

The Botany of the Islands of Mersing District, Johore, Peninsular Malaysia. 1. The Plants and Vegetation of Pulau Tinggi

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Abstract

A list of the vascular plant species found on Pulau Tinggi in the district of Mersing, Johore, Peninsular Malaysia is presented. This has been prepared from herbarium collections in Malaysia and Singapore and covers more than 500 species. A brief outline of the vegetation of the island and the principal species in each vegetation type are given. Pulau Tinggi is mostly covered with lowland dipterocarp forest. The island has good examples of several coastal vegetation types which include the presence of a number of rare seashore species including *Argusia argentea*, *Manilkara kauki*, *Pouteria linggensis* and *Serianthes grandiflora*.

Introduction

Pulau Tinggi (2° 18' N, 104° 7' E) is an island of roughly 14.5 km² lying 13 km off the east coast of Johore. Tinggi rises abruptly to a height of 610 m at its summit, with most of the slopes covered in forest. Turner *et al.* (1993) provided a preliminary account of the botany of Pulau Tinggi. Subsequent further research allows a more detailed report to be given here.

Flora

A list of the vascular plants recorded from Pulau Tinggi is given in Appendix 1. Records are taken from herbarium specimens in the Singapore Botanic

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Gardens (SING), School of Biological Sciences, National University of Singapore (SINU), Forest Research Institute Malaysia (KEP) and Department of Botany, Universiti Kebangsaan Malaysia (UKMB). The collections were made by J.B. Feilding who visited Pulau Tinggi in late 1892, I.H. Burkill who was there from 16 to 20 June 1915, Strugnell and Mohd. Yasin in 1952, J. Sinclair in May 1954, F.S.P. Ng in April 1967, A. Zainudin Ismail in 1990 and 1996, and groups from the National University of Singapore in 1991, 1992 and 1996. The list consists of 510 native or naturalized species and 62 cultivated ones.

Vegetation

The main vegetation on Pulau Tinggi is the tropical rain forest that covers the upper slopes of the island. In and around the villages this has been cleared to give way to cultivated areas. Close to the villages these are permanent, higher up the clearings (ladangs) are often abandoned in a form of shifting agriculture. Currently these ladangs are mostly abandoned, probably reflecting a gradual reduction in the permanent population of Pulau Tinggi in recent years, and a shift to employment in the holiday resorts on the island. The seashores support a range of different vegetation types, largely related to their substrate. The sandy beaches differ in their plant community from the more frequent rocky ones. There are also two areas of mangrove vegetation. On some of the coral reef flats there are seagrass meadows. The distribution of the major terrestrial vegetation types is shown in Fig. 1.

Forest

We probably know least about this vegetation type on Tinggi compared to the others. The area of forest is extensive and penetrated by relatively few trails, and collecting from tall trees is technically difficult. Therefore we can only be explicit with regard to the understorey vegetation. Turner *et al.* (1993) described the summit of Tinggi, which is an open grassy area, probably maintained as such by human visitors. The forest on the lower slopes is tall, reaching to 30 m or more in height and contains typical primary forest species such as members of the Dipterocarpaceae and Myristicaceae (see Appendix 1). The palm *Orania sylvicola* is abundant, and there is a zone of bamboo below the summit. This was tentatively identified as *Dendrocalamus hirtellus* by Turner *et al.* (1993), an identification confirmed from further collections by Dr K.M. Wong. Typical forest understorey herbs, such as gingers, aroids and ferns, are to be found in abundance.

The lower edges of the forest grade into secondary forest and

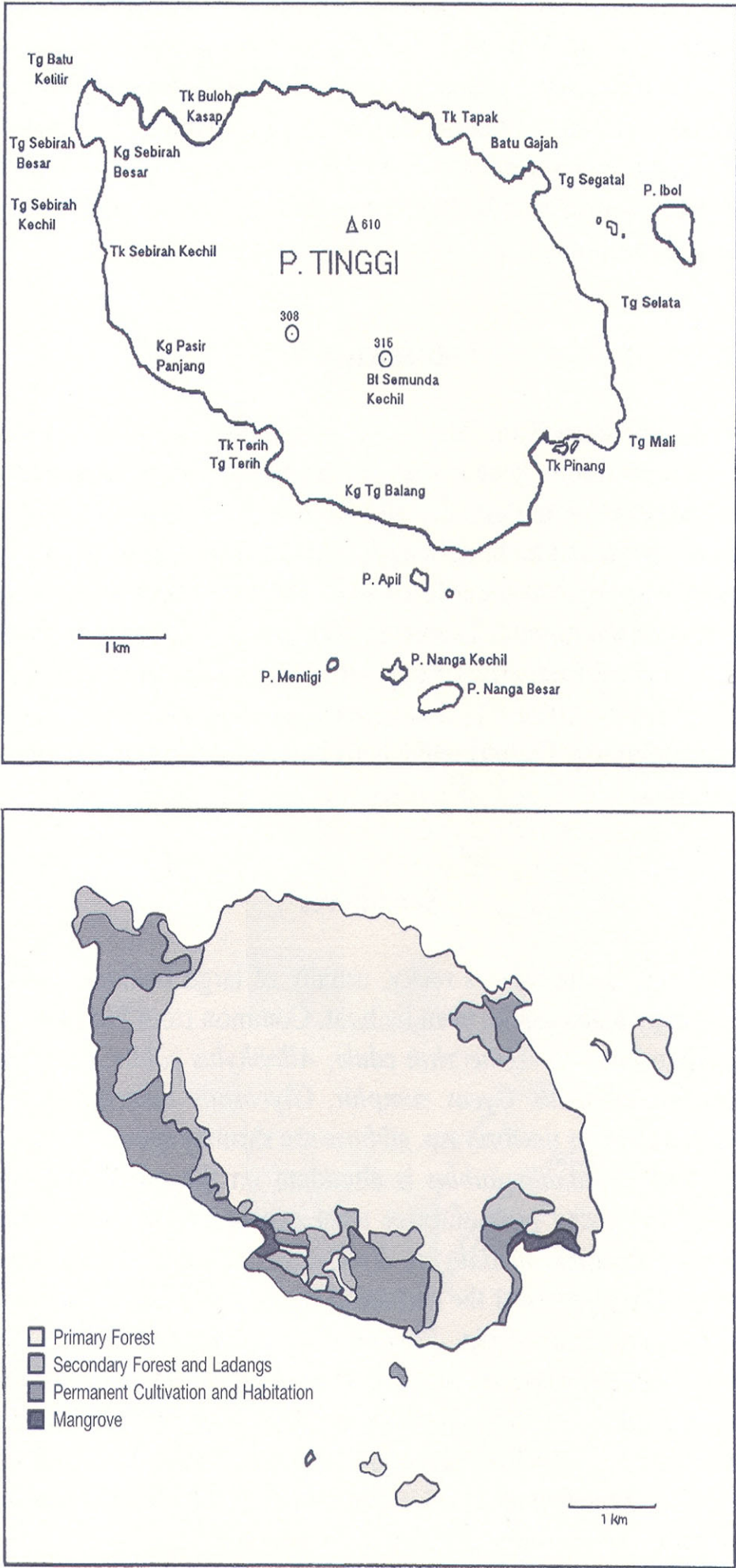


Figure 1. Maps of Pulau Tinggi and its major vegetation types. (P. = Pulau, Tg = Tanjung, Tk = Telok, Kg = Kampung, Bt = Bukit; spot heights in metres)

abandoned ladangs. Common species in this region include *Vitex pinnata* and *Melastoma malabathricum*. Old crop plants may also be found. We came across the garden pandan, *Pandanus amaryllifolius* growing along one stream, and the climber *Tinospora crispa*, which is grown for its medicinal uses, in another area. Newly cleared areas, if not planted, soon give way to pioneering plants such as *Trema tomentosa*, *Chromolaena odorata* and *Macaranga heynei*.

Cultivated Areas

The kampung houses on Tinggi are set among the typical tumult of ornamental and useful plants seen in any Malay village. Coconut palms (*Cocos nucifera*) dominate the flat areas near the sea, though their cultivation appears to be largely neglected at present. The coconut groves are mostly carpeted with cattle-grazed lallang (*Imperata cylindrica*) and clumps of *Lantana camara*. The kwini (*Mangifera odorata*) is the only crop currently exported from Pulau Tinggi. Other commonly grown trees include rubber (*Hevea brasiliensis*), clove (*Syzygium aromaticum*) and nutmeg (*Myristica fragrans*). The attractive herb *Tacca palmata* is quite common in the plantations.

Sea Shores

Most of Tinggi's coastline is rocky, usually of large boulders. The north coast is mostly inaccessible, even by boat. Common trees found just above the high tide line are *Memecylon edule*, *Allophylus cobbe*, *Ficus superba* and *Pouteria obovata*. *Cycas rumphii*, *Glycosmis mauritiana*, *Premna serratifolia* and *Ficus tinctoria* ssp. *gibbosa* are shrubby species also common on the rocks. *Pandanus dubius* is abundant on the north coast in such situations. The rocky promontories most exposed to salt spray from the sea support *Pemphis acidula* or *Xylocarpus rumphii*. Ferns are often encountered creeping over the surface of the rocks. These include *Davallia solida*, *Drynaria quercifolia*, *Phymatosorus scolopendria* and *Pyrrosia lanceolata*. Cracks support other herbs, notably the naturalized alien *Kalanchoe pinnata*, *Dianella ensifolia* and *Asplenium macrophyllum*. *Hoya verticillata* and *Dischidia major* are common epiphytes. The orchids *Dendrobium crumenatum* and *Aerides odorata* can be found growing both epiphytically and on rocks.

On the sandy beaches, mostly found in the bays on the south and east coasts, the creepers *Ipomoea pes-caprae*, *Ipomoea littoralis*, *Vitex trifolia* and *Cyperus stoloniferus* can be found. The back of the beach is typically

lined with shrubs of *Scaevola taccada*, *Pandanus odoratissimus* and *Dendrolobium umbellatum* behind which grow trees such as *Hibiscus tiliaceus*, *Peltophorum pterocarpum*, *Terminalia catappa*, *Barringtonia asiatica* and *Guettarda speciosa*. Less frequently encountered are *Thespesia populnea*, *Cordia subcordata* and *Casuarina equisetifolia*. Individual trees of *Erythrina fusca*, *Erythrina variegata* and *Hernandia nymphaeifolia* are to be found at Telok Seruang.

Mangrove

There are two areas of mangrove vegetation on Pulau Tinggi. At Telok Terih there is a range of mangrove habitats at the mouth of the Sungai Terih Besar. Telok Pinang contains a smaller area of mangrove.

A preliminary survey at Telok Terih found that an almost pure stand of *Rhizophora apiculata* occupies the seaward front of the mangrove where the substrate is muddiest (Fig. 2). Patches of different species, including

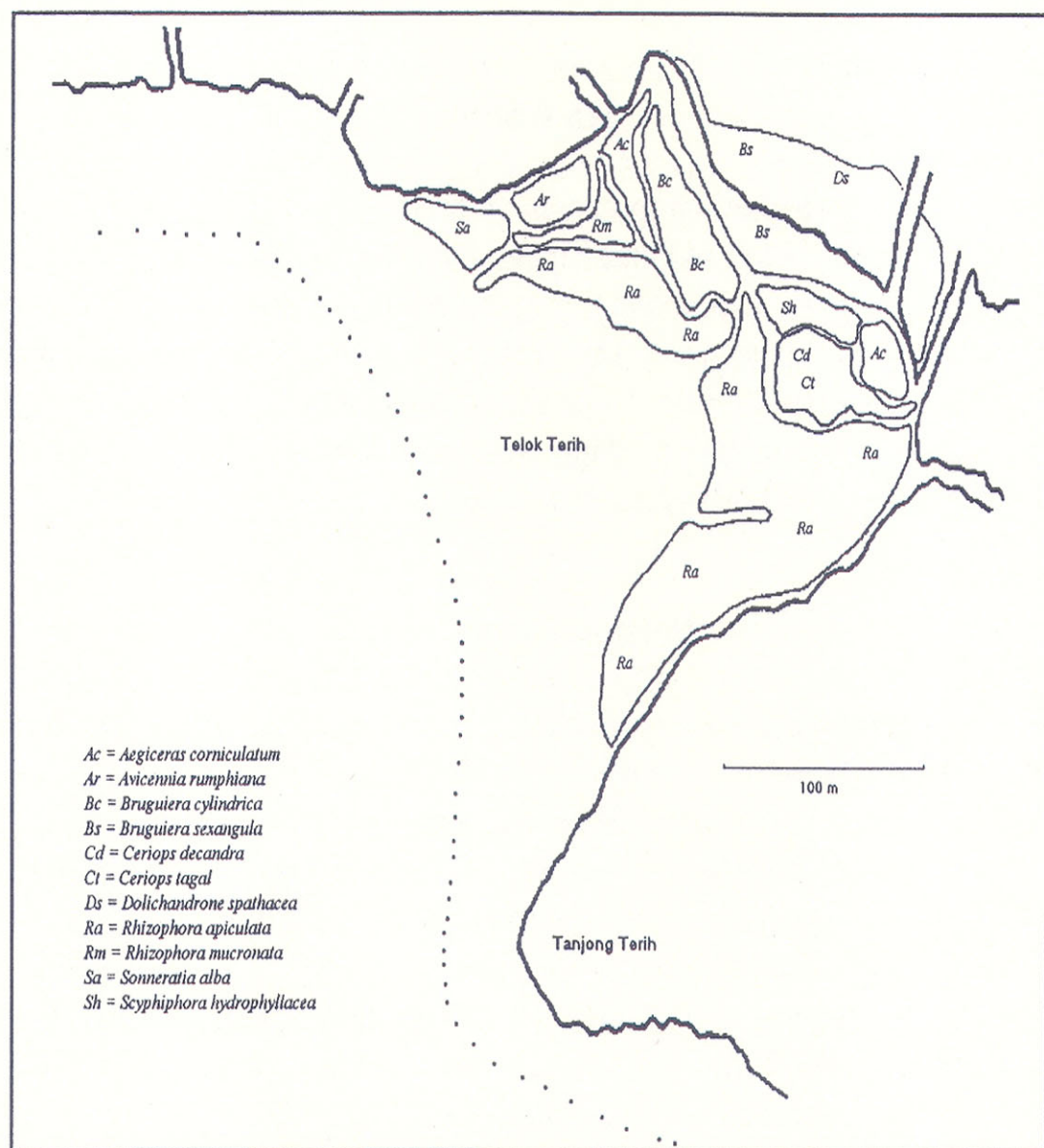


Figure 2. Map of the mangrove vegetation found at Telok Terih, Pulau Tinggi.

Avicennia rumphiana, *Bruguiera cylindrica* and *Aegiceras corniculatum* are found behind. The back mangrove is quite diverse with big trees of *Xylocarpus granatum* and *Bruguiera gymnorrhiza*. *Dolichandrone spathacea*, *Cynometra ramiflora* and *Bruguiera sexangula* also occur here, with an understorey of *Acrostichum aureum* and *Acrostichum speciosum*. The trees on the rocky fringe bordering the mangrove support many epiphytes including the rubiaceous myrmecophyte *Hydnophytum formicarum* and the clubmoss *Huperzia carinata*.

The Telok Pinang mangrove is dominated by *Rhizophora apiculata* and *Rhizophora stylosa* but with an admixture of a number of other species including *Ceriops decandra* and *Bruguiera gymnorrhiza*. There appears to be more human utilization of the mangroves in Telok Pinang than Telok Terih, but there is evidence that the local people may be replanting areas cut, presumably for fuel or for use as poles. Species found at Telok Terih but not seen at Telok Pinang include *Avicennia alba*, *Bruguiera sexangula* and *Ceriops tagal*. The mangroves on Tinggi are notable for the scarcity of *Sonneratia alba* and *Avicennia alba*.

Sea Grasses

We have located herbarium specimens of three species of sea grass collected from the coastal waters of Pulau Tinggi. There are fairly extensive areas of sea grass in front of Kampung Tanjung Balang, mostly of *Cymodocea rotundifolia* interspersed with the smaller *Halodule uninervis*. Burkill also collected *Thalassia hemprichii*. *Enhalus acoroides* shoots were found among the seashore flotsam, but no plants were seen growing around the island. Japar (1994) also reports *Halophila ovalis* from Tinggi.

Botanical Significance

We now have records for more than 500 species of vascular plant from Pulau Tinggi. However, we believe that this is likely to represent less than half of the flora of the island. Many forest species remain uncollected.

As outlined by Turner *et al.* (1993), the most important collections from Pulau Tinggi are those of *Pandanus lais* and *Canarium hirsutum*. The former has not been collected since 1915, but we have located the latter. Several plants were encountered near the path running behind the mangroves in Telok Terih. It grows at the edge of secondary forest and becomes reproductive at a fairly small size (4-5 m tall).

The most exciting of the recent collections is the discovery of a new east coast locality for *Argusia argentea*. Until now it was only known from

Pulau Tengah in Johore. This adds to the number of rare seashore species that have been recorded from Pulau Tinggi. Others in this category include *Serianthes grandiflora*, *Manilkara kauki* and *Pouteria linggensis*.

Didymocarpus tiumanicus was believed to be endemic to Pulau Tioman (Henderson 1930, as *Paraboea tiumanica*), but we have now found it on Tinggi, and it has been collected on Pulau Pemanggil also. Thus this species has to be added to the flora of Johore, and must be thought of as a Tioman Archipelago endemic, rather than being confined to the one island. Another species not previously reported from Johore is *Mallotus philippensis*.

One sterile collection was identified by Mr K.M. Kochummen as possibly *Swintonia acuta*, a species only previously recorded from Borneo. Fertile material is needed to confirm the occurrence of this species in Peninsular Malaysia.

Acknowledgements

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References

- Henderson, M.R. 1930. Notes on the flora of Pulau Tioman and neighbouring islands. *Gardens' Bulletin Straits Settlements* **5**: 80-93.
- Japar, S.B. 1994. Status of seagrass resources in Malaysia. In: C.R. Wilkinson, S. Sudara & L.M. Chou. *Proceedings, Third ASEAN-Australia Symposium on Living Coastal Resources*, pp. 283-289 Vol. 1 Australian Institute of Marine Science, Townsville.
- Turner, I.M. 1995. A catalogue of the vascular plants of Malaya. *Gardens' Bulletin Singapore* **47**: 1-757.
- Turner, I.M., H.T.W. Tan, K.S. Chua, P.T. Chew, & Haji Samsuri bin Haji Ahmad 1993. A botanical reconnaissance of Pulau Tinggi, Johore. *Malayan Nature Journal* **46**: 157-168.

Appendix 1. A list of species collected from Pulau Tinggi.

One representative herbarium collection is cited for each species. Species only found in cultivation, or as relics of cultivation, are indicated as such by 'c' in the margin. Nomenclature follows Turner (1995) where possible.

PTERIDOPHYTA

Adiantaceae

Adiantum stenochlamys Baker - Strugnell
KEP 70933 (KEP)

Taenitis blechnoides (Willd.) Sw. - PT96
649 (SINU)

Aspleniaceae

Asplenium macrophyllum Sw. - PT96-186
(SINU)

Asplenium nidus L. - PT96-217 (SINU)

Asplenium tenerum G. Forst. - PT96-131
(SINU)

Blechnaceae

Blechnum finlaysonianum Wall. ex Hook.
& Grev. - J.W.H. Yong PT5 (SINU)

Davalliaceae

Davallia angustata Wall. ex Hook. &
Grev. - I.M. Turner PT13 (SINU)

Davallia denticulata (Burm.f.) Mett. ex
Kuhn - PT96-423 (SINU)

Dennstaedtiaceae

Lindsaea doryophora K.U. Kramer
I.M. Turner PT4 (SINU)

Lindsaea lucida Blume - I.H. Burkill
S.F.N. 947 (SING)

Pteridium esculentum (G. Forst.)
Cockayne - I.M. Turner PT66 (SINU)

Tapeinidium pinnatum (Cav.) C. Chr. -
I.M. Turner PT31 (SINU)

Tectaria griffithii (Baker) C. Chr. -
I.M. Turner PT78 (SINU)

Tectaria semipinnata (Roxb.) C.V.
Morton - Radhika Ramadas PT99
(SINU)

Tectaria singaporeana (Hook. & Grev.)
Copel. - PT96-113 (SINU)

Dryopteridaceae

Ctenitis vilis (Kunze) Ching - I.M. Turner
PT33 (SINU)

Heterogonium giganteum (Blume)
Holttum - I.M. Turner PT78 (SINU)

Pleocnema irregularis (C. Presl) Holttum
- I.H. Burkill S.F.N. 923 (SING)

Gleicheniaceae

Dicranopteris linearis (Willd.) Spreng. -
PT96-230 (SINU)

Stichurus truncatus (Willd.) Nakai -
I.M. Turner PT53 (SINU)

Hymenophyllaceae

Cephalomanes javanicum (Blume) Bosch
- I.H. Burkill S.F.N. 937 (SING)

Hymenophyllum polyanthos Sw. -
I.M. Turner PT14 (SINU)

Lomariopsidaceae

Teratophyllum rotundifolium (R.
Bonap.) Holttum - I.M. Turner PT76
(SINU)

Lycopodiaceae

Huperzia carinata (Desv. ex Poir.) Trevis.
- PT96-208 (SINU)

Huperzia phlegmaria (L.) Rothm. - PT96
202 (SINU)

Marattiaceae

Angiopteris evecta (G. Forst.) Hoffm. -
PT96-107 (SINU)

Oleandraceae

Nephrolepis auriculata (L.) Trimen -
I.M. Turner PT9 (SINU)

Polypodiaceae

- Colysis pedunculata* (Hook. & Grev.)
Ching - I.M.Turner PT55 (SINU)
Drynaria quercifolia (L.) J. Sm. - PT96
238 (SINU)
Drynaria sparsisora (Desv.) T. Moore -
PT96-388 (SINU)
Lecanopteris crustacea Copel. -
J.W.H.Yong PT104 (SINU)
Phymatosorus scolopendria (Burm.f.)
Pic.Serm. - PT96-332 (SINU)
Pyrrosia lanceolata (L.) Farwell - PT96
451 (SINU)
Pyrrosia piloselloides (L.) M.G. Price -
PT96-457 (SINU)
Selliguea heterocarpa (Blume) Blume -
I.M.Turner PT26 (SINU)

Pteridaceae

- Acrostichum aureum* L. - PT96-644
(SINU)
Acrostichum speciosum Willd. - PT96-312
(SINU)
Pteris ensiformis Burm.f. - PT96-654
(SINU)

Schizaeaceae

- Lygodium circinnatum* (Burm.f.) Sw. -
PT96-378 (SINU)
Lygodium flexuosum (L.) Sw. - PT96-
364 (SINU)
Schizaea digitata (L.) Sw. - PT96-671
(SINU)

Selaginellaceae

- Selaginella intermedia* (Blume) Spring -
PT96-285 (SINU)
Selaginella padangensis Hieron. - I.H.
Burkill s.n., June 1915 (SING)
Selaginella willdenowii (Desv.) Baker -
PT96-106 (SINU)

Thelypteridaceae

- Amphineuron opulentum* (Kaulf.)
Holtum - PT96-637 (SINU)

Christella parasitica (L.) Lév. - J. Sinclair,
S.F.N. 40291 (SING)

Cyclosorus interruptus (Willd.) H. Itô -
PT96-491 (SINU)

Pronephrium menisciocarpon (Blume)
Holtum - I.M.Turner PT43 (SINU)

Pronephrium repandum (Fée) Holtum -
PT96-683 (SINU)

Vittariaceae

Antrophyum callifolium Blume - PT96-
124 (SINU)

SPERMATOPHYTA**Acanthaceae**

- Asystasia nemorum* Nees - PT96-53
(SINU)
c *Justicia gendarussa* Burm.f. - PT96-15
(SINU)
c *Thunbergia affinis* S. Moore - PT96-4
(SINU)

Actinidiaceae

Saurauia pentapetala (Jack) Hoogland -
D.J.Metcalf PT71 (SINU)

Alangiaceae

Alangium kurzii Craib - A. Zainudin AZ
5785 (UKMB)
Alangium rotundifolium (Hassk.)
Bloemb. - I.H.Burkill S.F.N.907 (SING)

Amaranthaceae

Amaranthus lividus L. - PT96-657 (SINU)
Amaranthus spinosus L. - PT96-679
(SINU)

Amaryllidaceae

Crinum asiaticum L. - PT96-231 (SINU)

Anacardiaceae

Campnosperma auriculatum (Blume)
Hook.f. - Mohd. Yasin bin Aboo, KEP
70930 (KEP)

- c *Mangifera indica* L. - PT96-609 (SINU)
Mangifera magnifica Kochummen - A. Zainudin AZ 5922 (UKMB)
Mangifera pentandra Hook.f. - I.H. Burkill s.n., June 1915 (SING)
Melanochyla caesia (Blume) Ding Hou - PT96-160 (SINU)
Parishia maingayi Hook.f. - A. Zainudin AZ 5921 (UKMB)
c *Spondias cytherea* Sonn. - PT96-153 (SINU)
Swintonia cf. acuta Engl. - A. Zainudin AZ 5841 (UKMB)

Anisophylleaceae

- Anisophyllea corneri* Ding Hou - PT96-525 (SINU)

Annonaceae

- c *Annona squamata* L. - PT96-63 (SINU)
Desmos dasymaschalus (Blume) Safford - A. Zainudin AZ 5896 (UKMB)
Phaeanthus ophthalmicus (Roxb. ex G. Don) J. Sinclair - PT96-664 (SINU)
Polyalthia cauliflora Hook.f. & Thomson - Samsuri 61 (SINU)
Uvaria cordata (Dunal) Alston - Samsuri 62 (SINU)
Uvaria hirsuta Jack - I.H. Burkill S.F.N. 872 (SING)

Apocynaceae

- Alstonia angustiloba* Miq. - I.M. Turner PT42 (SINU)
Alstonia scholaris (L.) R.Br. - A. Zainudin AZ 5859 (UKMB)
Cerbera manghas L. - PT96-172 (SINU)
Ichnocarpus serpyllifolius (Blume) P.I. Forst. - J.W.H. Yong PT25 (SINU)
c *Thevetia peruviana* (Pers.) K. Schum. - PT96-303 (SINU)

Araceae

- Aglaonema simplex* Blume - I.H. Burkill S.F.N. 912 (SING)

- Alocasia beccarii* Engl. - I.M. Turner PT11 (SINU)
Alocasia denudata Endl. - PT96-101 (SINU)
Alocasia longiloba Miq. - A. Zainudin AZ 5787 (UKMB)
Anadendrum montanum (Blume) Schott - A. Zainudin AZ 3259 (UKMB)
c *Caladium bicolor* (Aiton) Vent. - PT96-167 (SINU)
Homalomena angustifolia (Jack) Hook.f. - I.H. Burkill S.F.N. 908 (SING)
Homalomena propinqua Schott - PT96-158 (SINU)
Homalomena sagittifolia Jungh. ex Schott - I.H. Burkill S.F.N. 931 (SING)
Rhaphidophora korthalsii Schott - J. Feilding s.n., 1892 (SING)
Schismatoglottis calypttrata (Roxb.) Zoll. & Moritz - I.H. Burkill S.F.N. 883 (SING)
Schismatoglottis wallichii Hook.f. - I.H. Burkill S.F.N. 932 (SING)
Scindapsus pictus Hassk. - J.C.W. Chee PT94 (SINU)

Araliaceae

- Arthropphyllum diversifolium* Blume - PT96-402 (SINU)
Arthropphyllum maingayi Philipson - A. Zainudin AZ 5961 (UKMB)
Macropanax maingayi (C.B. Clarke) Philipson - A. Zainudin AZ 3251 (UKMB)
Schefflera elliptica (Blume) Harms - I.H. Burkill S.F.N. 886 (SING)

Aralidiaceae

- Aralidium pinnatifidum* (Jungh. & de Vriese) Miq. - PT96-620 (SINU)

Asclepiadaceae

- Dischidia major* (Vahl) Merr. - PT96-237 (SINU)
Hoya diversifolia Blume - J. Feilding s.n., 27 Nov. 1892 (SING)

Hoya elliptica Hook.f. - A. Zainudin AZ 5878 (UKMB)

Hoya multiflora Blume - I.M.Turner 91-31 (SINU)

Hoya verticillata (Vahl) G. Don - I.H. Burkill S.F.N. 898 (SING)

Avicenniaceae

Avicennia alba Blume - PT96-613 (SINU)

Avicennia rumphiana Hallier f. - PT96-175 (SINU)

Balsaminaceae

c *Impatiens balsamina* L. - PT96-55 (SINU)

Begoniaceae

Begonia herveyana King - J. Feilding s.n., Oct. 1892 (SING)

Bignoniaceae

Dolichandrone spathacea (L.f.) K. Schum. - PT96-651 (SINU)

Bombacaceae

c *Ceiba pentandra* (L.) Gaertn. - PT96-16 (SINU)

c *Durio zibethinus* L. - PT96-33 (SINU)

Boraginaceae

Argusia argentea (L.f.) Heine - PT96-257 (SINU)

Cordia dichotoma G. Forst. - A. Zainudin AZ 3201 (UKMB)

Cordia subcordata Lam. - PT96-276 (SINU)

Burmanniaceae

Burmannia championii Thwaites - PT96-511 (SINU)

Burseraceae

Canarium hirsutum Willd. - I.H. Burkill S.F.N. 906 (SING)

Canarium littorale Blume - A. Zainudin AZ 5864 (SING)

Canarium pilosum Benn. - I.H. Burkill S.F.N. 862 (SING)

Santiria apiculata Benn. - A. Zainudin AZ 5919 (UKMB)

Santiria rubiginosa Blume - A. Zainudin AZ 5836 (UKMB)

Capparaceae

Cleome rutidosperma DC. - PT96-14 (SINU)

Casuarinaceae

Casuarina equisetifolia J.R. Forst. & G. Forst. - PT96-176 (SINU)

Celastraceae

Bhesa paniculata Arn. - J.W.H. Yong PT10 (SINU)

Loesneriella pauciflora (DC.) A.C. Sm. - PT96-277 (SINU)

Salacia korthalsiana Miq. - I.M.Turner PT115 (SINU)

Salacia macrophylla Blume - I.M.Turner PT83 (SINU)

Chloranthaceae

Chloranthus erectus (Buch.-Ham.) Verdc. - PT96-515 (SINU)

Chrysobalanaceae

Maranthes corymbosa Blume - A. Zainudin AZ 5931 (UKMB)

Colchicaceae

c *Gloriosa superba* L. - PT96-49 (SINU)

Combretaceae

Lumnitzera littorea (Jack) Voigt - PT96-298 (SINU)

Lumnitzera racemosa Willd. - PT96-272 (SINU)

Terminalia catappa L. - PT96-680 (SINU)

Commelinaceae

- Amischotolype gracilis* (Ridl.) I.M.
Turner - PT96-281 (SINU)
Murdannia nudiflora (L.) Brenan - J.
Feilding s.n., 1892 (SING)

Compositae

- Acmella paniculata* (Wall. ex DC.) R.K.
Jansen - Y.F. Chan & M.C. Loh PT48
(SINU)
Ageratum conyzoides L. - PT96-74
(SINU)
Blumea balsamifera (L.) DC. - J. Sinclair,
S.F.N. 40282 (SING)
Chromolaena odorata (L.) R.M. King &
H. Rob. - PT96-653 (SINU)
Conyza bonariensis (L.) Cronquist - I.H.
Burkill s.n., June 1915 (SING)
c *Cosmos sulphureus* Cav. - PT96-52
(SINU)
Erechtites valerianifolia (Wolf) DC. -
PT96-221 (SINU)
Synedrella nodiflora (L.) Gaertn. - A.
Zainudin AZ 5939 (UKMB)
Vernonia cinerea (L.) Less. - PT96-650
(SINU)
Vernonia patula (Dryand.) Merr. - PT96-
259 (SINU)
Wollastonia biflora (L.) DC. - PT96-386
(SINU)
c *Zinnia elegans* Jacq. - PT96-142 (SINU)

Connaraceae

- Cnestis palala* (Lour.) Merr. - A. Zainudin
AZ 5881 (UKMB)

Convallariaceae

- Peliosanthes teta* Andr. ssp. *humilis*
(Andr.) Jessop - D.J. Metcalfe PT60
(SINU)

Convolvulaceae

- c *Ipomoea batatas* (L.) Lam. - PT96-94
(SINU)
Ipomoea littoralis Blume - I.H. Burkill
S.F.N. 889 (SING)

- Ipomoea pes-caprea* (L.) R.Br. - PT96-
199 (SINU)

- Merremia peltata* (L.) Merr. - J. Sinclair,
S.F.N. 40281 (SING)

Costaceae

- Costus globosus* Blume - PT96-159
(SINU)

Crassulaceae

- c *Kalanchoe laciniata* (L.) DC. - I.H.
Burkill S.F.N. 926 (SING)
Kalanchoe pinnata (Lam.) Pers. - PT96-
339 (SINU)

Cycadaceae

- Cycas rumphii* Miq. - PT96-320 (SINU)

Cymodoceaceae

- Cymodocea rotundata* Ehrenb. & Hempr.
- PT96-235 (SINU)
Halodule uninervis (Forssk.) Asch. - I.H.
Burkill S.F.N. 899 (SING)

Cyperaceae

- Cyperus dubius* Rottb. - PT96-247
(SINU)
Cyperus javanicus Houtt. - PT96-442
(SINU)
Cyperus rotundatus L. - A. Zainudin AZ
5769 (UKMB)
Cyperus stoloniferus Retz. - PT96-248
(SINU)
Fimbristylis cymosa R.Br. - A. Zainudin
AZ 5768 (UKMB)
Fimbristylis dichotoma (L.) Vahl - PT96-
318 (SINU)
Hypolytrum nemorum (Vahl) Spreng. -
PT96-411 (SINU)
Kyllinga brevifolia Rottb. - I.H. Burkill
s.n., June 1915 (SING)
Kyllinga polycephala Willd. ex Kunth -
PT96-100 (SINU)
Mapania cuspidata (Miq.) Uittien var.
petiolata (C.B. Clarke) Uittien - PT96-
416 (SINU)

Scleria biflora Roxb. - PT96-462 (SINU)

Scleria levis Retz. - PT96-459 (SINU)

Scleria lithosperma (L.) Sw. - PT96-224 (SINU)

Scleria purpurascens Steud. - PT96-279 (SINU)

Dilleniaceae

Tetracera indica (Christ. & Panz.) Merr. - PT96-346 (SINU)

Tetracera scandens (L.) Merr. - PT96-325 (SINU)

Dipterocarpaceae

Dipterocarpus grandiflorus (Blanco) Blanco - I.H. Burkill S.F.N. 930 (SING)

Shorea macroptera Dyer - Mohd. Yasin bin Aboo, KEP 70928 (KEP)

Shorea materialis Ridl. - I.H. Burkill S.F.N. 946 (SING)

Shorea pauciflora King - Mohd. Yasin bin Aboo, KEP 70941 (KEP)

Dioscoreaceae

Dioscorea bulbifera L. - A. Zainudin AZ 5894 (UKMB)

Dracaenaceae

Dracaena maingayi Hook.f. - PT96-342 (SINU)

Dracaena umbratica Ridl. - A. Zainudin AZ 3219 (UKMB)

Ebenaceae

Diospyros cauliflora Blume - A. Zainudin AZ 5916 (UKMB)

Diospyros ferrea (Willd.) Bakh. - PT96-189 (SINU)

Diospyros lanceifolia Roxb. - I.H. Burkill S.F.N. 874 (SING)

Diospyros malabarica (Descr.) Kostel. - PT96-447 (SINU)

Diospyros toposia Buch.-Ham. - I.H. Burkill S.F.N. 943 (SING)

Elaeocarpaceae

Elaeocarpus petiolatus (Jack) Wall. - A. Zainudin AZ 5858 (UKMB)

Erythroxylaceae

Erythroxylum cuneatum (Miq.) Kurz - PT96-315 (SINU)

Euphorbiaceae

c *Acalypha hispida* Burm.f. - PT96-12 (SINU)

Antidesma coriaceum Tul. - A. Zainudin AZ 3222 (UKMB)

Antidesma cuspidatum Müll.Arg. - PT96-476 (SINU)

Antidesma montanum Blume - F.S.P. Ng, FRI 5031 (KEP)

Antidesma velutinosum Blume - A. Zainudin AZ 5831 (UKMB)

c *Baccaurea motleyana* (Müll.Arg.) Müll.Arg. - PT96-458 (SINU)

Baccaurea racemosa (Reinw.) Müll.Arg. - PT96-145 (SINU)

Baccaurea ramiflora Lour. - PT96-162 (SINU)

Breynia reclinata (Roxb.) Hook.f. - PT96-412 (SINU)

Breynia vitis-idaea (Burm.f.) C.E.C. Fisch. - D.J.Metcalf PT49 (SINU)

Bridelia tomentosa Blume - A. Zainudin AZ 5814 (UKMB)

Claoxylon longifolium (Blume) Endl. ex Hassk. - A. Zainudin AZ 3260 (UKMB)

Croton argyratus Blume - A. Zainudin AZ 5862 (UKMB)

Endospermum diadenum (Miq.) Airy Shaw - D.J.Metcalf PT2 (SINU)

Euphorbia cyathophora Murr. - PT96-234 (SINU)

Euphorbia hirta L. - PT96-50 (SINU)

c *Euphorbia pulcherrima* Willd. - A. Zainudin AZ 3237 (UKMB)

Excoecaria agallocha L. - PT96-218 (SINU)

- Glochidion fuscum* (Müll.Arg.) Boerl. - A. Zainudin AZ 3210 (UKMB)
- Glochidion penangense* (Müll.Arg.) Airy Shaw - PT96-393 (SINU)
- c *Hevea brasiliensis* (Willd. ex A. Juss.) Müll.Arg. - PT96-485 (SINU)
- c *Jatropha gossypifolia* L. - PT96-677 (SINU)
- Macaranga heynei* I.M. Johnst. - PT96-166 (SINU)
- Macaranga gigantea* (Rchb.f. & Zoll.) Müll.Arg. - PT96-686 (SINU)
- Macaranga tanarius* (L.) Müll.Arg. - PT96-663 (SINU)
- Macaranga triloba* (Blume) Müll.Arg. - I.M.Turner PT23 (SINU)
- Mallotus penangensis* Müll.Arg. - PT96-147 (SINU)
- Mallotus philippensis* (Lam.) Müll.Arg. - PT96-681 (SINU)
- Mallotus oblongifolius* (Miq.) Müll.Arg. - PT96-466 (SINU)
- Mallotus subcuneatus* (Gage) Airy Shaw - I.M.Turner PT105 (SINU)
- Melanolepis multiglandulosa* (Reinw. ex Blume) Rchb.f. & Zoll. - A. Zainudin AZ 5813 (UKMB)
- Micrococca mercurialis* (L.) Benth. - PT96-30 (SINU)
- Phyllanthus amarus* Schumach. & Thonn. - PT96-151 (SINU)
- Phyllanthus debilis* Klein ex Willd. - PT96-655 (SINU)
- Phyllanthus urinaria* L. - PT96-640 (SINU)
- c *Ricinus communis* L. - PT96-367 (SINU)
- Sauropus androgynus* (L.) Merr. - PT96-84 (SINU)
- Suregada multiflora* (Juss.) Baill. - PT96-347 (SINU)
- Trigonostemon longifolius* Baill. - PT96-109 (SINU)

Fagaceae

- Castanopsis megacarpa* Gamble - F.S.P. Ng, FRI 5087 (KEP)

- Castanopsis inermis* (Lindl. ex Wall.) Benth. & Hook.f. - Mohd. Yasin bin Aboo, KEP 70926 (KEP)
- Lithocarpus bancanus* (Scheff.) Rehder - A. Zainudin AZ 5923 (UKMB)

Flacourtiaceae

- Casearia grewiaefolia* Vent. - I.H. Burkill S.F.N. 871 (SING)
- c *Flacourtia jangomas* (Lour.) Raeusch. - I.H. Burkill s.n., June 1915 (SING)
- Flacourtia rukam* Zoll. & Moritzi - A. Zainudin AZ 5782 (UKMB)
- Hemisclopiopsis trimera* (Boerl.) Slooten - PT96-443 (SINU)

Flagellariaceae

- Flagellaria indica* L. - PT96-271 (SINU)

Gesneriaceae

- Didymocarpus antirrhinoides* A. Weber - Strugnell KEP 70932 (KEP)
- Didymocarpus tumanicus* (Ridl.) B.L. Burtt - PT96-619 (SINU)

Gnetaceae

- c *Gnetum gnemon* L. - I.H. Burkill S.F.N. 964 (SING)
- Gnetum macrostachyum* Hook.f. - PT96-393 (SINU)

Goodeniaceae

- Scaevola taccada* (Gaertn.) Roxb. - PT96-44 (SINU)

Gramineae

- Acroceras tonkinense* (Balansa) C.E. Hubb. ex Bor - I.M.Turner PT72 (SINU)
- c *Bambusa vulgaris* Schrad. ex Wendl. 'vittata' - A. Zainudin AZ 5797 (UKMB)
- c *Bambusa vulgaris* Schrad. ex Wendl. var. *vulgaris* - A. Zainudin AZ 5969 (UKMB)

Bothriochloa bladhii (Retz.) S.T. Blake - PT96-675 (SINU)
Centotheca lappacea (L.) Desv. - PT96-490 (SINU)
Chrysopogon aciculatus (Retz.) Trin. - PT96-149 (SINU)
Cyrtococcum accrescens (Trin.) Stapf - I.H. Burkill S.F.N. 913 (SING)
Dactyloctenium aegyptium (L.) Willd. - PT96-263 (SINU)
Dendrocalamus hirtellus Ridl. - I.H. Burkill S.F.N. 909 (SING)
Digitaria setigera Roem. & Schult. - PT96-602 (SINU)
Eleusine indica (L.) Gaertn. - PT96-143 (SINU)
Eragrostis amabilis (L.) Wight & Arn. ex Hook. & Arn. - PT96-152 (SINU)
Eragrostis cumingii Steud. - I.M. Turner PT74 (SINU)
Imperata cylindrica (L.) P. Beauv. - PT96-150 (SINU)
Ischaemum muticum L. - PT96-144 (SINU)
Miscanthus floridulus (Labill.) Warb. ex K. Schum. - I.M. Turner & D.J. Metcalfe PT89 (SINU)
Mnesithea glandulosa (Trin.) de Koning & Sosef - PT96-674 (SINU)
Oplismenus compositus (L.) P. Beauv. - PT96-467 (SINU)
Panicum sarmentosum Roxb. - PT96-473 (SINU)
Paspalum conjugatum Berg. - I.M. Turner PT113 (SINU)
Pennisetum polystachion (L.) Schult. - A. Zainudin AZ 3246 (UKMB)
Pogonatherum crinitum (Thunb. ex Murr.) Kunth - PT96-118 (SINU)
Schizostachyum jaculans Holttum - A. Zainudin AZ5817 (UKMB)
Setaria geniculata (Lam.) P. Beauv. - PT96-223 (SINU)
Sporobolus indicus (L.) R.Br. var. *flaccidus* (Roem. & Schult.) Veldkamp - I.H. Burkill S.F.N. 925 (SING)

Thuarea involuta (G. Forst.) R.Br. ex Roem. & Schult. - PT96-212 (SINU)
Urochloa paspaloides Presl - A. Zainudin AZ 5952 (UKMB)
Zoysia matrella (L.) Merr. - PT96-90 (SINU)

Guttiferae

Calophyllum depressinervosum M.R. Hend. & Wyatt-Smith. - A. Zainudin AZ 5845 (UKMB)
Calophyllum ferrugineum Ridl. - PT96-289 (SINU)
Calophyllum flavoramulum M.R. Hend. & Wyatt-Smith. - A. Zainudin AZ 5843 (UKMB)
Calophyllum inophyllum L. - PT96-167 (SINU)
Calophyllum pulcherrimum Wall. ex Choisy - KEP 70936 (KEP)
Cratoxylon cochinchinense (Lour.) Blume - A. Zainudin AZ 5830 (UKMB)
Garcinia atroviridis Griff. ex T. Anderson - A. Zainudin AZ 5854 (UKMB)
Garcinia eugeniifolia Wall. ex T. Anderson - A. Zainudin AZ 5803 (UKMB)
Garcinia griffithii T. Anderson - Samsuri 63 (SINU)
Garcinia hombroniana Pierre - PT96-232 (SINU)
Garcinia nervosa Miq. - I.H. Burkill S.F.N. 887 (SING)
Garcinia nigrolineata Planch. ex T. Anderson - A. Zainudin AZ 5897 (UKMB)
Mesua aff. assamica (King & Prain) Kosterm. - F.S.P. Ng, FRI 5088 (KEP)

Heliconiaceae

Heliconia psittacorum L.f. - A. Zainudin AZ 5793 (UKMB)

Hernandiaceae

Hernandia nymphaeifolia (Presl) Kubitski

- J. Feilding 4007, 1892 (SING)

Hydrocharitaceae

Thalassia hemprichii (Ehrenb.) Asch. -
I.H. Burkill S.F.N. 900 (SING)

Hypoxidaceae

Molineria latifolia (Dryand.) Herb. -
PT96-134 (SINU)

Icacinaceae

Phytocrene bracteata Wall. - I.H. Burkill
S.F.N. 902 (SING)

Ixonanthaceae

Ixonanthes icosandra Jack - A. Zainudin
AZ 5868 (UKMB)
Ixonanthes reticulata Jack - A. Zainudin
AZ 3252 (UKMB)

Labiatae

c *Leonotis nepetifolia* (L.) R.Br. - PT96-18
(SINU)
Leucas zeylanica (L.) R.Br. - PT96-27
(SINU)
Ocimum basilicum L. - PT96-13 (SINU)
Ocimum tenuiflorum L. - PT96-37 (SINU)

Lauraceae

Actinodaphne ?montana Gamble - J.
Sinclair, S.F.N. 40290 (SING)
Beilschmiedia kunstleri Gamble - A.
Zainudin AZ 5915 (UKMB)
Cassytha filiformis L. - PT96-47 (SINU)
Cinnamomum cf. altissimum Kostermans
- I.M. Turner PT64 (SINU)
Neolitsea zeylanica (Nees) Merr. - PT96-
527 (SINU)

Lecythidaceae

Barringtonia asiatica (L.) Kurz - PT96-
183 (SINU)
Barringtonia macrostachya (Jack) Kurz -
I.H. Burkill S.F.N. 929 (SING)

Leeaceae

Leea indica (Burm.f.) Merr. - I.H. Burkill
S.F.N. 920 (SING)

Leguminosae

Abrus precatorius L. - PT96-177 (SINU)
Adenanthera malayana Kosterm. - F.S.P.
Ng, FRI 5072 (KEP)
Adenanthera pavonina L. - PT96-349
(SINU)
Archidendron ellipticum (Blume) I.C.
Nielsen - A. Zainudin AZ 5788
(UKMB)
Bauhinia integrifolia Roxb. ssp.
integrifolia - I.H. Burkill S.F.N. 951
(SING)
Callerya atropurpurea (Wall.) Schot - A.
Zainudin AZ 5842 (UKMB)
Canavalia cathartica Thouars - PT96-322
(SINU)
Canavalia rosea (Sw.) DC. - A. Zainudin
AZ 5825 (UKMB)
Crotalaria pallida Aiton - PT96-79
(SINU)
Crotalaria retusa L. - A. Zainudin AZ
5895 (UKMB)
Cynometra ramiflora L. - PT96-652
(SINU)
Dalbergia candenatensis (Dennst.) Prain
- J. Feilding s.n., Nov. 1892 (SING)
Dendrolobium umbellatum (L.) Benth. -
PT96-336 (SINU)
Derris trifoliata Lour. - PT96-387 (SINU)
Erythrina fusca Lour. - PT96-292 (SINU)
Erythrina variegata L. - PT96-209 (SINU)
Intsia bijuga (Colebr.) Kuntze - I.H.
Burkill, S.F.N. 891 (SING)
Koompassia malaccensis Maing. ex
Benth. - Mohd. Yasin bin Abou, KEP
70927 (KEP)
Lucaena leucocephala (Lam.) de Wit -
PT96-10 (SINU)
Mimosa pudica L. - PT96-397 (SINU)
Peltophorum pterocarpum (DC.) K.
Heyne - PT96-220 (SINU)
Pongamia pinnata (L.) Pierre - PT96-319
(SINU)

- c *Saraca indica* L. - A. Zainudin AZ 5806 (UKMB)
- Serianthes grandiflora* Benth. - PT96-273 (SINU)
- Senna alata* (L.) Roxb. - A. Zainudin AZ 5815 (UKMB)
- c *Senna fruticosa* (Mill.) Irwin & Barneby - PT96-3 (SINU)
- Senna tora* (L.) Roxb. - PT96-60 (SINU)
- Sindora echinocalyx* (Benth.) Prain - I.H. Burkill S.F.N. 896 (SING)
- Sophora tomentosa* L. - PT96-327 (SINU)
- c *Tamarindus indica* L. - PT96-362 (SINU)
- Tephrosia noctiflora* Bojer ex Baker - PT96-488 (SINU)
- Vigna marina* (Burm.) Merr. - I.H. Burkill S.F.N. 892 (SING)
- c *Vigna radiata* (L.) R. Wilczek - PT96-647 (SINU)

Loranthaceae

- Dendrophthoe pentandra* (L.) Miq. - PT96-633 (SINU)

Lythraceae

- c *Lawsonia inermis* L. - PT96-43 (SINU)
- Pemphis acidula* J.R. Forst. & G. Forst. - PT96-169 (SINU)
- Sonneratia alba* J.J.Sm. - PT96-210 (SINU)

Malvaceae

- c *Abelmoschus moschatus* Medik. - PT96-670 (SINU)
- Abutilon indicum* (L.) Sweet - A. Zainudin AZ 3239 (UKMB)
- c *Hibiscus rosa-sinensis* L. - PT96-38 (SINU)
- Hibiscus tiliaceus* L. - I.H. Burkill S.F.N. 893 (SINU)
- c *Malvaviscus penduliflorus* DC. - PT96-82 (SINU)
- Sida rhombifolia* L. - PT96-80 (SINU)
- Thespesia populnea* (L.) Sol. ex Corrêa - PT96-196 (SINU)
- Urena lobata* L. - PT96-621 (SINU)

Marantaceae

- Donax grandis* (Miq.) K. Schum. - PT96-122 (SINU)
- c *Maranta arundinacea* L. - A. Zainudin AZ 5808 (UKMB)

Melastomataceae

- Clidemia hirta* (L.) D. Don - PT96-69 (SINU)
- Melastoma malabathricum* L. - PT96-323 (SINU)
- Memecylon campanulatum* C.B. Clarke - A. Zainudin AZ 3226 (UKMB)
- Memecylon edule* Roxb. - PT96-601 (SINU)
- Memecylon lilacinum* Zoll. & Moritzi - I.H. Burkill S.F.N. 903 (SING)
- Pachycentria constricta* (Blume) Blume - PT96-500 (SINU)
- Pternandra echinata* Jack - I.H. Burkill s.n., June 1915 (SINU)

Meliaceae

- c *Lansium domesticum* Corrêa - PT96-2 (SINU)
- c *Melia azederach* L. - PT96-667 (SINU)
- Xylocarpus granatum* J. König - PT96-304 (SINU)
- Xylocarpus rumphii* (Kostel.) Mabb. - PT96-239 (SINU)

Menispermaceae

- Cocculus orbiculatus* (L.) DC. - PT96-245 (SINU)
- Fibraurea tinctoria* Lour. - PT96-414 (SINU)
- Hypserpa nitida* Miers - I.H. Burkill S.F.N. 880 (SING)
- Pericampylus glaucus* (Lam.) Merr. - PT96-494 (SINU)
- Stephania capitata* (Blume) Spreng. - PT96-280 (SINU)
- c *Tinospora crispa* (L.) Hook.f. & Thomson - PT96-420 (SINU)

Moraceae

- Artocarpus dadah* Miq. - A. Zainudin AZ 5925 (UKMB)
Artocarpus hispidus F.M. Jarrett - A. Zainudin AZ 5846 (UKMB)
Artocarpus lanceifolius Roxb. - J. Sinclair s.n., May 1954 (SING)
Artocarpus rigidus Blume - A. Zainudin AZ 5863 (UKMB)
Ficus consociata Blume var. *murtoni* King - I.M. Turner PT52 (SINU)
Ficus drupacea Thunb. - PT96-422 (SINU)
Ficus globosa Blume - PT96-646 (SINU)
Ficus grossularioides Burm.f. - I.M. Turner PT81 (SINU)
Ficus hispida L.f. - PT96-330 (SINU)
Ficus microcarpa L.f. - PT96-355 (SINU)
Ficus scortechinii King - I.H. Burkill S.F.N. 954 (SING)
Ficus subcordata Blume - PT96-348 (SINU)
Ficus superba (Miq.) Miq. - PT96-368 (SINU)
Ficus tinctoria G. Forst. ssp. *gibbosa* (Blume) Corner - PT96-292 (SINU)
Ficus vasculosa Wall. ex Miq. - A. Zainudin AZ 5962 (UKMB)
Parartocarpus ?bracteatus (King) Becc. - F.S.P. Ng FRI 5076 (KEP)
Streblus ilicifolius (Vidal) Corner - I.H. Burkill S.F.N. 904 (SING)

Musaceae

- Musa acuminata* Colla ssp. *malaccensis* (Ridl.) N.W. Simmonds - PT96-146 (SINU)

Myristicaceae

- Gymnacranthera forbesii* (King) Warb. - A. Zainudin AZ 5902 (UKMB)
Horsfieldia irya (Gaertn.) Warb. - A. Zainudin AZ 5896 (UKMB)
Horsfieldia polyspherula (Hook.f.) J. Sinclair - J. Sinclair, S.F.N. 40288 (SING)

- Horsfieldia tomentosa* Warb. - A. Zainudin AZ 5847 (UKMB)
Knema communis J. Sinclair - A. Zainudin AZ 5926 (UKMB)
Knema hookeriana (Wall. ex Hook.f. & Thomson) Warb. - A. Zainudin AZ 5807 (UKMB)
Knema malayana Warb. - PT96-244 (SINU)
Knema scortechinii (King) J. Sinclair - J. Sinclair, S.F.N. 40287 (SING)
c *Myristica fragrans* Houtt. - PT96-66 (SINU)

Myrsinaceae

- Aegiceras corniculatum* (L.) Blanco - PT96-181 (SINU)
Ardisia elliptica Thunb. - I.H. Burkill S.F.N. 852 (SING)
Ardisia oxyphylla Wall. ex DC. - A. Zainudin AZ 5857 (UKMB)
Embelia ribes Burm. - A. Zainudin AZ 5908 (UKMB)
Labisia pumila (Blume) Fern.-Vill. - PT96-467 (SINU)
Maesa ramentacea Wall. ex Roxb. - PT96-498 (SINU)
Rapanea porteriana Wall. ex A.DC. - I.M. Turner PT66 (SINU)

Myrtaceae

- c *Psidium guajava* L. - PT96-260 (SINU)
Rhodamnia cinerea Jack - A. Zainudin AZ 5867 (UKMB)
c *Syzygium aromaticum* (L.) Merr. & L.M. Perry - PT96-489 (SINU)
Syzygium grande (Wight) Walp. - PT96-250 (SINU)
c *Syzygium malaccense* (L.) Merr. & L.M. Perry - PT96-622 (SINU)
Syzygium pauper (Ridl.) I.M. Turner - I.H. Burkill S.F.N. 939 (SING)
Syzygium pendens (Duthie) I.M. Turner - D.J. Metcalfe & J.W.H. Yong PT90 (SINU)

Syzygium pycnanthum Merr. & L.M.

Perry - I.H. Burkill S.F.N. 940 (SINU)

- c *Syzygium samarangense* (Blume) Merr.
& L.M. Perry - PT96-117 (SINU)

Nyctaginaceae

Boerhavia diffusa L. - PT96-141 (SINU)

- c *Mirabilis jalapa* L. - PT96-28 (SINU)

Ochnaceae

Campylospermum serratum (Gaertn.)

Bittrich & M.C.E. Amaral - J. Feilding

s.n., 27 Oct. 1892 (SING)

Olacaceae

Strombosia javanica Blume - I.H. Burkill

S.F.N. 952 (SING)

Ximenia americana L. - I.H. Burkill S.F.N.

884 (SING)

Oleaceae

Olea brachiata (Lour.) Merr. - A. Zainudin

AZ 3257 (UKMB)

Opiliaceae

Cansjera rheedii J.F. Gmel. - J. Feilding

s.n., 27 Oct. 1892 (SING)

Champereia manillana (Blume) Merr. - A.

Zainudin AZ 5832 (UKMB)

Orchidaceae

Aerides odorata Lour. - PT96-502 (SINU)

Anoectochilus geniculatus Ridl. - PT96-

285 (SINU)

Bulbophyllum vaginatum (Lindl.) Rchb.f.

- PT96-228 (SINU)

Corymborkis veratrifolia (Reinw.) Blume

- H.T.W. Tan PT8 (SINU)

Cymbidium atropurpureum (Lindl.)

Rolfe - A. Zainudin AZ 5885 (UKMB)

Cymbidium finlaysonianum Lindl. -

PT96-188 (SINU)

Dendrobium crumenatum Sw. - PT96-333

(SINU)

Eulophia spectabilis (Dennst.) Suresh -

PT96-301 (SINU)

Oxalidaceae

- c *Averrhoa bilimbi* L. - PT96-57 (SINU)

- c *Averrhoa carambola* L. - PT96-23 (SINU)

Oxalis barrelieri L. - PT96-404 (SINU)

Palmae

Arenga westerhoutii Griff. - A. Zainudin

AZ 5802 (UKMB)

Calamus javensis Blume - A. Zainudin

AZ 5800 (UKMB)

Caryota mitis Lour. - PT96-335 (SINU)

Daemonorops lewisiana (Griff.) Mart. -

I.H. Burkill S.F.N. 866 (SING)

Daemonorops melanochaetes Blume - A.

Zainudin AZ 5920 (UKMB)

Korthalsia rigida Blume - J.W.H. Yong

PT16 (SINU)

Korthalsia rostrata Blume - A. Zainudin

AZ 5917 (UKMB)

Licuala ferruginea Becc. - PT96-635

(SINU)

Licuala spinosa Wurm - A. Zainudin

AZ 5872 (UKMB)

Nypa fruticans Wurm - PT96-274

(SINU)

Orania sylvicola (Griff.) H.E. Moore -

PT96-161 (SINU)

Plectocomia elongata Mart. ex Blume -

I.M. Turner PT63 (SINU)

Pandanaceae

Freycinetia sumatrana Hemsl. -

I.M. Turner PT39 (SINU)

- c *Pandanus amaryllifolius* Roxb. - PT96-

409 (SINU)

Pandanus dubius Spreng. - PT96-268

(SINU)

Pandanus lais Kurz - I.H. Burkill S.F.N.

957 (SING)

Pandanus c.f. *longicaudatus* Holttum &

H. St. John - J.W.H. Yong PT61 (SINU)

Pandanus odoratissimus L.f. - PT96-201

(SINU)

Passifloraceae

Adenia macrophylla (Blume) Koord. var.

macrophylla - I.M.Turner PT69
(SINU)

Passiflora foetida L. - PT96-11 (SINU)

Passiflora laurifolia L. - PT96-626 (SINU)

Pedaliaceae

Sesamum orientale L. - PT96-187 (SINU)

Phormiaceae

Dianella ensifolia (L.) DC. - PT96-408
(SINU)

Piperaceae

Piper caninum Blume - D.J.Metcalf
PT122 (SINU)

Piper pedicellosum Wall. - A. Zainudin
AZ 5789 (UKMB)

Piper protractum C. DC. - M.C.Lim PT29
(SINU)

c *Piper sarmentosum* Roxb. - PT96-24
(SINU)

Pittosporaceae

Pittosporum ferrugineum W.T. Aiton -
PT96-48 (SINU)

Podocarpaceae

Podocarpus polystachyus R.Br. ex Endl. -
PT96-193 (SINU)

Polgalaceae

Polygala paniculata L. - PT96-156
(SINU)

Xanthophyllum affine Korth. ex Miq. -
F.S.P. Ng, FRI 5085 (KEP)

Xanthophyllum amoenum Chodat - A.
Zainudin AZ 5914 (UKMB)

Xanthophyllum vitellinum (Blume) Dietr.
- A. Zainudin AZ 5918 (UKMB)

Portulacaceae

Portulaca oleracea L. - PT96-215 (SINU)

Punicaceae

c *Punica granatum* L. - PT96-46 (SINU)

Ranunculaceae

Clematis smilacifolia Wall. - I.H. Burkill
S.F.N. 857 (SING)

Rhamnaceae

Colubrina asiatica L. ex Brongn. - I.H.
Burkill S.F.N. 894 (SING)

Rhizophoraceae

Bruguiera cylindrica (L.) Blume - PT96-
198 (SINU)

Bruguiera gymnorhiza (L.) Lam. ex
Savigny - I.H. Burkill S.F.N. 953
(SING)

Bruguiera sexangula (Lour.) Poir. - PT96-
643 (SINU)

Ceriops decandra (Griff.) W. Theob. -
PT96-454 (SINU)

Ceriops tagal (Pers.) C.B. Rob. - PT96-
206 (SINU)

Rhizophora apiculata Blume - PT96-297
(SINU)

Rhizophora mucronata Lam. - PT96-211
(SINU)

Rhizophora stylosa Griff. - PT96-453
(SINU)

Rosaceae

Rubus moluccanus L. var. *angulosus*
Kalkman - I.H. Burkill S.F.N. 860
(SING)

Rubiaceae

Aidia densiflora (Wall.) Masam. - I.H.
Burkill S.F.N. 870 (SING)

Borreria laevicaulis (Miq.) Ridl. - A.
Zainudin AZ 5934 (UKMB)

Chassalia curviflora (Wall.) Thwaites -
J.W.H. Yong PT106 (SINU)

c *Gardenia augusta* (L.) Merr. - PT96-403
(SINU)

Guettarda speciosa L. - I.H. Burkill S.F.N.
855 (SING)

Hedyotis capitellata Wall. ex G. Don -
PT96-616 (SINU)

- Hedyotis herbacea* L. - PT96-632 (SINU)
Hydnophytum formicarum Jack - I.H. Burkill S.F.N. 869 (SING)
Ixora javanica (Blume) DC. - F.S.P. Ng, FRI 5045 (KEP)
Ixora lobbii King & Gamble - J. Feilding s.n., Oct. 1892 (SING)
Ixora pendula Jack - A. Zainudin AZ 3225 (UKMB)
Lasianthus cyanocarpus Jack - PT96-668 (SINU)
Morinda citrifolia L. - PT96-425 (SINU)
Morinda elliptica (Hook.f.) Ridl. - A. Zainudin AZ 3217 (UKMB)
Morinda umbellata L. - PT96-432 (SINU)
Ophiorrhiza discolor R.Br. - H.T.W. Tan PT32 (SINU)
Pavetta naucleiflora R. Br. ex G. Don - I.H. Burkill S.F.N. 868 (SING)
Psychotria brachybotrys Ridl. - A. Zainudin AZ 5828 (UKMB)
Psychotria sarmentosa Blume - PT96-493 (SINU)
Scyphiphora hydrophyllacea C.F. Gaertn. - PT96-192 (SINU)
Spermacoce articularis L.f. - A. Zainudin AZ 5960 (UKMB)
Timonius compressicaulis (Miq.) Boerl. - I.H. Burkill S.F.N. 854 (SING)
Uncaria cordata (Lour.) Merr. - I.H. Burkill S.F.N. 950 (SING)
Urophyllum sp. 2 - PT96-126 (SINU)
Urophyllum streptopodium Wall. ex. Hook.f. - I.H. Burkill S.F.N. 935 (SING)

Rutaceae

- c *Citrus aurantifolia* (Christm.) Swingle - PT96-495 (SINU)
 c *Citrus maxima* (L.) Merr. - PT96-83 (SINU)
Glycosmis mauritiana (Lam.) Tanaka - PT96-396 (SINU)
Maclurodendron porteri (Hook.f.) T.G. Hartley - A. Zainudin AZ 3261 (UKMB)
Murraya paniculata (L.) Jack - PT96-380 (SINU)

- Paramignya lobata* Burkill - PT96-345 (SINU)
Zanthoxylum nitidum (Roxb.) DC. - A. Zainudin AZ 3242 (UKMB)

Sapindaceae

- Allophylus cobbe* (L.) Raeusch. - I.H. Burkill S.F.N. 895 (SING)
Dodonaea viscosa Jacq. - J. Feilding 4062 (SING)
Guioa pleuropteris (Blume) Radlk. - PT96-604 (SINU)
Lepisanthes fruticosa (Roxb.) Leenh. - A. Zainudin AZ 3220 (UKMB)
Lepisanthes rubiginosa (Roxb.) Leenh. - F.S.P. Ng, FRI 5092 (KEP)
Lepisanthes tetraphylla (Vahl) Radlk. - PT96-128 (SINU)
Nephelium juglandifolium Blume - A. Zainudin AZ 5848 (UKMB)
Pometia pinnata J.R. Forst. & G. Forst. - Mohd. Yasin bin Abou, KEP 70929 (KEP)

Sapotaceae

- Manilkara kauki* (L.) Dubard - I.H. Burkill S.F.N. 942 (SING)
 c *Manilkara zapota* (L.) Royen - PT96-20 (SINU)
Palaquium rostratum (Miq.) Burck - F.S.P. Ng FRI 5077 (KEP)
Payena lucida A. DC. - F.S.P. Ng FRI 5082 (KEP)
Pouteria linggensis (Burck) Baehni - I.H. Burkill S.F.N. 876 (SING)
Pouteria maingayi (C.B. Clarke) Baehni - F.S.P. Ng, FRI 5079 (KEP)
Pouteria obovata (Burck) Baehni - PT96-450 (SINU)

Scrophulariaceae

- Scoparia dulcis* L. - PT96-605 (SINU)
Torenia ciliata Sm. - PT96-673 (SINU)
 c *Torenia fournieri* Linden ex Fourn. - A. Zainudin AZ 5967 (UKMB)

SIMAROUBACEAE

Brucea javanica (L.) Merr. - PT96-81 (SINU)

Smilacaceae

Smilax lanceifolia Roxb. - I.M.Turner PT92 (SINU)

Solanaceae

- c *Capsicum annuum* L. - PT96-31 (SINU)
Physalis minima L. - PT96-317 (SINU)
Solanum lasiocarpum Dunal. - PT96-226 (SINU)
 c *Solanum melongena* L. - PT96-5 (SINU)
Solanum torvum Sw. - PT96-509 (SINU)

Sterculiaceae

Commersonia bartramia (L.) Merr. - PT96-618 (SINU)
Helicteres hirsuta Lour. - A. Zainudin AZ 5827 (UKMB)
Heritiera littoralis Dryand. - PT96-174 (SINU)
Sterculia coccinea Jack - D.J.Metcalf & J.W.H.Yong PT59 (SINU)
Sterculia rubiginosa Vent. - A. Zainudin AZ 5905 (UKMB)

Stemonaceae

Stichoneuron caudatum Ridl. - A. Zainudin AZ 3248 (UKMB)

Taccaceae

Tacca integrifolia Ker Gawl. - I.M.Turner PT91 (SINU)
Tacca palmata Blume - PT96-662 (SINU)

Theaceae

Gordonia concentricatrix Burkill - A. Zainudin AZ 5924 (UKMB)
Gordonia multinervis King - A. Zainudin AZ 5851 (UKMB)
Ternstroemia bancana Miq. - A. Zainudin AZ 5855 (UKMB)

Thymelaeaceae

Aquilaria malaccensis Lam. - Mohd. Yasin bin Aboo, KEP 70924 (KEP)
Linostoma pauciflorum Griff. - PT96-648 (SINU)

Tiliaceae

Colona serratifolia Cav. - A. Zainudin AZ 5816 (UKMB)
Grewia laevigata Vahl - I.H. Burkill S.F.N. 879 (SING)
Microcos hirsuta (Korth.) Burret - I.H. Burkill S.F.N. 933 (SING)
Muntingia calabura L. - PT96-22 (SINU)

Turneraceae

Turnera ulmifolia L. - PT96-291 (SINU)

Ulmaceae

Gironniera hirta Ridl. - I.M.Turner PT65 (SINU)
Trema tomentosa (Roxb.) Hara - PT96-45 (SINU)

Urticaceae

Pipturus argenteus (G. Forst.) Wedd. - I.H. Burkill s.n., June 1915 (SING)

Verbenaceae

- Callicarpa longifolia* Lam. - Y.F.Chan & M.C.Loh PT44 (SINU)
 c *Clerodendrum calamitosum* L. - PT96-25 (SINU)
 c *Clerodendrum chinense* (Osbeck) Mabb. - PT96-71 (SINU)
Clerodendrum inerme (L.) Gaertn. - PT96-214 (SINU)
 c *Clerodendrum paniculatum* L. - PT96-34 (SINU)
 c *Clerodendrum serrulatum* (L.) Moon - A. Zainudin AZ 3235 (UKMB)
Gmelina asiatica L. - PT96-32 (SINU)
Gmelina elliptica Sm. - A. Zainudin AZ 5887 (UKMB)
Lantana camara L. - PT96-36 (SINU)

- Premna serratifolia* L. - PT96-17 (SINU)
Stachytarpheta indica (L.) Vahl - PT96-261 (SINU)
Vitex negundo L. - PT96-1 (SINU)
Vitex pinnata L. - PT96-350 (SINU)
Vitex trifolia L. - PT96-229 (SINU)

Violaceae

- Rinorea bengalensis* (Wall.) Kuntze - J.W.H.Yong PT17 (SINU)
Rinorea horneri (Korth.) Kuntze - J.W.H.Yong & D.J.Metcalf PT7 (SINU)
Rinorea sclerocarpa (Burgersd.) M. Jacobs - PT96-125 (SINU)

Viscaceae

- Viscum ovalifolium* Wall. ex DC. - PT96-241 (SINU)

Vitaceae

- Ampelocissus elegans* (Kurz) Gagnep. - A. Zainudin AZ 5927 (UKMB)
Cayratia japonica (Thunb.) Gagnep. - PT96-269 (SINU)
Cayratia trifolia (L.) Domin - F.S.P. Ng, FRI 5101 (SING)
Cissus hastata Miq. - PT96-363 (SINU)
Cissus repens Lam. - PT96-358 (SINU)

Zingiberaceae

- c *Alpinia galanga* (L.) Sw. - I.H. Burkill S.F.N. 861 (SING)
 ?*Amomum cephalotes* Ridl. - I.H. Burkill S.F.N. 882 (SING)
Amomum testaceum Ridl. - PT96-417 (SINU)
Amomum xanthophlebium Baker - PT96-507 (SINU)