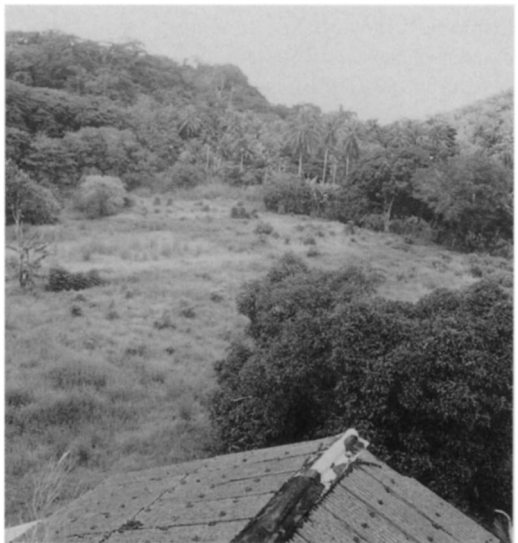


Fig. 6. Empty, weed-filled field that once held extensive plantings of black pepper on trellises and a mixed-crop demonstration area. Remnants of mangosteen collection are in lower right corner.

and impacts of four successive colonial regimes—Spanish, German, Japanese, and American. Our hope is that the information chronicled in this paper will help perpetuate the 100-year legacy of the Agriculture Station and guide efforts to preserve it into the next century.

SUMMARY AND RECOMMENDATIONS

The situation at the Pohnpei Agriculture Station is one faced by similar institutions throughout the tropics. In too many cases plant collections are neglected or abandoned, if not previously destroyed through political turmoil or warfare. Political and civil strife, administrative neglect, lack of resources to maintain or use the collections, including a shortage of trained staff, and ignorance about the plant collections have all taken their toll. All of these factors make it complicated for a botanist to determine what the plants are and why they are there.

We suggest the following steps to reconstruct the history of these institutions. First is a thorough and careful inventory of all the plants at the facility, including weeds and common plants. We regret that we did not inventory the plants growing in a mixed-crop demonstration planting at the Pohnpei Agriculture Station in 1996. This area has since been destroyed, and with the retirement of the staffer who tended this section, knowledge about the plants growing there and which varieties did best is now unavailable. Ideally the inventory team should consist of a trained systematic botanist and horticulturist both familiar with cultivated plants, as well as a local counterpart who works or has worked at the facility. Voucher specimens and photographs should be made of each and every taxon, cultivar, or accession, drawing their locations on a map. If the plants are not already labeled, a temporary label should be affixed with the goal of making permanent tags.

Detailed plant introduction records and the results of variety trials may be on file at the facility; these are often found in annual reports. When these are not available, sleuthing in archives, libraries, and other repositories for colonial records and reports is required to find the desired information. Because there may be very little published literature about plant introductions or the activities of a botanical facility, this “gray literature” will be essential to compiling this history. A regional flora, if one exists, can be an excellent source for information on plant

introductions. Otherwise, an examination of herbaria for vouchers of cultivated plants from the area can be undertaken. This, however, is a time-consuming and challenging task since most collectors typically ignore the cultivated plants of a region, focusing instead on wild plants. The final step is to compile all of this information into a detailed list of introduced plants. These baseline data are an extremely useful tool for ethnobotanists studying the uses of plants by a particular people. Knowing the value or detrimental effects of these plant introductions on the indigenous people and their environment can guide efforts to preserve existing cultivated plant resources and diversify agriculture in a safe and sustainable manner by introducing appropriate and desired plants. Knowledge about the successes and failures of plant introductions is essential to developing practical projects for sustainable agricultural diversification. Botanical gardens, arboreta, and agricultural experiment stations in the tropics have had, and should continue to play, an important role in these efforts.

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APPENDIX I. PLANTS DOCUMENTED AS INTRODUCED TO THE ISLAND OF POHNPEI, INCLUDING ALL PLANTS TESTED OR CULTIVATED AT THE POHNPEI AGRICULTURE STATION (PAS). SOURCE OF THE PLANT INTRODUCTIONS ARE DEFINED AS ABO = ABORIGINAL (PRE-1830); EC = EARLY CONTACT (1830-1886); SP = SPANISH PERIOD (1886-1899); GER = GERMAN PERIOD (1899-1914); PRE-JPN = PLANTS INTRODUCED EARLIER THAN 1914 BUT EXACT PERIOD NOT AVAILABLE; JPN = JAPANESE PERIOD (1914-1945); US = AMERICAN PERIOD (1945-1986); NA = NOT AVAILABLE; X* = PLANTS INVENTORIED BY THE AUTHORS AT THE STATION IN DECEMBER 1996. VOUCHERS (INDICATED BY TF OR DL NUMBERS) DEPOSITED IN HERBARIUM PTBG. CURRENTLY ACCEPTED NAMES GIVEN FIRST; SYNONYMS AND MISAPPLIED NAMES AS THEY APPEAR IN THE ORIGINAL SOURCE, FOLLOW IN PARENTHESES. AUTHORS OF NAMES FOLLOW BRUMMITT AND POWELL (1992), PLANT FAMILIES FOLLOW MABBERLEY (1997).

Taxon	Common name	Origin	Source	PAS	Use
Acanthaceae					
<i>Baleria cristata</i> L.	—	—	NA		Ornamental
<i>Fittonia verschoffeltii</i> (Hort ex Lem.) Coem.	nerve plant	Tokyo	JPN	X	Ornamental
cv. <i>Argyoneura</i>					
<i>Graptophyllum pictum</i> (L.) Griff.	caricature plant	—	Pre-JPN	X	Ornamental
<i>Pseuderanthemum carruthersii</i> (Seem.)	—	—	NA		Ornamental
Guillaumin var. <i>atropurpureum</i> (Bull.) Fosberg					
(<i>Pseuderanthemum atropurpureum</i> Bull.)					
<i>Strobilanthes crispus</i> Blume	—	Java	JPN	X	Medicinal
Agavaceae					
<i>Agave americana</i> L. var. <i>variegata</i> Nichols	century plant	Celebes	JPN	X	Ornamental
<i>Agave sisalana</i> (Engelm.) J.R. Drumm. & Prain	sisal hemp	—	JPN	X	Fiber
<i>Cordylone fruticosa</i> (L.) Goeppert	dihing	Tokyo	JPN	X*	Ornamental
<i>Dracaena fragrans</i> (L.) Ker-Gawler	—	Rabaul	JPN	X	Ornamental
cv. <i>Massangeana</i>					
<i>Dracaena</i> sp.	—	—	NA	X*	Ornamental
<i>Pleomele angustifolia</i> (Roxb.) N.E. Br.	—	Palau	JPN	X	Ornamental
<i>Sansevieria trifasciata</i> Prain	bowstring hemp	—	NA	X	Fiber
(<i>Sansevieria guineensis</i>)					
<i>Yucca gloriosa</i> L.	yucca	Tokyo	JPN	X	Ornamental
Alliaceae					
<i>Allium cepa</i> L.	onion	—	GER, JPN, US	X	Vegetable
Amaranthaceae					
<i>Celosia argentea</i> L.	cockscorn	—	NA		Ornamental
<i>Gomphrena globosa</i> L.	globe amaranth	—	NA		Ornamental
Amaryllidaceae					
<i>Amaryllis belladonna</i> L.	belladonna lily	Japan	JPN	X	Ornamental
<i>Zephyranthes grandiflora</i> Lindl.	amaryllis	—	NA		Ornamental

APPENDIX I. CONTINUED.

Taxon	Common name	Origin	Source	PAS	Use
Anacardiaceae					
<i>Anacardium occidentale</i> L.	cashew nut	Java, India	JPN	X	Fruit, nut
<i>Mangifera indica</i> L.	kehnigd, mango	Java, Hong Kong, Hawaii	EC, GER, JPN, US	X	Fruit
<i>Pistachia vera</i> L.	pistachio	—	NA	X	Nut
<i>Rhus succedanea</i> L. var. <i>dumortieri</i> Kudo	Japanese tallow tree	Taiwan	JPN	X	Latex
<i>Rhus succedanea</i> L. var. <i>japonica</i> Engl.	Japanese tallow tree	—	NA	X	Latex
<i>Semecarpus vernicifera</i> Hayata & Kawak.	—	Taiwan	JPN	X	Latex
<i>Spondias cytherea</i> Sonn. (<i>S. dulcis</i> G. Forst.)	vi, Otaheite apple	—	NA		Fruit
Annonaceae					
<i>Annona cherimola</i> Mill.	cherimoya	Hawaii	US	X	Fruit
<i>Annona muricata</i> L.	sei, sour sop	—	EC	X	Fruit
<i>Cananga odorata</i> (Lam.) Hook. f. & Thomson	ylang ylang	—	Native	X	Fragrance
Apiaceae					
<i>Daucus carota</i> L.	carrot	—	JPN		Vegetable
<i>Petroselinum crispum</i> (Mill.) A.W. Hill	parsley	—	JPN		Vegetable
Apocynaceae					
<i>Allamanda cathartica</i> L.	allamanda	—	Pre-JPN	X	Ornamental
<i>Allamanda cathartica</i> L. cv. <i>Hendersonii</i>	allamanda	—	NA		Ornamental
<i>Alstonia scholaris</i> (L.) R. Br.	dita bark	—	NA	X	Medicinal, timber
<i>Catharanthus roseus</i> (L.) G. Don	rosy periwinkle	—	NA		Ornamental
<i>Funtumia elastica</i> (Preuss) Stapf	Lagos rubber	—	GER	X	Latex
<i>Nerium oleander</i> L. (<i>Nerium indicum</i> Mill.)	oleander	—	Pre-JPN	X	Ornamental
<i>Plumeria rubra</i> L.	pohmeria, frangipani	—	JPN	X	Ornamental
<i>Strophanthus hispidus</i> A. DC.	arrow poison plant	Java	JPN	X	Medicinal
<i>Thevetia peruviana</i> (Pers.) Schum.	—	Rabaul	JPN	X	Ornamental
Araceae					
<i>Alocasia lowii</i> Hook.	—	Java	JPN	X	Ornamental
<i>Caladium bicolor</i> (Aiton) Vent.	—	Celebes	JPN	X	Ornamental
<i>Colocasia esculenta</i> (L.) Schott	sawa, taro, cocoyam	Kusaie, Saipan, Palau, Mortlock, Marianas, Hawaii, Nukuoro	GER, JPN, US	X	Root crop

APPENDIX I. CONTINUED.

Taxon	Common name	Origin	Source	PAS	Use
<i>Colocasia esculenta</i> (L.) Schott cv. Miki	taro leaf	Hawaii	US	X	Vegetable
<i>Cyrtosperma chamissonis</i> (Schott) Merr.	mwahng, giant taro	Ponape	ABO	X	Root crop
<i>Dieffenbachia seguine</i> (Jacq.) Schott	dumbcane	Tokyo	JPN	X	Ornamental
<i>Epipremnum pinnatum</i> (L.) Engl.	pothos, taro vine	Celebes	JPN	X	Ornamental
(<i>Scindapsis aureus</i> Engl.)					
<i>Xanthosoma sagittifolium</i> (L.) Schott	awah Honolulu, yautia	—	NA	X	Root crop
Araliaceae					
<i>Polyscias fruticosa</i> (L.) Harms	panax	—	Pre-JPN	X	Ornamental
(<i>Nothopanax fruticosum</i> (L.) Miq.)					
<i>Polyscias scutellaria</i> (Burm. f.) Fosberg	panax	—	Pre-JPN	X	Ornamental
(<i>Nothopanax scutellarium</i> (Burm. f.) Merr.)					
<i>Polyscias tricochleata</i> (Miq.) Fosberg	panax	—	Pre-JPN	X	Ornamental
(<i>Nothopanax tricochleatum</i> Miq.)					
Araucariaceae					
<i>Araucaria bidwillii</i> Hook.	—	Rabaul	JPN	X	Ornamental
<i>Araucaria heterophylla</i> (Salisb.) Franco	Norfolk Island pine	Hawaii	JPN, US	X*	Ornamental
(<i>A. excelsa</i> R. Br.)					
Arecaceae					
<i>Areca catechu</i> L.	pwuh, betelnut	Palau	JPN	X*	Medicinal, palm, masticatory
<i>Arenga engleri</i> Becc.	palm	Celebes	JPN	X*	Palm
<i>Arenga pinnata</i> (Wurmb) Merr.	sugar palm	Celebes	JPN	X	Palm, sugar
<i>Caryota mitis</i> Lour.	fishtail palm	Taiwan	JPN	X	Palm
<i>Caryota urens</i> L.	jaggery or toddy palm	Taiwan	JPN	X	Palm
<i>Clinostigma ponapensis</i> (Becc.) H.E. Moore & Fosberg (<i>Exorrhiza ponapensis</i> Becc.; <i>Bentinckioopsis ponapensis</i> Becc.)	kotop	Ponape	Native	X	Palm
<i>Cocos nucifera</i> L. cv. King	nih, coconut	Celebes	JPN	X	Palm
<i>Cocos nucifera</i> L.	nih, coconut	Nukuoro, Chuuk, Rabaul, Bali	ABO, GER, JPN	X	Oil, palm
<i>Cyrtostachys renda</i> Blume (<i>C. lakka</i> Becc.)	sealing wax palm	Rabaul	JPN	X*	Palm
<i>Dypsis lutescens</i> (H. Wendl.) Beentje & J. Dransf. (<i>Crysalidocarpus lutescens</i> H. Wendl.)	bamboo palm	Taiwan	JPN	X*	Palm

APPENDIX I. CONTINUED.

Taxon	Common name	Origin	Source	PAS	Use
<i>Elaeis guineensis</i> Jacq.	nihn aprika, oil palm	Malaya	JPN	X	Oil, palm
<i>Howea forsteriana</i> (C. Moore & F. Muell.) Becc.	kentia palm	Taiwan	JPN	X	Palm
<i>Hyophorbe lagenicaulis</i> (L.H. Bailey) H.E. Moore	bottle palm	Taiwan	JPN	X	Palm
(<i>H. amariacaulis</i> Mart.)					
<i>Latania lodiagesii</i> Mart.	blue latan palm	Rabaul	JPN	X*	Palm
<i>Latania lontaroides</i> (Gaertn.) H.E. Moore	red latan palm	Rabaul	JPN	X	Palm
(<i>L. commersonii</i> Gmel.)					
<i>Livistona altissima</i> Zoll.	fan palm	Celebes	JPN	X	Palm
<i>Livistona chinensis</i> (Jacq.) R. Br. ex Mart.	Chinese fan palm	Taiwan	JPN	X*	Palm
<i>Metroxylon amicarum</i> (Wendl.) Becc.	oahs, ivory nut palm	Ponape	Native	X	Palm
(<i>Coelococcus amicarum</i> (Wendl.) Warb.)					
<i>Metroxylon sagu</i> Rottb.	sago palm	—	JPN	X	Palm
<i>Phoenix canariensis</i> Hort. ex Chabaud	Canary Island date palm	Taiwan	JPN	X	Palm
<i>Phoenix dactylifera</i> L.	date palm	Taiwan, Java	JPN	X	Fruit, palm
<i>Phoenix roebelinii</i> O'Brien	dwarf/pygmy date palm	Taiwan	JPN	X*	Palm
<i>Pinanga insignis</i> Becc.	—	Palau	JPN	X	Palm
(<i>Pinanga micronesica</i> Kaneh.)					
<i>Pychosperma hosinoi</i> (Kaneh.) H.E. Moore & Fosberg	kedei	Ponape	Native	X	Palm
(<i>Ponapea hosinoi</i> Kaneh.)					
<i>Pychosperma ledermanniana</i> (Becc.) H.E. Moore & Fosberg	kedei	Ponape	Native	X	Palm
(<i>Ponapea ledermanniana</i> Becc.)					
<i>Pychosperma macarthurii</i> (H. Wendl. ex Veitch) H. Wendl. ex Hook. f. (<i>Actinophloeus macarthurii</i> (H. Wendl. ex Veitch) Becc.)	Macarthur palm	Taiwan, Celebes	JPN	X	Palm
<i>Raphia farinifera</i> (Gaertn.) Hyl. (<i>R. ruffia</i> (Jacq.) Mart.)	raffia palm	—	GER		Palm
<i>Raphia vinifera</i> B. Beauv.	wine palm	—	Pre-JPN	X	Palm
<i>Rhapis excelsa</i> (Thunb.) Rehder	lady palm	Tokyo	JPN	X	Palm
(<i>R. flabelliformis</i> L. Hort.)					
<i>Rhapis humilis</i> Blume	slender lady palm	Tokyo	JPN	X	Palm
<i>Roystonea regia</i> (Kunth) O.F. Cook (<i>R. elata</i> (Barton) Harper; <i>Oreodoxa regia</i> Kunth)	royal palm	—	Pre-JPN	X*	Palm
<i>Sabal blackburniana</i> Glazeb.	Hispaniola palmetto	Rabaul	JPN	X	Palm
<i>Sabal palmetto</i> (Walter) Schultes & Schultes f.	cabbage palmetto	Rabaul	JPN	X	Palm
<i>Salacca zalacca</i> (Gaertn.) Voss	salac palm	Java	JPN	X	Palm
(<i>Zalacca edulis</i> Blume)					
<i>Trachycarpus excelsus</i> H. Wendl.	Chuson palm	Tokyo	JPN	X	Palm
<i>Wallichia disticha</i> T. Anderson	Wallich's palm	Celebes	JPN	X	Palm

APPENDIX I. CONTINUED.

Taxon	Common name	Origin	Source	PAS	Use
Asphodelaceae					
<i>Aloe arborescens</i> Miller	candelabra aloe	Japan	JPN	X	Medicinal
<i>Aloe saponaria</i> (Aiton) Haw.	—	Tokyo	JPN	X	Medicinal
<i>Aloe vera</i> (L.) Burm. f.	Barbados/true aloe	Tokyo	JPN	X	Medicinal
Asteraceae					
<i>Ageratum conyzoides</i> L.	—	—	NA	X	Weed
<i>Cichorium endivia</i> L.	endive	—	US	X	Vegetable
<i>Lactuca sativa</i> L.	lettuce	—	GER, JPN		Vegetable
<i>Sphagnicola trilobata</i> (L.) Pruski	ingkahu, wedelia	—	NA		Ornamental,
(<i>Wedelia trilobata</i> (L.) Hitchc.)					ground cover
Balsaminaceae					
<i>Impatiens balsamina</i> L.	garden balsam	—	NA		Ornamental
Begoniaceae					
<i>Begonia</i> sp.	begonia	Japan	JPN	X	Ornamental
Bignoniaceae					
<i>Parmentiera cerifera</i> Seem.	candle tree	Rabaul	JPN	X	Ornamental
<i>Spathodea campanulata</i> P. Beauv.	African tulip tree	Rabaul	JPN	X*	Ornamental
<i>Tabebuia pallida</i> (Lindley) Miers	—		NA	X*	Ornamental
Bixaceae					
<i>Bixa orellana</i> L.	anatto, lipstick plant	Java	GER, JPN	X	Dye
Bombacaceae					
<i>Ceiba pentandra</i> (L.) Gaertn.	koatun, kapok	—	GER, JPN	X*	Fiber
<i>Durio zibethinus</i> Murray	durian	Java	GER, JPN	X	Fruit
<i>Ochroma pyramidale</i> (Cav.) Urban	balsa wood	—	NA	X	Timber
<i>Pachira aquatica</i> Aublet	Malabar chestnut	—	US	X*	Nut, ornamental
Boraginaceae					
<i>Cordia allodora</i> L.	clammy cherry, manjack	—	NA	X	Fruit
Brassicaceae					
<i>Brassica pekinensis</i> (Lour.) Rupr.	Chinese cabbage	—	JPN, US	X	Vegetable
<i>Brassica rapa</i> L. var. <i>rapa</i>	Asiatic turnip, sarson	—	JPN		Vegetable
<i>Rorippa nasturtium aquaticum</i> (L.) Hayek	water cress	—	JPN, US	X	Vegetable
(<i>Nasturtium officinale</i> R. Br.)					
<i>Raphanus sativus</i> L. cv. Longipinnatus	daikon	—	JPN		Vegetable

APPENDIX I. CONTINUED.

Taxon	Common name	Origin	Source	PAS	Use
Bromeliaceae					
<i>Ananas comosus</i> (L.) Merr.	pweinaper, pineapple	Hawaii	SP, GER, US	X	Fruit
<i>Billbergia pyramidalis</i> (Sims) Lindl.	bromeliad	Japan	JPN	X	Ornamental
Burseraceae					
<i>Canarium indicum</i> L. (DL7914)	ngali nut	Celebes	JPN	X*	Oil, nut
(<i>C. commune</i> L.)	pili nut	—	NA		Nut
<i>Canarium ovatum</i> Engl.					
Cactaceae					
<i>Cereus peruvianus</i> (L.) Mill.	cactus	—	Pre-JPN	X	Ornamental
<i>Epiphyllum oxypetalum</i> (DC.) Haw.	gooseneck cactus	Palau	JPN	X	Ornamental
(<i>Phyllocactus oxypetalus</i> (DC.) Link)					
<i>Opuntia cochinellifera</i> (L.) Mill.	cochineal plant	—	JPN	X	Ornamental
(<i>Nopalea coccinellifera</i> (L.) Salm-Dyck)					
Campanulaceae					
<i>Hippobroma longiflora</i> (L.) G. Don	—		NA		Weed
Cannaceae					
<i>Canna coccinea</i> Mill.	canna	Tokyo	JPN	X	Ornamental
<i>Canna flaccida</i> Roscoe	canna	Tokyo	JPN	X	Ornamental
<i>Canna indica</i> L.	Indian shot	—	NA		Ornamental
Caricaceae					
<i>Carica papaya</i> L.	memiap, papaya	Hawaii, Saipan, Rabaul	SP, GER, JPN, US	X	Fruit
Casuarinaceae					
<i>Casuarina equisetifolia</i> L.	beefwood, ironwood	—	NA	X	Timber
Chenopodiaceae					
<i>Spinacia oleracea</i> L.	spinach	—	JPN		Vegetable
Chrysobalanaceae					
<i>Parinaria laurina</i> Gray	ais	Ponape	Native	X*	Oil
(<i>Parinarium glaberrimum</i> Aubl.)					

APPENDIX I. CONTINUED.

Taxon	Common name	Origin	Source	PAS	Use
Clusiaceae					
<i>Calophyllum inophyllum</i> L. var. <i>inophyllum</i>	isou	Ponape	Native	X	Oil, medicinal
<i>Garcinia mangostana</i> L.	mangosteen	Celebes, Singapore	GER, JPN	X*	Fruit
<i>Garcinia</i> sp. (TF6100)	—	—	NA	X*	Ornamental
<i>Garcinia spicata</i> Hook. f.	—	Ryukyu	JPN	X	Dye
<i>Garcinia xanthochymus</i> Hook. f. ex T. Anderson	False mangosteen	—	NA	X*	Fruit
Combretaceae					
<i>Quisqualis indica</i> L.	Rangoon creeper	Raboul, Taiwan	JPN	X	Medicinal
<i>Terminalia chebula</i> (Gaertn.) Retz.	myrobalan	—	JPN	X	Dye
<i>Terminalia kaernbachii</i> Warb. (DL7917)	—	—	NA	X*	Nut, timber
Commelinaceae					
<i>Tradescantia spathacea</i> Sw. (Rheo discolor Hance)	—	—	Pre-JPN	X	Ornamental
Convolvulaceae					
<i>Ipomoea batatas</i> (L.) Lam.	pedehde, sweet potato	Kusaie	SP, GER, JPN, US	X	Root crop
<i>Ipomoea coccinea</i> L.	trompillo	—	GER	X	Ornamental
<i>Ipomoea purga</i> (Wender.) Hayne	jalap	Palau	JPN	X	Medicinal
Cucurbitaceae					
<i>Citrullus lanatus</i> (Thunb.) Matsum. & Nakai	soika, watermelon	—	SP, JPN, US	X	Vegetable
<i>Cucumis melo</i> L.	casaba melon	—	JPN		Vegetable
<i>Cucumis sativus</i> L.	cucumber	—	GER, JPN, US	X	Vegetable
<i>Cucurbita maxima</i> Duchesne	pwengkin, pumpkin	—	SP, GER, JPN, US	X	Vegetable
<i>Cucurbita maxima</i> Duchesne	squash	—	JPN, US	X	Vegetable
Cupressaceae					
<i>Platycladus orientalis</i> (L.f.) Franco (Thuja orientalis L. f.)	Oriental thuja, biota	Japan	JPN	X	Ornamental
Cyatheaceae					
<i>Cyathea nigricans</i> Mett.	katarr, tree fern	Ponape	Native	X	Fiber
Cycadaceae					
<i>Cycas circinalis</i> L.	sago palm	—	Pre-JPN	X*	Ornamental
<i>Cycas revoluta</i> Thunb.	cycad	Ryukyu	JPN	X	Ornamental
Cyclanthaceae					
<i>Carludovica palmata</i> Ruiz and Pavon	Panama hat palm	—	JPN	X	Fiber

APPENDIX I. CONTINUED.

Taxon	Common name	Origin	Source	PAS	Use
Dilleniaceae					
<i>Dillenia indica</i> L.	Honda para, elephant apple	—	NA	X*	Fruit
Dioscoreaceae					
<i>Dioscorea alata</i> L.	kehp, yam	—	EC, SP, GER, JPN	X	Root crop
Ebenaceae					
<i>Diospyros blancoi</i> A. DC.	mabola, butterfruit	Hong Kong	GER	X	Fruit
<i>Diospyros digyna</i> Jacq.	black sapote	—	NA	X*	Fruit
Elaeocarpaceae					
<i>Elaeocarpus serratus</i> L.	Ceylon olive	—	NA	X	Fruit
<i>Elaeocarpus</i> sp.	—	—	NA	X	Timber
Erythroxylaceae					
<i>Erythroxylum coca</i> Lam.	coca	Taiwan	JPN	X	Medicinal
<i>Erythroxylum novaealedonicum</i> O.E. Schulz	—	Java	JPN	X	Medicinal
Euphorbiaceae					
<i>Acalypha hispida</i> Burm. f.	chenille plant	Fiji	JPN	X	Ornamental
<i>Acalypha wilkesiana</i> Muell. Arg. cv. Musaica	copperleaf, beef steak plant	—	JPN	X	Ornamental
<i>Aleurites moluccana</i> (L.) Willd.	candlenut	Malaya	JPN	X	Oil
<i>Chamaesyce thymifolia</i> (L.) Millsp. (<i>Euphorbia thymifolia</i> L.)	—	—	NA		Weed
<i>Codiaeum variegatum</i> (L.) Blume	korodon, croton	—	JPN	X	Ornamental
<i>Croton tiglium</i> L.	purging croton	Java	JPN	X	Medicinal
<i>Euphorbia millii</i> Des Moul. (<i>E. splendens</i> Bojer ex Hook.)	crown of thorns	Tokyo	JPN	X	Ornamental
<i>Euphorbia pulcherrima</i> Willd. ex Klotzsch	poinsettia	Ponape	Pre-JPN	X	Ornamental
<i>Hevea brasiliensis</i> (A. Juss.) Muell. Arg.	Para rubber, caotchouc	Java	JPN	X	Latex
<i>Jatropha curcas</i> L.	physic nut	Malaya	JPN	X	Medicinal
<i>Manihot esculenta</i> Crantz	dapioka, cassava	—	EC, GER, JPN, US	X	Root crop
<i>Manihot esculenta</i> Crantz cv. Variegata (<i>M. utilisima</i> Pohl. var. Variegata Hort.)	dapioka, cassava	—	JPN	X	Ornamental
<i>Manihot glaziovii</i> Muell. Arg.	Ceara rubber tree	Java	GER, JPN	X	Latex

APPENDIX I. CONTINUED.

Taxon	Common name	Origin	Source	PAS	Use
Fabaceae					
<i>Acacia auriculiformis</i> Cunn. ex Benth.	Papuan wattle	—	NA	X*	Timber
<i>Acacia catechu</i> (L.f.) Willd.	catechu, black cutch	Java	GER, JPN	X	Masticatory, dye, medicinal
<i>Acacia confusa</i> Merr.	Formosa koa	—	NA		Ornamental
<i>Acacia farnesiana</i> (L.) Willd.	cassie, popinac	New Caledonia	JPN	X	Fragrance
<i>Acacia nilotica</i> (L.) Willd. ex Deless. (A. arabica (Lam.) Willd.)	babul	Berlin	GER	X	Gum, tannin
<i>Adenanthera pavonina</i> L.	kaikes, red sandalwood	—	NA		Timber
<i>Albizia lebbeck</i> (L.) Benth.	siris tree	—	GER	X	Shade
<i>Arachis hypogaea</i> L.	peanut	—	GER, JPN, US	X	Root crop
<i>Bauhinia monandra</i> Kurz (B. tomentosa L.)	pilampwoia, pink bauhinia	—	GER	X	Ornamental
<i>Caesalpinia pulcherrima</i> (L.) Sw.	sehmwida, pride of Barbados	—	SP	X	Ornamental
<i>Caesalpinia sappan</i> L.	sapponwood	Java	JPN	X	Dye
<i>Cajanus cajan</i> (L.) HuTh	pigeon pea	—	US	X	Green manure
<i>Calopogonium mucunoides</i> Desv.	calopo, frisolilla	Java	JPN, US	X	Green manure
<i>Cassia fistula</i> L.	golden shower, purging cassia	Tokyo	JPN	X*	Medicinal
<i>Cassia grandis</i> L.	horse cassia	—	Pre-JPN	X	Ornamental
<i>Cassia javanica</i> L.	pink & white shower	—	NA	X*	Ornamental
<i>Cassia lechenaultiana</i> DC.	partridge pea	—	US	X	Green manure
<i>Cassia tora</i> L.	sickle senna	Japan	JPN	X	Medicinal
<i>Centrosema pubescens</i> Benth.	centro	Java	JPN, US	X	Green manure
<i>Chamaecrista mimosoides</i> (L.) E. Greene (Cassia mimosoides L.)	—	—	US	X	Green manure
<i>Clitoria ternatea</i> L.	butterfly pea	—	GER	X	Dye, medicinal
<i>Crescentia cujete</i> L.	calabash tree	Rabaul	JPN	X	Ornamental
<i>Crotalaria anagyroides</i> Kunth	—	Java	JPN, US	X	Green manure
<i>Crotalaria juncea</i> L.	sunh hemp	—	GER	X	Green manure
<i>Crotalaria pallida</i> Aiton	krodalaria, smooth rattlepod	—	US	X	Green manure

APPENDIX I. CONTINUED.

Taxon	Common name	Origin	Source	PAS	Use
<i>Crotalaria spectabilis</i> Roth	showy crotalaria, rattlebox	—	US	X	Green manure
<i>Crotalaria zanzibarica</i> Benth. (<i>C. usaramoensis</i> Baker f.)	—	Java	JPN	X	Green manure
<i>Delonix regia</i> (Hook.) Raf.	flamboyant, flame tree	—	Pre-JPN	X	Ornamental
<i>Derris elliptica</i> (Wall.) Benth.	peinuhp, derris root	Malaya, Java	JPN	X	Medicinal
<i>Derris malaccensis</i> Prain	—	Malaya, Java	JPN	X	Medicinal
<i>Desmodium adscendens</i> (Sw.) DC.	—	—	US	X	Green manure
(<i>D. ovalifolium</i> Guillemain & Perrottet)	—	—	US	X	Green manure
<i>Desmodium heterophyllum</i> (Willd.) DC.	—	—	US	X	Green manure
<i>Desmodium incanum</i> DC.	Spanish clover, kaimi clover	—	US	X	Green manure
(<i>D. canum</i> (J.F. Gmel.) Schinz & Thell.)	—	—	US	X	Green manure
<i>Desmodium intortum</i> (Mill.) Urb.	beggarlice	—	US	X	Green manure
<i>Desmodium triflorum</i> (L.) DC.	threeflower, beggarweed	—	US	X	Green manure
<i>Desmodium uncinatum</i> (Jacq.) DC.	Spanish tickclover	—	JPN	X	Green manure
<i>Dolichos hosei</i> Craib	—	Java	JPN	X	Green manure
<i>Erythrina subumbrans</i> Blume	dadap	Java	JPN	X	Green manure
(<i>E. lithosperma</i> (Hassk.) Merr.)	—	—	Native	X	Shade
<i>Erythrina variegata</i> L. (<i>E. indica</i> Lam.)	coral tree	—	JPN	X	Ornamental, shade
<i>Gliricidia sepium</i> (Jacq.) Walp. (<i>G. maculata</i>)	madre de cacao	—	JPN	X	Vegetable
<i>Glycine max</i> (L.) Merr.	soybean, soya bean	—	US	X	Green manure
<i>Indigofera hirsuta</i> L.	hairy indigo	—	US	X	Green manure
<i>Indigofera hendecaphylla</i> Jacq.	creeping indigo	—	US	X	Green manure
<i>Indigofera suffruticosa</i> Mill.	indigo	—	US	X	Green manure
<i>Inga edulis</i> C. Mart.	inga, ice cream bean	Hawaii	US	X	Fruit, shade
<i>Inocarpus fagifer</i> (Parkinson ex Z) Fosberg	mwurupw, Tahitian chestnut	Polynesia	JPN	X	Nut
<i>Intsia bijuga</i> (Colebr.) Kuntze	ifil, Borneo teak	—	Native	X*	Timber
<i>Leucaena leucocephala</i> (Lam.) Dewit	lead tree	Java	JPN	X	Green manure
<i>Melinis minutiflora</i> P. Beauv.	molasses grass	—	US	X	Green manure
<i>Milletia taiwaniana</i> Hayata	—	Taiwan	JPN	X	Medicinal
<i>Mimosa pudica</i> L.	sensitive plant	—	GER	X	Weed
<i>Myroxylon balsamum</i> (L.) Harms	balsam of Tolu	Tokyo	JPN	X	Medicinal
<i>Myroxylon balsamum</i> (L.) Harms var. <i>pareirae</i> (Royle) Harms	balsam of Peru	Tokyo	JPN	X	Medicinal
<i>Parkia korom</i> Kaneh.	kurum	Ponape	Native	X	Shade
<i>Phaseolus</i> spp.	beans (unspecified)	—	GER, JPN	X	Vegetable

APPENDIX I. CONTINUED.

Taxon	Common name	Origin	Source	PAS	Use
<i>Pisum sativum</i> L.	pea	—	JPN		Vegetable
<i>Pithecellobium dulce</i> (Roxb.) Benth.	Madras thorn	—	NA	X	Timber, forage
<i>Platypodium</i> sp. (TF 6107)	—	—	NA	X*	Timber
<i>Pterocarpus indicus</i> Willd.	—	—	JPN	X*	Timber
<i>Samanea saman</i> (Jacq.) Merr.	Burmese rosewood	—	JPN	X*	Shade, timber
<i>Senna alata</i> (L.) Roxb. (<i>Cassia alata</i> L.)	monkeypod, rain tree	Java	Pre-JPN	X	Medicinal
<i>Senna occidentalis</i> (L.) H. Irwin & Barneby	candle or ringworm bush	—	JPN, US	X	Medicinal, green manure
(<i>Cassia occidentalis</i> L.)	coffeeweed, coffee senna	Japan			
<i>Senna petersiana</i> (Bolle) Locke	—	—		X*	—
<i>Senna siamea</i> (Lam.) H. Irwin & Barneby	Siamese senna	—	NA	X	Timber
(<i>Cassia siamea</i> Lam.)					
<i>Senna sophora</i> (L.) Roxb. (<i>Cassia sophora</i> L.)	—	Japan	JPN	X	Medicinal
<i>Serianthes grandiflora</i> Benth.	—	—	NA	X	Timber, shade
<i>Sesbania grandiflora</i> (L.) Pers.	bakphul	—	NA		Vegetable
<i>Tamarindus indica</i> L.	tamarind	Celebes	GER, JPN	X	Ornamental, fruit
<i>Vigna hosei</i> (Craib) Backer ex K. Heyne	—	—	JPN		Green manure
<i>Vigna mungo</i> (L.) Hepper (<i>Phaseolus mungo</i>)	urd, black gram	—	US	X	Vegetable
<i>Vigna unguiculata</i> (L.) Walp. subsp. <i>unguiculata</i>	cowpea, southern pea	—	US	X	Green manure
(<i>V. sinensis</i> (L.) Savi ex Hassk.)					
Flacourtiaceae					
<i>Flacourtia rukam</i> Zoll. & Moritz	rukam	—	NA	X*	Fruit
<i>Flacourtia jangomas</i> (Lour.) Raeusch (DL 7920)	—	—	NA	X*	Fruit
<i>Hydnocarpus anthelminticus</i> Pierre ex Lanessan	chaulmoogra oil tree	Malaya	JPN	X	Medicinal
<i>Hydnocarpus kurzii</i> (King) Warb.	chaulmoogra oil tree	Malaya	JPN	X	Medicinal
(<i>Taraktogenos kurzii</i> King.)					
<i>Pangium edule</i> Reinw.	duhrien	Ponape	Native	X	Oil
Gentianaceae					
<i>Fagraea sair</i> Gilg & Benedict	seir	Ponape	Native	X	Ornamental
Gesneriaceae					
<i>Chrysothemis pulchella</i> (Conn ex Simms) Decne (TF 6102)	—	—		X*	Ornamental
<i>Episcia cupreata</i> (Hook.) Hanst.	—	Tokyo	JPN	X	Ornamental

APPENDIX I. CONTINUED.

Taxon	Common name	Origin	Source	PAS	Use
Hydrangeaceae					
<i>Hydrangea macrophylla</i> (Thunb.) Ser. var. <i>stellata</i> Makino & Nemoto	hydrangea	Tokyo	JPN	X	Ornamental
Lamiaceae					
<i>Hyptis capitata</i> Jacq.	—	—	NA	X	Weed
<i>Ocimum tenuiflorum</i> L. (<i>O. sanctum</i> L.)	Holy or Thai basil	—	NA		Ornamental
<i>Orthosiphon grandiflorus</i> Bold. ex Heyne	—	Java	JPN	X	Medicinal
<i>Plectranthus scutellarioides</i> (L.) R. Br. (<i>Coleus scutellarioides</i> Benth.)	coleus	—	NA		Ornamental
<i>Pogostemon cablin</i> (Blanco) Benth.	patchouli	Palau	JPN	X	Fragrance
Lauraceae					
<i>Cinnamomum camphora</i> (L.) Sieb.	camphor tree	Taiwan	GER, JPN	X	Medicinal
<i>Cinnamomum carolinense</i> Koidz.	madeu	Ponape	Native	X	Timber
<i>Cinnamomum verum</i> J. Presl (DL 7918/TF 6106) (<i>C. zeylanicum</i> Blume)	cinnamon	Java	JPN	X*	Medicinal
<i>Persea americana</i> Mill.	apokado, avocado	Hawaii	GER, JPN, US	X	Fruit
Lecythidaceae					
<i>Bertholletia excelsa</i> Humb. & Bonpl.	Brazil nut	—	GER	X	Nut
<i>Couroupita guianensis</i> Aubl.	cannonball tree	Rabaul	JPN	X	Ornamental
Liliaceae					
<i>Asparagus densiflorus</i> (Kunth) Jessop	asparagus fern	Celebes	JPN	X	Ornamental
<i>Asparagus setaceus</i> (Kunth) Jessop	asparagus fern	Celebes	JPN	X	Ornamental
Lythraceae					
<i>Lagerstroemia indica</i> L.	crepe myrtle	Ponape	Pre-JPN	X	Ornamental
<i>Lagerstroemia speciosa</i> (L.) Pers.	giant crepe myrtle	—	NA	X*	Ornamental
Magnoliaceae					
<i>Michelia champaca</i> L.	champak, sapu	Rabaul	JPN	X	Ornamental
Malpighiaceae					
<i>Malpighia glabra</i> L.	acerola, Barbados cherry	—	NA	X*	Fruit, Vitamin C

APPENDIX I. CONTINUED.

Taxon	Common name	Origin	Source	PAS	Use
Malvaceae					
<i>Abelmochus esculentus</i> (L.) Moench	okra, gumbo	—	JPN, US	X	Vegetable
<i>Gossypium brasiliense</i> Macfad.	cotton	—	GER, JPN	X	Fiber
<i>Hibiscus abelmoschus</i> L.	muskmallow	—	NA	X	Ornamental
<i>Hibiscus mutabilis</i> L.	changeable rosemallow	—	Pre-JPN	X	Ornamental
<i>Hibiscus rosa-sinensis</i> L.	keleu en wai, China rose	—	Pre-JPN	X	Ornamental
<i>Hibiscus schizopetalus</i> (Mast.) Hook f.	coral hibiscus	—	Pre-JPN	X	Ornamental
<i>Hibiscus tiliaceus</i> L.	keleu	—	Native	X	Fiber
Marantaceae					
<i>Calathea picta</i> Hook. f.	—	Japan	JPN	X	Ornamental
<i>Calathea zebrina</i> (Sims) Lindl.	—	Tokyo	JPN	X	Ornamental
Meliaceae					
<i>Azadirachta indica</i> A. Juss.	neem	—	NA	X*	Pesticide
<i>Lansium domesticum</i> Correa	langsat	—	NA	X*	Fruit
<i>Melia azedarach</i> L.	pride of India	—	NA	X	Medicinal, ornamental
<i>Sandoricum koetjape</i> (Burm. f.) Merr.	santol	—	NA	X*	Fruit
<i>Swietenia macrophylla</i> King	mahokani, bay wood	—	JPN	X*	Timber
<i>Swietenia mahagoni</i> (L.) Jacq.	Cuba mahogany	—	JPN	X*	Timber
Moraceae					
<i>Artocarpus altilis</i> (Parkinson) Fosberg (<i>A. communis</i> Forst.)	mahi, breadfruit	Ponape, Tahiti, Chuuk	ABO, US	X*	Fruit
<i>Artocarpus heterophyllus</i> Lam.	jackfruit, jak	—	JPN	X*	Fruit
<i>Artocarpus mariannensis</i> Trecul	mahi, breadfruit	Chuuk	ABO, US	X*	Fruit
<i>Castilla elastica</i> Sesse	Panama rubber	Guatemala	GER	X	Latex
<i>Ficus carica</i> L.	common fig	California	GER	X	Fruit
<i>Ficus elastica</i> Roxb. ex Hornem.	Indian rubber tree	Ponape	GER	X	Latex
<i>Ficus elastica</i> Roxb. ex Hornem. cv. Variegata	variegated Indian rubber tree	—	GER	X	Ornamental
<i>Ficus religiosa</i> L.	bo tree, peepul	Rabaul	JPN	X	Ornamental
Moringaceae					
<i>Moringa oleifera</i> Lam.	horseradish tree	—	NA	X*	Oil, vegetable

APPENDIX I. CONTINUED.

Taxon	Common name	Origin	Source	PAS	Use
Musaceae					
<i>Musa acuminata</i> Colla	uht, dwarf banana, Chinese or Cavendish	—	NA	X	Fruit
<i>Musa textilis</i> Nee	Manila hemp, abaca	—	SP, GER	X	Fiber
<i>Musa</i> × <i>paradisziaca</i> L.	uht, banana	Taiwan, Marianas, Guam, Marshalls, Philippines, Palau, Anguar, Brazil	GER, JPN	X	Fruit
<i>Musa</i> × <i>paradisziaca</i> L.	uht, Manila banana	Philippines	GER, JPN		Fruit
<i>Musa</i> × <i>paradisziaca</i> L.	uht, plantain	—	GER	X	Fruit
(<i>M. acuminata</i> × <i>M. balbisiana</i>)					
<i>Musa</i> × <i>paradisziaca</i> L. cv. Williams	uht, Williams banana	Hawaii	US	X	Fruit
Myrticaceae					
<i>Myristica fragrans</i> Houtt. (TF 6103/6104)	nutmeg, mace	Celebes	JPN	X*	Spice
<i>Myristica horsfieldia</i> Blume	—	—	NA	X	Timber
Myrtaceae					
<i>Eucalyptus citriodora</i> Hook.	lemon gum	Taiwan	JPN	X	Medicinal, oil
<i>Eucalyptus deglupta</i> Sm.	painted/Mindanao gum	—	NA	X*	Timber
<i>Eucalyptus globulus</i> Labill.	blue gum	—	NA	X	Timber
<i>Eucalyptus robusta</i> Sm.	swamp gum	—	NA	X	Timber
<i>Eugenia edulis</i> Benth. & Hook. f. ex Griseb.	—	—	GER	X	Fruit
<i>Eugenia javanica</i> Lam.	wax apple	—	NA	X	Fruit
<i>Eugenia uniflora</i> L.	Suriname cherry	—	NA	X*	Fruit
<i>Melaleuca cajuputi</i> Powell	cajeput	—	JPN	X*	Medicinal
<i>Melaleuca quinquenervia</i> (Cav.) S.T. Blake	paperbark, niaouli	Tokyo	JPN	X*	Ornamental
<i>Psidium cattleianum</i> Sabine	paperberry, guava	Hawaii	US	X	Fruit
<i>Psidium guajava</i> L.	kuahpa, guava	Hawaii	SP, US	X*	Fruit
<i>Syzygium aromaticum</i> (L.) Merr. & Perry (TF6099)	clove	Celebes	JPN	X*	Spice
(<i>Eugenia caryophyllata</i> Thunb.)					
<i>Syzygium jambos</i> (L.) Alston ex Trimen	Jambu, rose apple	—	NA		Fruit
<i>Syzygium malaccense</i> (L.) Merr. & Perry	Malay apple	—	JPN	X	Fruit
<i>Syzygium samarangense</i> (Blume) Merr. & Perry	wax jambu	—	NA		Fruit
Nepenthaceae					
<i>Nepenthes mirabilis</i> (Lour.) Druce	pitcher plant	Palau	JPN	X	Ornamental

APPENDIX I. CONTINUED.

Taxon	Common name	Origin	Source	PAS	Use
Nephrolepidaceae					
<i>Nephrolepis cordifolia</i> C. Presl	rehdl, fern	Fiji	JPN	X	Ornamental
Nyctaginaceae					
<i>Bougainvillea glabra</i> Choisy cv. Ms. Butt.	bougainvillea	Rabaul	JPN	X	Ornamental
<i>Bougainvillea spectabilis</i> Willd.	bougainvillea	—	JPN	X	Ornamental
Oleaceae					
<i>Jasminum sambac</i> (L.) Aiton	Arabian jasmine	Palau	Pre-JPN	X	Fragrance
Orchidaceae					
<i>Cattleya labiata</i> Lindl.	orchid	Tokyo	JPN	X	Ornamental
<i>Cypripedium</i> sp.	lady's slipper orchid	Tokyo	JPN	X	Ornamental
<i>Dendrobium chloropterum</i> Reichb. f & S. Moore	orchid	—	JPN	X	Ornamental
<i>Dendrobium cynanthum</i> L.O. Williams	orchid	—	JPN	X	Ornamental
<i>Dendrobium eborecense</i> Kraenzl.	orchid	—	JPN	X	Ornamental
<i>Dendrobium thyrsiflorum</i> Rehlb. f.	orchid	—	JPN	X	Ornamental
<i>Phalaenopsis aphrodite</i> Rehlb. f.	orchid	Java	JPN	X	Ornamental
<i>Phalaenopsis schilleriana</i> Rehlb. f.	orchid	Tokyo	JPN	X	Ornamental
<i>Vanilla planifolia</i> Jack.	vanilla	Celebes, Hawaii, Fiji, Java	GER, JPN, US	X*	Spice
Oxalidaceae					
<i>Averrhoa bilimbi</i> L.	bilimbi, cucumber tree	Palau	JPN	X*	Fruit
<i>Averrhoa carambola</i> L.	ansu, starfruit	—	JPN	X*	Fruit
<i>Oxalis barrelieri</i> L.	—	—	NA	X	Wood
(<i>O. bahiensis</i> Prog. apud Mart.)					
Pandanaceae					
<i>Pandanus</i> sp.	mwatal, pandanus	—	NA	X	Fruit, fiber
<i>Pandanus veitchii</i> Hort. Veitch ex Mast. & T. Moore	mwatal, variegated pandanus	—	Pre-JPN	X	Ornamental
Passifloraceae					
<i>Passiflora edulis</i> Sims	passion fruit	—	US	X	Fruit
<i>Passiflora foetida</i> L. var. <i>hispida</i> (DC.) Killip	pompom	—	NA	X	Fruit
Pinaceae					
<i>Abies firma</i> Siebold & Zucc.	Japanese fir	Berlin	GER	X	Timber
<i>Pinus massoniana</i> Lamb.	Masson pine	California	GER	X	Timber

APPENDIX I. CONTINUED.

Taxon	Common name	Origin	Source	PAS	Use
Piperaceae					
<i>Piper betle</i> L.	kapwohi, betel leaf	Palau	JPN	X	Masticatory
<i>Piper methysticum</i> G. Forst.	sakau, kava, awa	Ponape, Hawaii	ABO, US	X*	Medicinal
<i>Piper nigrum</i> L. (TF6105)	peper, black pepper	Java, Hawaii, Fiji	GER, JPN, US	X*	Spice
Poaceae					
<i>Bombusa</i> sp.	pehri, bamboo	—	EC, GER, JPN	X*	Timber, ornamental
<i>Cenchrus ciliaris</i> L.	buffel grass	—	US	X	Pasture
<i>Chrysopogon aciculatus</i> (Retz.) Trin.	rehtakai	—	NA		Lawn grass
<i>Cymbopogon citratus</i> (Nees) Stapf	lemon grass	—	Pre-JPN	X	Fragrance
<i>Cymbopogon nardus</i> (L.) Rendle	citronella, mana grass	—	Pre-JPN	X	Fragrance
<i>Cynodon dactylon</i> (L.) Pers.	bermuda grass	—	NA		Lawn grass
<i>Ischaemum aristatum</i> L.	—	—	US	X	Green manure
<i>Ischaemum cordatum</i> Hack. ex Warb.	—	—	US	X	Green manure
<i>Oryza sativa</i> L.	rice	India, Java, Ryukus, Taiwan	GER, JPN	X	Cereal
<i>Panicum maximum</i> Jacq.	Guinea grass	—	US	X	Pasture
<i>Paspalum commersonii</i> Lam.	kodo millet, rice grass	—	NA		Forage
<i>P. scrobiculatum</i> L.)	rehnwai	—	NA		Pasture
<i>Paspalum conjugatum</i> Berg.	rehnta	—	NA		Pasture
<i>Paspalum orbiculare</i> G. Forst.	pukso, napier grass	—	JPN, US		Paper, forage
<i>Pennisetum purpureum</i> Schum.	sehu, sugar cane	Saipan, Palau	EC, GER, JPN	X	Sugar
<i>Saccharum officinarum</i> L.	sorghum	Berlin	GER	X	Cereal
<i>Sorghum bicolor</i> (L.) Moench	vetiver, cuscus	Java	JPN	X	Fragrance
<i>Vetiveria zizanioides</i> (L.) Nash ex Small	corn, maize	—	SP, GER, JPN, US	X	Cereal
<i>Zea mays</i> L.	zoysia grass	—	NA		Lawn grass
<i>Zoysia matrella</i> (L.) Merr. var. <i>pacifica</i> Goudsw. (Z. tenuifolia Willd. ex Thiele)					
Polygalaceae					
<i>Polygala paniculata</i> L.	kisinpwil	—	NA	X	Weed
Polygonaceae					
<i>Antigonon leptopus</i> Hook. & Arn.	coral vine	—	Pre-JPN	X	Ornamental
Polypodiaceae					
<i>Platyserium bifurcatum</i> (Cav.) C. Chr.	staghorn fern	—	JPN	X	Ornamental

APPENDIX I. CONTINUED.

Taxon	Common name	Origin	Source	PAS	Use
Pontederiaceae					
<i>Eichhornia crassipes</i> (C. Mart.) Solms	water hyacinth	Ponape	Pre-JPN	X	Ornamental
Proteaceae					
<i>Grevillea robusta</i> A. Cunn.	silky oak	—	JPN	X	Timber
<i>Macadamia integrifolia</i> Maiden & Betcher	macadamia nut	Hawaii	JPN, US	X	Nut
Psittacanthaceae					
<i>Adiantum capillus-veneris</i> L.	maidenhair fern	Java	JPN	X	Ornamental
<i>Pteris ensiformis</i> Burm. f. var. <i>victoriae</i> Baker	fern	Tokyo	JPN	X	Ornamental
Rosaceae					
<i>Eriobotrya japonica</i> Lindl.	loquat	—	NA		Fruit
<i>Prunus armeniaca</i> L.	apricot	California	GER	X	Fruit
<i>Prunus persica</i> (L.) Batsch	peach	California	GER	X	Fruit
Rubiaceae					
<i>Cinchona</i> horticultural hybrid	quinine	Taiwan, Java	JPN	X	Medicinal
<i>Cinchona ledgeriana</i> (Howard) Bern. Moens ex Trimen	quinine	Taiwan, Java	JPN	X	Medicinal
<i>Cinchona pubescens</i> Vahl (C. <i>succirubra</i> Pavon)	quinine	Taiwan, Java	JPN	X	Medicinal
<i>Coffea arabica</i> L.	koahpi, Arabica coffee	—	SP, GER	X*	Beverage
<i>Coffea canephora</i> Pierre ex Frohner (C. <i>robusta</i> Linden)	robusta coffee	Java	JPN	X*	Beverage
<i>Coffea liberica</i> W. Bull ex Hiern	Liberian coffee	—	GER	X*	Beverage
<i>Gardenia augusta</i> (L.) Merr. (G. <i>jasminoides</i> Ellis)	iohsep sarawi, gardenia	—	Pre-JPN	X	Fragrance
<i>Hedyotis corymbosa</i> (L.) Lam.	—	—	NA	X	Weed
<i>Ixora chinensis</i> Lam.	—	Tokyo	JPN	X	Ornamental
<i>Ixora coccinea</i> L. (DL7916)	ixora	—	JPN	X*	Ornamental
<i>Ixora casei</i> Hance (I. <i>confertiflora</i> Valetton)	ketieu	Ponape	Native	X	Ornamental
<i>Ixora lutea</i> Hutchinson	—	Rabaul	JPN	X	Ornamental
<i>Morinda citrifolia</i> L.	weipwul, Indian mulberry	Ponape	Native	X*	Timber, medicinal
<i>Psychotria ipecacuanha</i> (Brot.) Standl.	ipecac	Malaya	JPN	X	Medicinal
<i>Uncaria gambir</i> (Hunter) Roxb.	catechu	Palau	GER, JPN	X	Dye

APPENDIX I. CONTINUED.

Taxon	Common name	Origin	Source	PAS	Use
Rutaceae					
<i>Aegle marmelos</i> (L.) Correa (DL7919)	bael fruit	—	Pre-JPN	X*	Medicinal
<i>Casimiroa edulis</i> La Llave & Lex.	white sapote	Hawaii	US	X	Fruit
<i>Citrus aurantifolia</i> (Christm.) Swingle	karer, lime	—	NA	X	Fruit
<i>Citrus aurantifolia</i> (Christm.) Swingle cv. Mexican	karer, Mexican lime	Hawaii	US	X	Fruit
<i>Citrus aurantifolia</i> (Christm.) Swingle cv. Persian	karer, Persian lime	—	US	X	Fruit
<i>Citrus aurantifolia</i> (Christm.) Swingle cv. Rungapeer	karer, Rungapeer lime	Hawaii	US	X	Fruit
<i>Citrus limon</i> (L.) Osbeck	lemon	—	GER	X	Fruit
<i>Citrus limon</i> (L.) Osbeck cv. Meyer	Meyer lemon	Hawaii	US	X	Fruit
<i>Citrus limon</i> (L.) Osbeck cv. Poonensis	lemon	Taiwan	JPN	X	Fruit
<i>Citrus limon</i> (L.) Osbeck cv. Villa France	Villa France lemon	Hawaii	US	X	Fruit
<i>Citrus maxima</i> (Burm.) Merr.	pummelo	Taiwan	JPN, US	X	Fruit
<i>Citrus maxima</i> (Burm.) Merr. cv. Banhakuyu	pummelo	Taiwan	JPN	X	Fruit
<i>Citrus reticulata</i> Blanco	mandarin orange	Hong Kong	GER, JPN	X	Fruit
<i>Citrus reticulata</i> Blanco cv. Kara	Kara mandarin	Hawaii	US	X	Fruit
<i>Citrus reticulata</i> Blanco cv. King	King mandarin	Hawaii	US	X	Fruit
<i>Citrus sinensis</i> (L.) Osbeck	orens, orange	Philippines, Borneo, Hong Kong	GER, JPN	X	Fruit
<i>Citrus sinensis</i> (L.) Osbeck cv. Carter	orens, Carter navel orange	Hawaii	US	X	Fruit
<i>Citrus sinensis</i> (L.) Osbeck cv. Kusaie	orens, Kusaie orange	Kusaie	NA	X	Fruit
<i>Citrus sinensis</i> (L.) Osbeck cv. Mediterranean	orens, Mediterranean sweet orange	Hawaii	US	X	Fruit
<i>Citrus unshiu</i> Markov cv. Satsuma	Satsuma orange	—	JPN	X	Fruit
<i>Euodia hortensis</i> Forst.	—	—	NA	X	Fragrance
<i>Pilocarpus pennatifolius</i> Lem.	jaborandi	Tokyo	JPN	X	Medicinal
<i>Ruta graveolens</i> L.	rue	Tokyo	JPN	X	Medicinal
Santalaceae					
<i>Santalum album</i> L.	white sandalwood	Tokyo	JPN	X	Medicinal

APPENDIX I. CONTINUED.

Taxon	Common name	Origin	Source	PAS	Use
Sapindaceae					
<i>Blighia sapida</i> J. König	akee	—	NA	X*	Fruit
<i>Dimocarpus longan</i> Lour.	longan, dragon's eye	—	JPN	X	Fruit
<i>Litchi chinensis</i> Sonn.	litchi	Taiwan, Hong Kong, China	GER, JPN	X	Fruit
<i>Nephelium lappaceum</i> L.	rambutan	Taiwan	JPN	X*	Fruit
Sapotaceae					
<i>Chrysophyllum cainito</i> L.	star apple	—	NA	X*	Fruit
<i>Manilkara zapota</i> (L.) P. Royen (<i>Achras sapota</i> L.)	sapodilla, chicle	Java	JPN	X*	Latex
<i>Palaquium gutta</i> (Hook.) Baill.	gutta percha	—	GER	X	Latex
<i>Pouteria campechiana</i> (Kunth) Baehni	eggfruit, canistel	—	NA	X*	Fruit
Scrophulariaceae					
<i>Angelonia angustifolia</i> Benth. (<i>A. gardneri</i> Hook.)	—	—	NA		Ornamental
<i>Bacopa procumbens</i> (Mill.) Greenm.	—	—	NA		Ground cover
<i>Stemodia verticillata</i> (Mill.) Sprague (<i>Lindenbergia petelotii</i> Bonati)	—	—	NA	X	Weed
Simaroubaceae					
<i>Brucea amarissima</i> Merr.	—	Java	JPN	X	Medicinal
<i>Quassia amara</i> L.	—	Java	JPN	X	Medicinal
Solanaceae					
<i>Capsicum annuum</i> L. (<i>C. frutescens</i> L.)	sele, bell pepper	—	JPN, US	X	Vegetable
<i>Capsicum frutescens</i> L.	sele, chili pepper	—	EC, US	X	Spice
<i>Cestrum nocturnum</i> L.	lady of the night	—	NA		Ornamental
<i>Solanum lycopersicum</i> L. (<i>Lycopersicon esculentum</i> Mill.)	tomato	—	JPN, US	X	Vegetable
<i>Nicotiana tabacum</i> L.	tipaker, tobacco	Saipan, Manila	EC, GER, JPN	X	Drug
<i>Solanum melongena</i> L.	eggplant	—	JPN, US	X	Vegetable

APPENDIX I. CONTINUED.

Taxon	Common name	Origin	Source	PAS	Use
Sterculiaceae					
<i>Theobroma cacao</i> L.	kakao, cocoa or cacao	Samoa, Yap	SP, GER, JPN	X	Beverage
<i>Theobroma cacao</i> L. cv. Criollo	kakao, cocoa or cacao	Palau	JPN	X	Beverage
<i>Theobroma cacao</i> L. cv. Forasterio	kakao, cocoa or cacao	Rabaul	JPN	X	Beverage
<i>Theobroma cacao</i> L. cv. Jatestago	kakao, cocoa or cacao	—	JPN	X	Beverage
Strelitziaceae					
<i>Ravenala madagascariensis</i> Sonn.	traveller's tree, peacock palm	Taiwan	JPN	X*	Ornamental
Styracaceae					
<i>Styrax benzoin</i> Dryand.	benzoin	Java	JPN	X	Medicinal
Taxodiaceae					
<i>Cryptomeria japonica</i> (L.f.) D. Don.	Sugi pine, Japanese cedar	Japan	GER, JPN	X	Ornamental
Theaceae					
<i>Camellia sinensis</i> (L.) Kuntze	tea	Taiwan	JPN	X	Beverage
<i>Camellia sinensis</i> (L.) Kuntze cv. Striata	tea	Taiwan	JPN	X	Beverage
Ulmaceae					
<i>Zelkova serrata</i> (Thunb.) Makino (Z. <i>keaki</i> (Sieb.) Maxim.)	Japanese zelkova	—	GER	X	Timber
Urticaceae					
<i>Boehmeria nivea</i> (L.) Guadich.	ramie	—	JPN	X	Fiber
<i>Procris cochinchinensis</i> (Lour.) Spreng. (Vanieria <i>cochinchinensis</i> Lour. var. <i>gerontoglia</i> Nakai)	—	Taiwan	JPN	X	Dye
Verbenaceae					
<i>Clerodendrum paniculatum</i> L.	Pagoda flower	Fiji	JPN	X	Ornamental
<i>Clerodendrum thomsoniae</i> Balf.	bleeding heart	—	Pre-JPN	X	Ornamental
<i>Duranta erecta</i> L. (D. <i>repens</i> L.)	pigeon berry, golden dewdrop	—	NA		Fruit
<i>Lantana camara</i> L.	randana, lantana	Saipan	GER, JPN	X	Ornamental
<i>Stachytarpheta jamaicensis</i> (L.) Vahl	Jamaica vervain	—	NA	X	Medicinal
<i>Tectona grandis</i> L.f.	teak	—	JPN	X*	Timber

APPENDIX I. CONTINUED.

Taxon	Common name	Origin	Source	PAS	Use
Vitaceae					
<i>Vitis vinifera</i> L.	grape	California	GER	X	Fruit
Zingiberaceae					
<i>Alpinia formosana</i> K. Schum.	—	—	JPN	X	Ornamental
<i>Curcuma longa</i> L.	kisimiohng, turmeric	Tokyo	ABO, JPN	X	Medicinal, dye
<i>Curcuma zedoaria</i> (Christm.) Roscoe	zedoary	Palau	JPN	X	Medicinal
<i>Hedychium coronarium</i> J. Koenig	butterfly lily	—	NA	X	Ornamental
<i>Hedychium spicatum</i> Buch.-Ham.	abir	Tokyo	JPN	X	Medicinal
<i>Zingiber officinale</i> Roscoe	sinser, ginger	Java	JPN	X	Medicinal