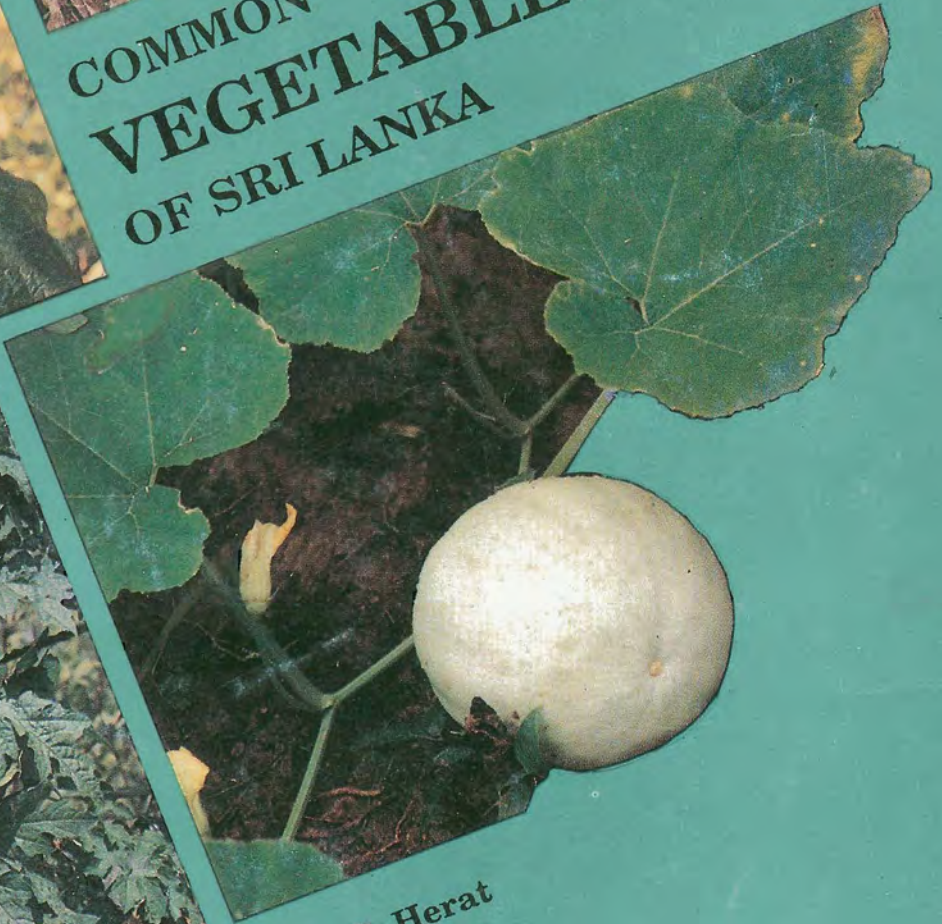


NA-180

Tissa



COMMON VEGETABLES OF SRI LANKA



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POLGOLLA

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Natural Resources,
Energy & Science Authority
of Sri Lanka

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by

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INTRODUCTION

In the case of vegetables, human activity has resulted in their movement within the countries of Asia from early times. Pursglove (1981) records such movements as far back as 4000 years ago. As a consequence in some instances it is difficult to distinguish between vegetables and naturalized vegetables of a country or region. Plants according to Harrington and Durrell (1957), are plants native to the country or region in contrast to naturalized plants which are thoroughly established but coming from foreign regions. For this reason, this booklet although titled Common Vegetables of Sri Lanka includes naturalized vegetables as well. However, recent introductions such as Carrots, Leeks Potatoes and Gherkins, Dubai wattakka etc. cultivated in the up country and low country are not listed.

A vegetable as defined in the Oxford Dictionary (1980) is a plant of which some part is used (raw or cooked) as food, especially as an accompaniment to meat. However, the staple diet of the majority of Sri Lankan people is boiled rice accompanied with curried or parboiled fresh vegetables, and meat or fish. In this respect, the book deals with plants that are used as accompaniment to the staple diet rice and thus would involve various parts of plants such as leaves, stems, flowers, fruits, nuts, roots etc. Eventhough in this treatment, vegetables are not categorized according to parts of the plant utilized but according to the group or taxon of the plant kingdom to which they belong, an index have been provided under the heading "List of plants catergarized according to the parts used" (pp.VIII-X) for easy reference.

It is observed that reliance could not be placed on the vernacular names (common names) as a means of identification of plants. The same plant may be known by different names in different parts of Sri Lanka or different plants are known by the same common name. An attempt has been made to give exact identification of the plants, accompanied by descriptions, illustrations (drawings/colour photographs), method of propagation and their distribution. Updated scientific botanical names are used for the individual plants, while vernacular names in Sinhala, Tamil and English (whenever known) are listed. The species are described under the plant families to which they belonged and the families are arranged in alphabetical order. The genera in each family also follow the alphabetical sequence so that the reader who is not conversant with the botanical arrangement of plant families and genera may be able to trace the species without much difficulty. Short descriptions of families are included. Descriptions of genera are not given as they are readily available in any standard book on Plant Taxonomy.

The main objective of this booklet is to provide information on vegetables (crops grown/naturally growing) in Sri Lanka. There is a new awareness of the importance of vegetables as a source of food, accompanied by the realization that many vegetables can supply nutritional materials which may not be readily available from other sources. The indices given in the book would help a laymen to find the scientific name/vernacular name or vice versa and to recognize the plant with the help of the drawings/colour photographs.

CONTENTS

	Page
ACKNOWLEDGEMENTS	I
INTRODUCTION	II
LISTS OF PLANTS CATERGORIZED ACCORDING TO THE PARTS USED	VIII
VEGETABLES DESCRIBED IN ALPHABETICAL ORDER OF FAMILY, GENUS AND SPECIES	
1.0 AIZOACEAE (CARPET -WEED FAMILY)	1
1.1 <i>Glinus oppositifolius</i> (L.) A. DC.	2
1.2 <i>Trianthema portulacatrum</i> L.	3
2.0 AMARANTHACEAE (COCKS-COMB FAMILY)	5
2.1 <i>Aewa lanata</i> (L.) Juss. ex Schult	6
2.2 <i>Alternanthera sessilis</i> (L.) DC.	8
2.3 <i>Amaranthus spinosus</i> L.	11
2.4 <i>Arnaranthus tricolor</i> L.	14
2.5 <i>Arnaranthus viridis</i> L.	16
2.6 <i>Celosia argentea</i> L.	19
3.0 AMARYLIDACEAE (AMARILIS FAMILY)	21
3.1 <i>Allium cepa</i> L. var. <i>aggregatum</i> G.Don	22
4.0 ANACARDIACEAE (MANGO FAMILY)	24
4.1 <i>Anacardium occidentale</i> L.	25
4.2 <i>Mangifera indica</i> L.	27
4.3 <i>Spondias dulcis</i> Soland. ex Parkinson	29
5.0 APIACEAE - UMBELIFERAE (CARROT FAMILY)	31
5.1 <i>Centella asiatica</i> (L.) Urb.	32
6.0 APONOGETANACEAE (APONOGETON FAMILY)	34
6.1 <i>Aponogeton jacobsenii</i> Bruggen	35

7.0	ARACEAE (ANTHURIUM FAMILY)	
	7.1 <i>Alocasia macrorhiza</i> (L.) Schott.	38
	7.2 <i>Colocasia esculenta</i> (L.) Schott.	40
	7.3 <i>Lasia spinosa</i> (L.) Thw.	42
	7.4 <i>Syngodium angustatum</i> Schott.	43
	7.5 <i>Xanthosoma sagittifolia</i> (L.) Schott.	45
8.0	ARALIACEAE (PANAX FAMILY)	47
	8.1 <i>Panax fruiticosum</i> L.	48
9.0	ASCLEPIADACEAE (MILKWEED FAMILY)	51
	9.1 <i>Gymnema lactiferum</i> (L.) R.Br. ex Schult. var. <i>lactiferum</i>	52
	9.2 <i>Wattakaka volubilis</i> (L.f.) Stapf.	53
10.0	BASELLACEAE (MADDEIRA-VINE FAMILY)	56
	10.1 <i>Basella alba</i> L.	57
11.0	BORAGINACEAE (HELIOTROPE FAMILY)	60
	11.1 <i>Cordia dichotoma</i> Forst.f.	61
12.0	CONVOLVULACEAE (MORNING-GLORY FAMILY)	63
	12.1 <i>Argyreia populifolia</i> Choisy	64
	12.2 <i>Ipomoea aquatica</i> Forsk	66
	12.3 <i>Ipomoea batatas</i> (L.) Lam.	69
13.0	CUCURBITACEAE (GOURD FAMILY)	71
	13.1 <i>Benincasa hispida</i> (Thumb.) Cogn.	72
	13.2 <i>Coccinea grandis</i> (L.) J.O. Voigt	74
	13.3 <i>Cucumis melo</i> var. <i>egrestis</i> Naud.	76
	13.4 <i>Cucumis sativus</i> L.	79
	13.5 <i>Cucurbita maxima</i> Duchsene	81
	13.6 <i>Lagenaria siceraria</i> (Molina) Standl.	84
	13.7 <i>Luffa acutangula</i> Roxb.	86
	13.8 <i>Luffa cylindrica</i> (L.) M.J. Roem	88
	13.9 <i>Momordica charantia</i> L.	90

13.10	<i>Momordica dioica</i> Roxb. ex Willd.	93
13.11	<i>Tricosanthes cucumerina</i> L.	95
14.0	DIOSCOREACEAE (YAM FAMILY)	97
14.1	<i>Dioscorea alata</i> L.	98
14.2	<i>Dioscorea bulbifera</i> L.	100
14.3	<i>Dioscorea esculenta</i> (Lour.) Burk.	102
14.4	<i>Dioscorea pentaphylla</i> L.	103
15.0	EUPHORBIACEAE (POINSETTIA FAMILY)	105
15.1	<i>Manihot esculenta</i> Carntz.	106
16.0	FABACEAE-LEGUMINOSAE (BEAN OR LEGUME FAMILY)	108
16.1	<i>Cassia auriculata</i> L.	110
16.2	<i>Cassia tora</i> L.	112
16.3	<i>Canavalia ensiformis</i> (L.) DC	114
16.4	<i>Cyamopsis tetragonoloba</i> (L.) Taub.	116
16.5	<i>Phaseolus lunatus</i> L.	117
16.6	<i>Phaseolus vulgaris</i> L.	119
16.7	<i>Psophocarpus tetragonolobus</i> (L.) DC.	121
16.8	<i>Sesbania grandiflora</i> Pers.	124
16.9	<i>Vigna mungo</i> L.	127
16.10	<i>Vigna unguiculata</i> subsp. <i>sesquipedala</i> (L.) Verdc.	129
17.0	LAMIACEAE - LABIATAE (COLEUS FAMILY/MINT FAMILY)	132
17.1	<i>Collius rotundifolius</i> (Poir.) A.Ch. & Perr	133
17.2	<i>Leucas zeylanica</i> (L.) R.Br.	135
18.0	LIMNOCHARITACEAE	137
18.1	<i>Limnocharis flava</i> (L.) Buch.	138
19.0	MALVACEAE (HIBISCUS FAMILY)	140
19.1	<i>Hibiscus esculentus</i> L.	141
20.0	MORACEAE (FIG FAMILY)	144
20.1	<i>Artocarpus heterophyllus</i> Lam.	145
20.2	<i>Artocarpus incisus</i> L.f	147

21.0	MORINGACEAE (HORSE-RADISH FAMILY)	
21.1	<i>Moringa oleifera</i> Lam.	151
22.0	MUSACEAE	153
22.1	<i>Musa acuminata</i> Colla	154
23.0	NYCTAGINACEAE (BOUGAINVILLEA FAMILY)	156
23.1	<i>Boerhavia diffusa</i> L.	157
23.2	<i>Pisonia grandis</i> R.Br.	159
24.0	NYMPHAEACEAE (WATER LILY FAMILY)	161
24.1	<i>Nelumbo nucifera</i> Gaertn.	162
24.2	<i>Nymphaea lotus</i> L.	164
24.3	<i>Nymphaea stellata</i> Willd.	166
25.0	OXALIDACEAE (WOOD-SORREL FAMILY)	168
25.1	<i>Averrhoa bilimbi</i> L.	169
25.2	<i>Averrhoa carambola</i> L.	171
26.0	PORTULACACEAE (PURSELANE FAMILY)	173
26.1	<i>Portulaca oleraceae</i> L.	174
26.2	<i>Talinum triangulare</i> (Jacq.) Willd.	176
27.0	SAPINDACEAE (SOAP FAMILY)	179
27.1	<i>Cardiospermum halicacabum</i> L.	180
28.0	SOLANACEAE (TOMATO FAMILY);	183
28.1	<i>Solanunz macrocarpon</i> L.	184
28.2	<i>Solanum melongena</i> L.	186
28.3	<i>Solanum violaceum</i> Orteg.	188

29.0	VERBENACEAE (VERBENA FAMILY)	191
29.1	<i>Premna procumbens</i> Moon.	192
	SELECTED BIBLIOGRAPHY	194
	INDEX OF FAMILY NAMES	195
	INDEX OF SCIENTIFIC NAMES	196
	INDEX OF SINHALA NAMES	198
	INDEX OF TAMIL NAMES	201
	INDEX OF ENGLISH NAMES	205

LIST OF PLANTS CATERGORIZED ACCORDING TO THE PARTS USED

LEAVES

	Page
<i>Aerva lanata</i> (L.) Juss. ex Schult	6
<i>Allium cepa</i> L. var. <i>aggregatum</i> G.Don	22
<i>Alternanthera sessilis</i> (L.) DC.	8
<i>Amaranthus spinosus</i> L.	11
<i>Amaranthus tricolor</i> L.	14
<i>Amaranthus viridis</i> L.	16
<i>Argyreia populifolia</i> Choisy	64
<i>Basella alba</i> L.	57
<i>Boerhavia diffusa</i> L.	157
<i>Cardiospermum halicacabum</i> L.	180
<i>Cassia auriculata</i> L.	110
<i>Cassia tora</i> L.	112
<i>Celosia argentea</i> L.	19
<i>Centella asiatica</i> (L.) Urb.	32
<i>Coccinea grandis</i> (L.) J.O. Voigt	74
<i>Cordia dichotoma</i> Forst.f.	61
<i>Cucurbita maxima</i> Duchesne	81
<i>Glinus oppositifolius</i> (L.) A. DC.	2
<i>Gymnema lactiferum</i> (L.) R.Br. ex Schult. var. <i>lactiferum</i>	52
<i>Ipomoea aquatica</i> Forsk.	66
<i>Lasia spinosa</i> (L.) Thw.	42
<i>Leucas zeylanica</i> (L.) R.Br.	135
<i>Limnocharis flava</i> (L.) Buch.	138
<i>Moringa oleifera</i> Lam.	151
<i>Nymphaea stellata</i> Willd.	166
<i>Panax fruiticosum</i> L.	48
<i>Pisonia grandis</i> R.Br.	159
<i>Portulaca oleraceae</i> L.	174
<i>Premna procumbens</i> Moon.	192
<i>Syngodium angustatum</i> Schott.	43
<i>Talinunz triangulare</i> (Jacq.) Willd.	176
<i>Trianthera portulacastrum</i> L.	3
<i>Wnttakaka volubilis</i> (L.f.) Stagf.	53

2. STEMS

<i>Alocasia macrorhiza</i> (L.) Schott.	38
<i>Aponogeton jacobsenii</i> Bruggen	35
<i>Colocasia esculenta</i> (L.) Schott.	40
<i>Lasia spinosa</i> (L.) Thw.	42
<i>Xanthosoma sagittifolia</i> (L.) Schott.	45

3. FLOWERS

<i>Allium cepa</i> L. var. <i>aggregatum</i> G. Don	22
<i>Aponogeton jacobsenii</i> Bruggen	35
<i>Musa acuminata</i> Colla	154

4. FRUITS

<i>Anacardium occidentale</i> L.	25
<i>Argyrea populifolia</i> Choisy	64
<i>Artocarpus heterophyllus</i> Lam.	145
<i>Artocarpus incisus</i> L.f.	147
<i>Averrhoa carambola</i> L.	171
<i>Averrhoa bilimbi</i> L.	169
<i>Benincasa hispida</i> (Thunb.) Cogn.	72
<i>Canavalia ensiformis</i> (L.) DC	114
<i>Cucumis sativus</i> L.	79
<i>Cucumis melo</i> var. <i>egrestis</i> Naud.	76
<i>Cucurbita maxima</i> Duchense	81
<i>Cyamopsis tetragonoloba</i> (L.) Taub.	116
<i>Hibiscus esculentus</i> L.	141
<i>Lagenaria siceraria</i> (Molina) Standl.	84
<i>Luffa cylindrica</i> (L.) M.J. Roem	88
<i>Luffa acutangula</i> Roxb.	86
<i>Mangifera indica</i> L.	27
<i>Momordica charantia</i> L.	90
<i>Momordica dioica</i> Roxb. ex Willd.	93
<i>Moringa oleifera</i> Lam.	151
<i>Musa acuminata</i> Colla	154
<i>Phaseolus lunatus</i> L.	117
<i>Phaseolus vulgaris</i> L.	119
<i>Psophocarpus tetragonolobus</i> (L.) DC.	121
<i>Sesbania grandiflora</i> Pers.	124

<i>Solanum violaceum</i> Ortega.	188
<i>Solanum macrocarpon</i> L.	184
<i>Solanum melongena</i> L.	186
<i>S'ondias dulcis</i> Soland ex Parkinson	29
<i>Tricosanthes cucumerina</i> L.	95
<i>Vigna mungo</i> L.	127
<i>Vigna unguiculata</i> subsp. <i>sesquipedalis</i> (L.) Verdc.	129

5. NUTS

<i>Anacardium occidentale</i> L.	25
----------------------------------	----

6. SEEDS

<i>Nelumbo nucifera</i> Gaertn.	162
<i>Nymphaea lotus</i> L.	164
<i>Nymphaea stellata</i> Willd.	166

7. ROOTS

<i>Dioscorea alata</i> L.	98
<i>Dioscorea bulbifera</i> L.	100
<i>Dioscorea esculenta</i> (Lour.) Burk.	102
<i>Dioscorea pentaphylla</i> L.	103
<i>Ipomoea batatas</i> (L.) Lam.	69
<i>Manihot esculenta</i> Carntz.	106
<i>Collius rotundifolius</i> (Poir.) A/Chev. & Perr	133

TABLE OF FIGURE;

Figure		Page
Fig. 1.1	<i>Trianthema portulacastrum</i> L.	4
Fig. 2.1	<i>Aerva lanata</i> (L.) Juss. ex Schult.	7
Fig. 2.2	<i>Alternanthera sessilis</i> (L.) DC.	9
Fig. 2.3	<i>Amaranthus spinosus</i> L.	12
Fig. 2.4	<i>Amaranthus viridis</i> L.	17
Fig. 2.5	<i>Celosia argentea</i> L.	20
Fig. 3.1	<i>Allium cepa</i> var. <i>aggregatum</i> G. Don.	23
Fig. 4.1	<i>Mangifera indica</i> L.	28
Fig. 4.2	<i>Spondias dulcis</i> Soland. ex Parkinson.	30
Fig. 5.1	<i>Centella asiatica</i> (L.) Urb.	33
Fig. 7.1	<i>Syngodium angustatum</i> Schott.	44
Fig. 7.2	<i>Xanthosoma sagittifolia</i> (L.) Schott	46
Fig. 8.1	<i>Panax fruiticosum</i> L.	49
Fig. 9.1	<i>Wattakaka volubilis</i> (L.f.) Stapf.	54
Fig. 10.1	<i>Basella alba</i> L.	58
Fig. 12.1	<i>Ipomoea aquatica</i> Forsk.	67
Fig. 12.2	<i>Ipomoea batatas</i> (L.) Lam.	70
Fig. 13.1	<i>Coccinea grandis</i> (L.) J.O.Voigt	75
Fig. 13.2	<i>Cucumis melo</i> var. <i>egrestis</i> Naud.	77
Fig. 13.3	<i>Cucurbita maxima</i> Duchesne	82
Fig. 13.4	<i>Lagenaria siceraria</i> (Molina) Standl.	85
Fig. 13.5	<i>Momordica charantia</i> L.	91
Fig. 14.1	<i>Dioscorea alata</i> L.	99
Fig. 16.1	<i>Cassia auriculata</i> L.	111
Fig. 16.2	<i>Canavalia ensiformis</i> (L.) DC.	115
Fig. 16.3	<i>Psophocarpus tetragonolobus</i> (L.) DC.	122
Fig. 16.4	<i>Sesbania grandiflora</i> Pers.	125
Fig. 16.5	<i>Vigna unguiculata</i> subsp. <i>sesquipedala</i> (L.) Verdc	130
Fig. 18.1	<i>Limnocharis flava</i> (L.) Buch.	139
Fig. 19.1	<i>Hibiscus esculentus</i> L.	142
Fig. 20.1	<i>Artocarpus incisos</i> L.f	148
Fig. 26.1	<i>Talinum triangulare</i> (Jacq.) Willd.	177
Fig. 27.1	<i>Cardiospermum halicacabum</i> L.	181
Fig. 28.1	<i>Solanum melongena</i> L.	187
Fig. 28.2	<i>Solanum violaceum</i> Ortega.	189
Fig. 29.1	<i>Premna procumbens</i> Moon	193

LIST OF PLATES

Plate		Page
Plate 2.1	<i>Alternanthera sessilis</i> (L.) DC.	10
Plate 2.2	<i>Amaranthus spinosus</i> L.	13
Plate 2.3	<i>Amaranthus tricolor</i> L.	15
Plate 2.4	<i>Amaranthus viridis</i> L.	18
Plate 4.1	<i>Anacardium occidentale</i> L.	26
Plate 6.1	<i>Aponogeton jacobsenii</i>	36
Plate 7.1	<i>Alocasia macrorrhiza</i> (L.) Schott	39
Plate 7.2	<i>Colocasia esculenta</i> (L.) Schott	41
Plate 8.1	<i>Panax fruticosum</i> L.	50
Plate 9.1	<i>Wattakka volubilis</i> (L.f.) Stapf.	55
Plate 10.1	<i>Basella alba</i> L.	59
Plate 12.1	<i>Argyreia populifolia</i> Choisy	65
Plate 11.1	<i>Cordia dichotoma</i> Forst. f.	62
Plate 12.2	<i>Ipomoea aquatica</i> Forsk.	68
Plate 13.1	<i>Benincasa hispida</i> . (Thunb.) Cogn.	73
Plate 13.2	<i>Cucumis melo</i> var. <i>ergrestris</i>	78
Plate 13.3	<i>Cucumis sativus</i> L.	80
Plate 13.4	<i>Cucurbita maxima</i> Duchene	83
Plate 13.5	<i>Luffa acutangula</i> (L.) Roxb.	87
Plate 13.0	<i>Luffa cylindrica</i> (L.) M.J. Roem	89
Plate 13.7	<i>Momordica charantia</i> L.	92
Plate 13.8	<i>Momordica dioica</i> Roxb. ex Willd.	94
Plate 13.11	<i>Tricosanthes cucumerina</i> L.	96
Plate 14.1	<i>Dioscorea bulbifera</i> L.	101
Plate 14.2	<i>Dioscorea pentaphylla</i> L.	104
Plate 16.1	<i>Cassia tora</i> L.	113
Plate 16.6	<i>Vigna mungo</i> L.	128
Plate 16.5	<i>Sesbania grandiflora</i> Pers.	126
Plate 16.7	<i>Vigna unguiculata</i> subsp. <i>sesquipedalis</i> .	131
Plate 16.3	<i>Phaseolus vulgaris</i> L.	120
Plate 16.4	<i>Psophocarpus tetragonolobus</i> (L.) DC.	123
Plate 17.1	<i>Collius rotundifolius</i> (Poir.) A.Chev. & Perr.	134
Plate 15.1	<i>Manihot esculenta</i> Crantz	107
Plate 16.2	<i>Phaseolus lunatus</i> L.	118
Plate 17.2	<i>Leucas zeylanica</i> (L.) R. Br.	136
Plate 19.1	<i>Hibiscus esculentus</i> L.	143
Plate 20.1	<i>Artocarpus heterophyllus</i> Lam.	146
Plate 20.2	<i>Artocarpus incisus</i> L.f	149
Plate 21.1	<i>Moringa oleifera</i> Lam.	152
Plate 22.1	<i>Musa acuminata</i> Colla.	155
Plate 23.1	<i>Boerhavia diffusa</i> L.	158

Plate 23.2	<i>Pisonia grandis</i> R. Br.	160
Plate 24.1	<i>Nelumbo nucifera</i> Gaertn.	163
Plate 24.2	<i>Nymphaea lotus</i> L.	165
Plate 24.3	<i>Nymphaea stellata</i> Willd.	167
Plate 25.1	<i>Averrhoa bilimbi</i> L.	170
Plate 25.2	<i>Averrhoa carambola</i> L.	172
Plate 26.1	<i>Portulaca oleraceae</i> L.	175
Plate 26.2	<i>Talinum triangulare</i>	178
Plate 27.1	<i>Cardiospermum halicacabum</i> L.	182
Plate 28.1	<i>Solnnum macrocarpon</i> L.	185
Plate 28.3	<i>Solanum violaceum</i> Ortega.	190

VEGETABLES DESCRIBED IN ALPHABETICAL ORDER OF FAMILY, GENUS AND SPECIES

1.0 AIZOACEAE (CARPET-WEED FAMILY)

Aizoaceae is a dicotyledonous family, which includes about 130 genera and 1200 species. The members of the family include annuals, biennials and perennials. Many are succulent plants distributed in South and Tropical Africa, Asia, Australia California and S. America, inhabiting sandy and rocky deserts or shores or cooler damper regions. Some are popular ornamentals while a few are food plants. This family is closely allied to families such as the Phytolaccaceae (Poke-weed family), Caryophyllaceae (Carnation family) and the Cactaceae (Cactus family).

Features of the family:

General : Most are erect or prostrate herbs while others are small shrubs.

Leaves : Opposite, alternate or whorled, simple, entire, ovate, narrow or filamentous, more or less succulent.

Flower : In clusters or single, terminal or axillary, small, regular, without petals; sepals four to five, more or less united, persistent or not; stamens few, alternating with sepals, ovary superior to inferior, with 2 to 20 cells or united carpels, each with one style and one to many ovules.

Fruit : Capsule, nutlike or fleshy; seeds numerous.

Species included:

1.1 *Glinus oppositifolius* (L.) A.DC.

1.2 *Trianthema portulacastrum* L.

1.1 *Glinus oppositifolius* (L.) A. DC.

Common name(s):

Been-pala, Heeni-pala, Hinipala (S); Kachantarai (T).

Distribution:

Occurs in Tropical Africa, India, Burma, Indo-China, Australia and Philippine islands. In Sri Lanka it grows as a common weed in the low country, specially in the dry regions.

Description of plant

General : Prostrate or ascending, slender, dichotomously branched, annual herb; flowering and fruiting throughout the year.

Leaves : Simple, in whorls of four to five, unequal, obovate to linear-lanceolate or even spatulate, 5 - 28 mm long, 2 - 10 mm broad.

Flower : In axillary fascicles of 1 - 5 to a node; white, regular, bisexual.

Fruit : Ellipsoidal, loculicidal capsule, 3.5 mm long; seeds dark brown tubercular 0.4 mm long.

Uses

Stem and leaves are eaten as a vegetable but is very bitter if not properly cooked. Reported to be rich in iron and calcium. The juice of the plant is applied to cure itch and other skin diseases. In some parts of the world the leaves are used for headaches and stomach problems.

Propagatation: By seeds and cuttings.

1.2 *Trianthema portulacastrum* L. (Fig. 1.1)

Common name(s):

Heen-sarana, Hin-sarana(S); Sharunnai, Shavalai(T); Horse purslane (E).

Distribution:

Throughout India and in most tropical countries. In Sri Lanka it is found growing in the low country on the coast and in the dry zone near tanks.

'Description of plant

General : Prostrate, branched, succulent herb with angular stems; flowering throughout the year.

Leaves : Simple, opposite, succulent, broadly ovate or rounded, 1.5 - 2.5 cm long, 1-3 cm broad.

Flower : In axils, solitary, sessile, small, light pink, bisexual, apetalous.

Fruit : Capsule, conical, truncate, like the cusp of a molar tooth, ca. 8 mm long, 4 cm broad.

Uses :

Eaten as a pot herb. Reported to be a good source of calcium and phosphorous. Used as a cathartic, abortifacient and an emmenagogue.

Propagation: By seeds and cuttings.

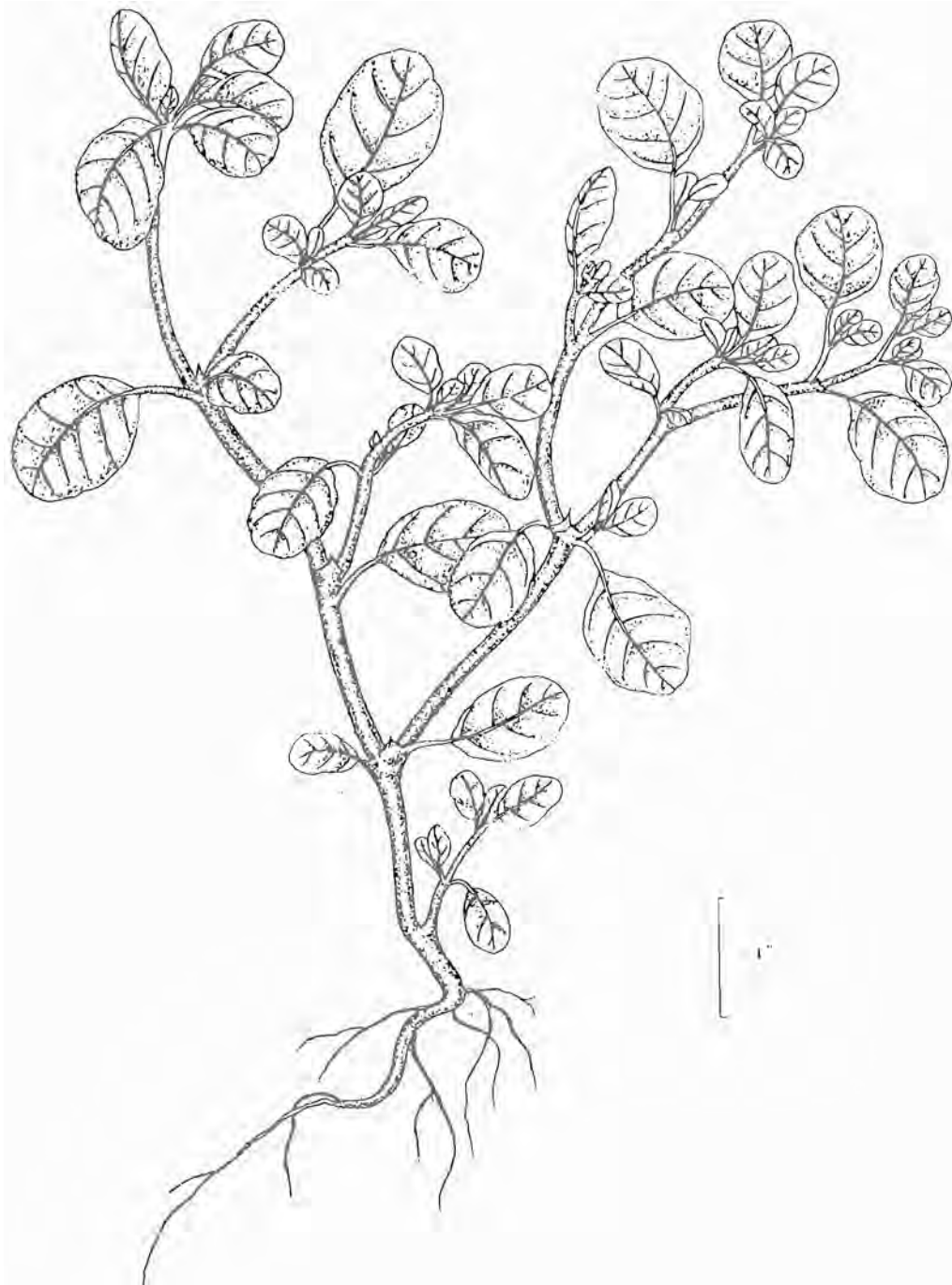


Fig. 1.1 *Trianthema portulacastrum* L. Plant with leaves.

2.0 AMARANTHACEAE (COCKS-COMB FAMILY)

A dicotyledonous family including 65 genera and about 850 species. The members of the family include annuals and perennials. They are found distributed in the Tropics and the Temperate regions of the world inhabiting a wide range of habitats. Most members of the family are weeds but a few are ornamentals and food plants. This family is closely related to families such as Chenopodiaceae (Goosefoot family) and the Phytolaccaceae (Pokeweed family).

Features of the family:

- General** : Mostly herbs, few climbing, very few shrubs and trees.
- Leaves** : Opposite or alternate, simple, mostly entire, succulent or not.
- Flower** : In axillary clusters or spikes, racemes or heads; radially symmetrical, most perfect, small, without petals; sepals one to five, free or nearly so, stiff, membranaceous; stamens one to five, opposite to the sepals, filaments joined in a short tube or not; ovary superior, one - celled; style short or long; stigma rounded or two to three-parted; ovule basal, one, rarely several per locule.
- Fruit** : Urticle, rarely a berry or capsule.

Species included:

- 2.1 *Aerva lanata* (L.) Juss.ex Schult.
- 2.2 *Alternanthera sessilis* (L.) DC.
- 2.3 *Amaranthus spinosus* L.
- 2.4 *Amaranthus tricolor* L.
- 2.5 *Amaranthus viridis* L.
- 2.6 *Celosia argentea* L.

2.1 *Aewa lanata* (L.) Juss. ex Schult.'(Fig. 2.1)

Common name(s) :

Pol-kudu-pala, Polpala(S); Sirupulai, Thengagoo-kirai (T).

Distribution:

Widespread in the drier parts of the Tropics and the Sub-Tropics of the Old World. In Sri Lanka it is a common weed in the mid and low country, specially in the dry zone.

Description of plant

General : Perennial herb, erect or prostrate, 0.1 - 2 m long; flowering throughout the year.

Leaves : Simple, alternate, oval or spatulate - oval, 1 - 4 cm long, 1 - 2.5 cm broad.

Flowe- : Growing in axillary heads or spikes; very small, regular, bisexual, greenish white in color.

Fruit : Indehiscent, flattish, ovate, with a membranous pericarp, one-seeded; seed black in color.

Uses :

Young leaves are eaten as mallun. Often the leaves boiled and the extract taken as a kind of medicinal tea. This decoction is a reputed diuretic. The plant is also used to treat coughs and used as a vermifuge for children. The roots are used in the treatment of headache.

Propagatation: By seed.



Fig. 2.1 *Aerva lanata* (L.) Juss. ex Schult. Plant with leaves and inflorescences.

2.2 *Alternanthera sessilis* (L.) DC. (Fig. 2.2, Plate 2.1)

Common name(s):

Mukunu-wenna (S); Ponnankani (T); *Alternanthera* (E).

Distribution:

Widespread in the Tropics of both Old and New Worlds. In Sri Lanka it is a common species in many kinds of habitats, chiefly in the lowlands and ascending up to elevations of about 1180 m. Often found as a weed in gardens.

Description of plant

General : A perennial herb grown usually as an annual, commonly prostrate with stem rooting at the nodes, up to 30 cm tall; flowering and fruiting throughout the year.

Leaves : Variable in size and shape, linear-lanceolate to oblong oval or obovate-spathulate, 1 - 5 cm long, 0.12 - 2 cm broad.

Flower : In inflorescences at the nodes; small, white.

Fruit : Obcordate or cordate orbicular.

Uses :

Eaten as a vegetable and also used as a pot herb. The vegetative and reproductive organs are reported to contain traces of Hydrocyanic acid. It is used as a cholagogue, laxative and treating many diseases of the liver. The juice of the plant is given with cow-ghee for the treatment of snake-bite.

Propagatation: By cuttings and seeds.



Fig. 2.2 *Altemanthera sessilis* (L.) DC. Plant with leaves and axillary inflorescences.



Plate 2.1 *Alternanthera sessilis*. Plants growing under natural conditions.

2.3 *Amaranthus spinosus* L. (Fig. 2.3, Plate 2.2)

Common name(s):

Katu-tampala, Katu-kira (S); Mullukkirai, Mudkirai (T); Prickly amaranth (E).

Distribution:

Probably native to America. Cosmopolitan in the warmer regions of the world. In Sri Lanka the plant is extremely common on waste and disturbed ground. It is considered as a garden weed.

Description of plant

Genera' : Annual herb, erect, much branched, growing up to 1.5 m, with a pair of very sharp divaricate spines in the leaf axils or at the base of the bud or branches; flowering from September to December.

Leaves : Simple, alternate, ovate-lanceolate, with a spine at the apex, 3 - 8 cm long, 1 - 4 cm broad.

Flower : In dense clusters both axillary and terminal spikes; very small, regular, pale green, unisexual, monoecious.

Fruit Capsule, ovoid-lanceolate, enclosed in persistent perianth, ca. 1.5 mm long; seeds orbicular, black in color.

Uses :

Leaves eaten as a vegetable. Medicinally it is used as a sudorific and recommended for eruptive fevers.

Propagatation: By seed.



Fig. 2.3 *Amaranthus spinosus* L. Plant with spines, leaves and inflorescence.



Plate 2.2 *Amaranthus spinosus* L.

2.4 *Amaranthus tricolor* L. (Plate 2.3)

Common name(s) :

Sudu-tampala, Tampala (S); Arikkirai, Chirukirai, Mulai-kirai(T);Amaranth Joseph's coat,Love-lies bleeding, Red cocks- comb (E).

Distribution :

Native area blurred by cultivation. Distributed from Pakistan to China and Japan, Indonesia, New Guinea, New Herbrides and many Pacific Islands. Also found in Africa and West Indies. In Sri Lanka often cultivated but also considered as a weed, specially in the low country.

Description of plant

General : Annual, stout erect herb, growing up to 1.25 m; flowering from April to July and from October to December.

Leaves : Alternate, simple, broad, rhomboid- oval or lanceolate or deltoid-ovate, 5 - 15 cm long, 2.5 - 10 cm broad.

Flower : Growing on axillary clusters and in branched terminal spikes; flower small, pale green, uinsexual, monoecious.

Fruit : A capsule, ovoid, enclosed in a persistent perianth ca. 2.5 mm long.

Uses :

Eaten as a vegetable similar to spinach and is also used as an astricgent. Externally it is used as a gargle in ulcerated conditions of the mouth and the throat.

Propagatation : By seed.



Plate 2.3 *Amaranthus tricolor* L. Top of the plant with inflorescence.

2.5 *Amaranthus viridis* L. (Fig. 2.4, Plate 2.4)

Common name(s) :

Kura-tampala (S); Araikkirai (T); Slender amaranth (E)

Distribution :

Cosmopolitan in the Tropical and Sub-tropical regions of the world. In Sri Lanka similar to *A. spinosus* L., it grows as a weed on waste and disturbed areas

Description of plant

- General :** Annual, erect herb, growing up to 14 - 50 cm. Flowering from October to December.
- Leaves :** Alternate, simple, ovate or truncate, 3 - 6.3 cm. long. 1.5 - 4.5 cm broad.
- Flower :** In clusters on terminal and axillary paniculate spikes; flower small, unisexual, monoecious.
- Fruit :** Capsule, sub-globose, enclosed in a persistent, membranous perianth, ca. 1.5 mm long.

Uses :

The leaves of this species are eaten as a kind of spinach. It is also used as a medicinal plant. The plant is reputed to contain an alkaloid. A good source of calcium, iron, Vitamins B and C.

Propagatation : By seed.



Fig. 2.4 *Amaranthus viridis* L. Branch with leaves and inflorescence.



Plate 2.4 *Amaranthus viridis* L. Top of the plant with inflorescence.

2.6 *Celosia argentea* L. (Fig. 2.5j)

Common name(s):

Kiri-handa (Sj; Cocks comb (E)

Distribution:

A pantropical weed. In Sri Lanka it is found abundant as a weed in cultivated fields and waste ground.

Description of plant

General : Annual herb, erect up to 2 m tall.

Leaves . Alternate, simple, lanceolate-oblong to narrowly linear? 2 - 15 cm long, 1 - 3 cm broad.

Flower : Growing on dense spikes; regular, bisexual.

Fruit : Capsule, ovoid to almost globose; seed lenticular, black, ca. 1.5 mm in diameter.

Uses : Leaves eaten as a vegetable.

Propagatation: By seeds.



Fig. 2.5 *Celosia argentea* L.

3.0 AMARYLLIDACEAE (AMARYLLIS FAMILY)

A Monocotyledonous family including 85 genera and about 1100 species. The members of the family include xerophytes which are often bulbous, leafing only during spring or the rainy seasons and are mostly large to small perennials. The bulbs of many species are said to be poisonous due to the presence of alkaloids. The species are found distributed in the tropical or sub-tropical regions of the world. In the family are numerous ornamentals while Agave and its relatives yield fiber and alcoholic beverages. The family is closely related to the Liliaceae (Lily family) from which it differs chiefly in having an inferior ovary. Some botanists also emphasize the difference from the Lily family in that, flowers are in a ray like head at the base of which are one or more bracts. According to some authors Amaryllidaceae is submerged in the Liliaceae.

Features of the family:

General : Usually herbs, with or without stems, with bulbs underground stems and fibrous roots.

Leaves : Basal or along the stem, simple, entire, mostly narrow, thin to thick, stiff or flexible.

Flower : In cymes, but often in umbels or heads, usually on sheath with spathe, flower small to large, perianth regular or one-sided, tubular or not, with six equal or nearly equal segments, white or colored; stamens six, joined together or not, attached to and opposite the segments; anthers two-celled, commonly slit lengthwise; style slender; stigma entire or three-lobed; ovary inferior (or partly so), three celled.

Fruit : A capsule or berry.

Species included:

3.1 *Allium cepa* L. var. *aggregatum* G.Don.

3.1 *Allium cepa* L. var. *aggregatum* G.Don. (Fig. 3.1)

Common name(s) :

Rathu lunu (S); Irravengayam, Sinna vengayam, Venngayam(T); Red onion, Shallot (E).

Distribution :

Cultivated in many tropical countries including Sri Lanka, India, Malaya, Java and the Philippine Islands. In Sri Lanka the plant thrives best in the Jaffna peninsula.

Description of plant

General : A perennial herb, grown usually as an annual, 16-55 cm tall, with red ovoid subterranean bulb; bulb giving off fibrous roots below; flowering in March.

Leaves : 3-5 to a bulb, hollow, linear 20-30 cm long 0.3-0.7 cm broad.

Flower : Many, growing in terminal rounded umbels; white, regular, bisexual.

Fruit : Not seen.

Uses :

The leaves, flowers and stalks and the bulbs are eaten as sambol or mallun. However, largely used as condiment in the daily diet. The bulb is very often used for medicinal purposes. Reported to be a diuretic, carminative and an aphrodisiac.

Propagatation : By seed and bulb.

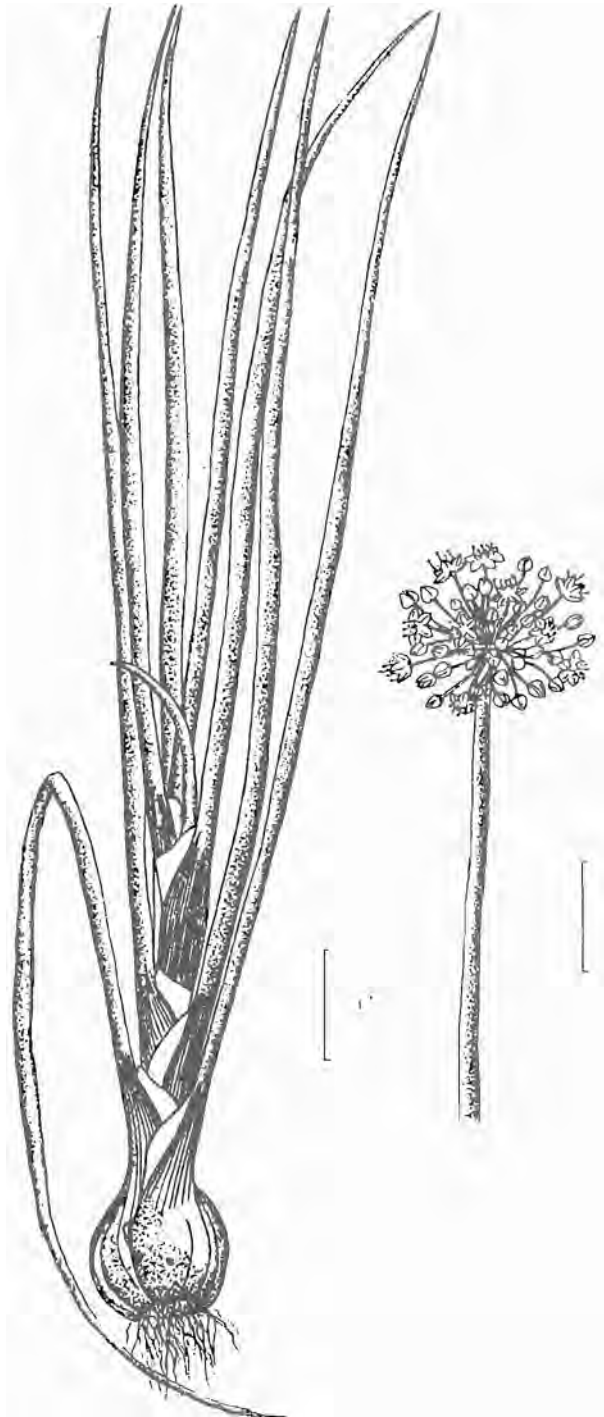


Fig. 3.1 *Allium cepa* var. *aggregatum* G. Don. A, Bulb with leaves. B, Inflorescence.

4.Q ANACARDIACEAE (MANGO FAMILY)

Anacardiaceae is a dicotyledonous family including 60 genera and about 600 species. The members of the family are chiefly in the tropics inhabiting dry to wet habitats. Members of the family include ornamentals, and fruit and nut trees. Some are poisonous, some with bark yielding lacquer and resin, a few with timber of commercial importance. This family is closely allied to the Burseraceae.

Features of the family:

General : Trees, shrubs, rarely climbing.

Leaves : Alternate, rarely opposite, simple or compound, coriaceous.

Flower : In axillary or terminal panicles; commonly small and regular, perfect or sexes separate on the same or different plants; calyx 3 to 7 - parted; petals three to seven, free or rarely joined; stamens same number as petals, or twice as many as or numerous, free; ovary superior, one, two to six -celled; styles one to three; one ovule per cell.

Fruit : Ordinarily a drupe or a nut.

Species included:

4.1 *Anacardium occidentale* L.

4.2 *Mangifera indica* L.

4.3 *Spondias dulcis* Soland. ex Parkinson

4.1 *Anacardium occidentale* L. (Plate 4.1)

Common name(s):

Kaju (S); Andima, Kallarama, Kottaimundiri, Muntin-kai Mundiri, Saram, Sigidima, Tirigai, Uttumbalam (T); cashew (E).

Distribution :

Native to tropical America, now naturalized and cultivated in hotter parts of the world. In Sri Lanka it is commonly found as a garden plant and in waste land in the dry zone.

Description of plant

General : A spreading medium sized tree; flowering in November, January to March.

Leaves : Simple, alternate, thick, rough, blunt, nearly oval-oblong, obovate or elliptical, 8-25 cm long, 5-15 cm broad.

Flower : In terminal panicles; small, regular.

Fruit : Nut, reniform on a swollen fleshy, yellow or red pedicel.

Uses :

Nuts are cooked as a curry or roasted and eaten. Ripe swollen fleshy pedicel is eaten. Parts of the plant are used in various ways. The pericarp of the nut is reported to contain a toxic principle, cardol, anacardol, cardinol, canacardic acid. The kernel yields oil containing linolic, palmatic, stearic and lignoceric acids and sitosterin. The exudate from the bark is a mixture of gum-arabic and bassorin. Most parts of the plant are used for medicinal purposes.

Propagatation : By seed.



Plate 4.1 *Anacardium occidentale* L.

4.2 *Mangifera indica* L. (Fig. 4.1)

Common name(s) :

Amba (S); Adiselarayam, Arnbiram, Amiram, Iradam, Kachakkar, Manga (T); Mango (E).

Distribution :

Native to India, cultivated in South Africa and Tropical America. In Sri Lanka it is commonly cultivated in village gardens.

Description of plant

General : Large, spreading tree reaching to a height of ca. 20 m; flowering in October and fruiting in April and May.

Leaves : Simple, alternate, entire, oblong- lanceolate, with pointed tips, 12 - 25 cm long, 6 - 12 cm broad.

Flower : In panicles; flower small, younger flowers greenish white, older ones pink.

Fruit : Drupe, green when young, yellow or red when ripe, obliquely lentiform, up to 18 cm long.

Uses :

Fruit when young is cooked or preserved and eaten. Fruit when ripe is eaten. The plant has many uses. Wood is of value. Leaves used as fodder. Resinous gum exudate used as a substitute for gum arabic. Bark sometimes used in tanning leather and in making yellow dye. Various parts of the plant used in medicine.

Propagatation : By seeds or grafting.

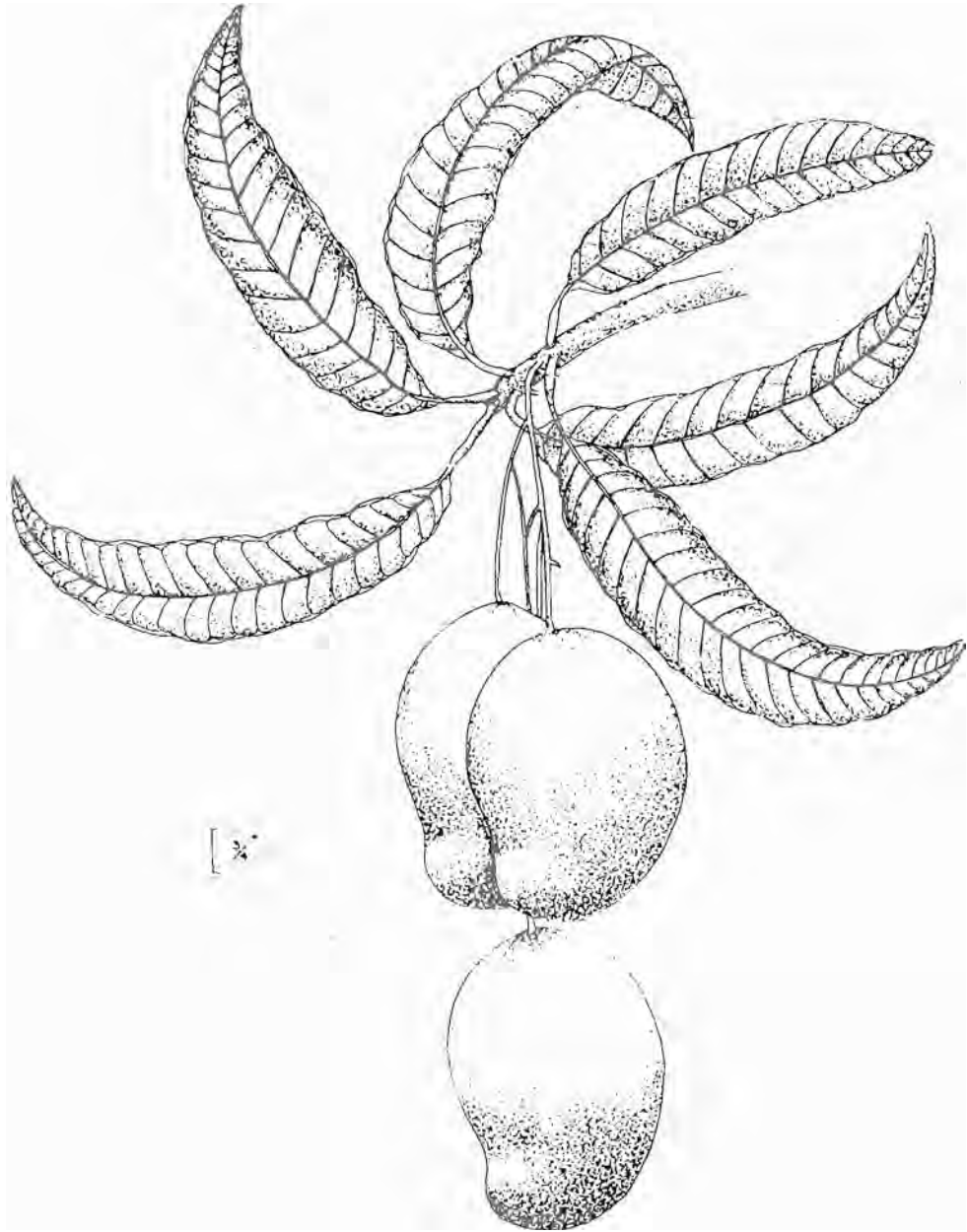


Fig. 4.1 *Mangifera indica* L. Twig with leaves and fruits.

4.3 *Spondias dulcis* Soland. ex Parkinson (Fig. 4.2)

Common name(s) :

Embarella (S); Amblam, Ambaralankai, Ambiram (T);
Amra, Bile tree (E).

Distribution :

Occurs throughout India, Burma, and the Andaman Islands.
In Sri Lanka often planted in the moist low country

Description of plant

General : Moderate-sized deciduous tree; flowering in January.

Leaves : Leaves large, pinnately compound, 30- 50 cm long; leaflets 3 - 5 pairs with a terminal one, oval or oblong rather unequal at base, 7 - 15 cm long.

Flower : In terminal panicles; flowers regular. poiygamous, pale pinkish green.

Fruit : Drupe, ovoid, smooth green to yellow in color, ca. 5 cm long with woody fibrous stone.

Uses :

Young fruit eaten pickled or cooked. Ripe fruit edible
The bark of the tree is used for treating dysentery.

Propagatation : By seeds.



Fig. 4.2 *Spondias dulcis* Soland. ex Parkinson. Branch with leaves and fruits.

5.0 APIACEAE - UMBELLIFERAE (CARROT FAMILY)

This dicotyledonous family include about 275 genera and about 2850 species. The members of the family include annuals, biennials, the stems of which are furrowed and hollow or filled with pith. Many are herbaceous plants distributed chiefly in the North temperate regions of the world. Many members of the family are economically important but as a rule they are poisonous. Most species are aromatic or strong-scented plants. This family is closely allied to the Araliaceae (Panax family).

Features of the family :

General : Herbs, a few shrubs.

Leaves : Alternate, pinnately or palmately compound

Flower : Single or in compound umbels or heads at the tips and upper leaf axils; small, perfect, regular or outer flowers irregular, greenish white to yellow; calyx joined to ovary, five; petal five, soon falling; stamens five, alternate with petals; ovary inferior, two-celled, each with one ovule; style two.

Fruit : Seed like, more or less flattened, winged or with five or nine longitudinal ridges, ridges commonly alternating with aromatic oil ducts.

Species included :

5.1 *Centella asiatica* (L.) Urb

5.1 *Centella asiatica* (L) Urb.(Fig. 5.1)

Common name(s) :

Gotukola (S); Vallarai (T); Asiatic penny wart (E).

Distribution :

Widespread throughout the tropics and Subtropics of the Old and New Worlds. In Sri Lanka it is very abundant from sea level to the highest elevation.

Description of Plant:

General : Plant herbaceous, perennial, prostrate; stems creeping, rooting at the nodes; flowers probably throughout the year.

Leaves : Clusters on a short shoot at each node, orbicular to reniform in outline, 0.5 - 2 cm long, 1 - 3 cm broad.

Flower : In umbels, mostly 3-flowered; bracts 2; petals white or rose tinged.

Fruit : Orbicular to ellipsoid, 2-3 mm long, 3-4 mm broad.

Uses :

The plant is widely used as a salad. Also the juice is extracted and cooked with rice to make a nutritious porridge.

Propagation

From rhizomes.

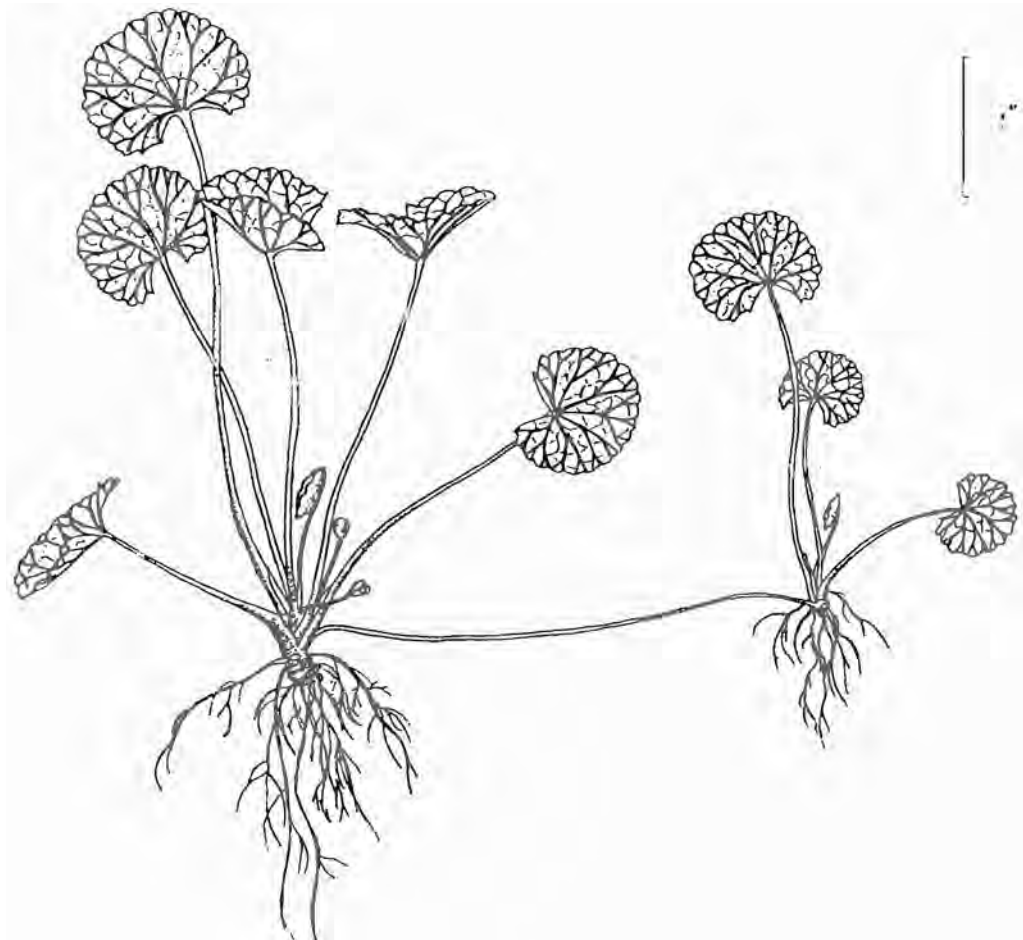


Fig. 5.1: *Centella asiatica* (L.) Urb. Plant with leaves and creeping stem.

6.0 APONOGETONACEAE (APONPGETON FAMILY)

This monocotyledonous family include only one genusAponogeton and about 43 species of aquatic perennial plants, distributed in Africa, Australia and Tropical Asia. Two species of the genus are cultivated in many parts of the world as ornamental plants in water gardens, green houses and aquaria. Both species have starchy, tuberous, underground stems which are eaten by the people. This family is closely allied to families such as the Alismataceae.

Features of the family

General : Aquatic plants with sympodial tuberous rhizomes.

Leaves : Usually floating.

Flower : In spikes, project above the water; bisexual, regular.

Fruit : A follicle.

Species included:

6.1 Agonogeton jacobsenii Bruggen

6.1 *Aponogeton jacobsenii* Bruggen (Plate 6.1)

Common name(s):

Kekatiya (S).

Distribution:

Throughout India and Australia. In Sri Lanka it is commonly grown in slow running to stagnant waters and is found growing between 1650 m to 2300 m elevations.

Description of plant

General : A submerged, fresh water herb with tuberous stoloniferous root stock; flowering during February and May.'

Leaves : Long petioled, ovate to rounded triangular, margin undulate, up to 30 cm long, 6 cm broad.

Flower : In solitary spikes, up to 20 cm long, hooked at the tip; flower pinkish to white, bisexual.

Fruit : Follicle, up to 12 mm long, 1 or 2 seeded.

Uses :

Inflorescence stalks and roots eaten as a vegetable. Further,, the tubers are used as a cholagogue, diuretic and diluent.

Propagatation : By root stock.



Plate 6.1: *Aponogeton jacobsenii* - Plant with hooked inflorescence

7.0 ARACEAE (ANTHURIUM FAMILY)

Araceae is a monocotyledonous family including 115 genera and about 2000 species. Many members of the family are perennials. They are distributed in the tropics inhabiting shade, damp or water-logged areas. The family include many ornamental plants like Anthuriums, Diffenbachias etc. and cultivated plants for food-value of the leaves and tubers. The juice of many species is milky and contain acric principles irritating the membrane of the mouth and throat when eaten or the skin when handled due to minute needle like crystals. Some climbing members of the family forms two types of aerial roots, one type to clasp the support and the other descending and entering the soil to take up the nutrient. This family is closely allied to the Lemnaceae (Duck weed family).

Features of the family:

- General :** Herbs, climbing, shrubs. or tree like.
- Leaves :** Compound or simple. triangular, heart-shaped, ovate,,oblong or lanceolate.
- Flower :** In spikes, inflorescence with a conspicuous bract (spathe), joined to the base of cylindrical spike (spadix), which the spathe envelopes or not; flowers minute, densely covering the spadix.
- Fruit :** Berries, closely arranged on the spadix.

Species included :

- 7.1 *Alocasia macrorrhizos* (L.)Schott
- 7.2 *Colocasia esculenta* (L.) Schott
- 7.3 *Lasia spinosa* (L.)Thw.
- 7.4 *Syngonium angustatum* Schott
- 7.5 *Xanthosoma sagittifolium* (L.)Schott

1.1 *Alocasia macrorrhiza* (L.) Schott (Plate 7.1)

Common name(s) :

Habarala. Sudu-habarala. Kalu-habarala. Washun-habarala (S); Param sembu (T).

Distribution :

Grows in all tropical countries. In Sri Lanka it is a common village garden plant in lowlands and midlands.

Description of plant

General : A large herb. with tuberous root stock. creeping and ascending; flowering during February.

Leaves Simple, large, broadly sagittate ovate peltate 60 cm - 1 m long. ca 50 cm broad

Flower In spike or spadix; spathe two or more together, narrowly ellipsoid, top hooded and cuspidate, pale green in color. spotted with red, 7-10 cm long, spadix nearly as long as spathe, male and female parts of the inflorescence distant. male flowers densely packed, female flowers crowded

Fruit : Berry ca. 2 cm in diameter.

Uses :

The slender leaves are eaten as a vegetable and the starch in the stem used as a source of food.

Propagation : By root stock.



Plate 7.1 *Alocasia macrorrhiza* (L.) Schott

7.2 *Colocasia esculenta* (L.) Schott (Plate 7.2)

Common.name(s) :

Gahala, Kalu-kahandala, Kandala, Tadal (S);
Samakkilangu, Semakkalengu (T); Taro (E).

Distribution :

Cultivated throughout the tropics of the world. In Sri Lanka, it is commonly cultivated as a village garden plant in open wet places.

Description of plant :

General : Large herb with no stem above ground, base slightly swollen, on tuberous rhizome, giving off bulbiferous suckers.

Leaves : Simple, ovate-cordate or hastate, dark ashy-green; large 15-48 cm long.

Flower : In spike on spadix; spathe solitary, narrow erect, green, spadix shorter than spathe, male and female separated, each inflorescence ca. 3 cm long, male flowers densely packed, female flowers crowded.

Fruit : Berry, oblong.

Uses :

The leaves and petioles are used as a leafy vegetable and are reported to be a good source of calcium, phosphorous, iron and vitamin B. The tubers are used as a source of starchy food. Medicinally the tubers are used as a laxative, diuretic, lactagogue and styptic.

Propagation : By root stock.



Plate 7.2 *Colocasia esculenta* (L.) Schott

7.3 *Lasia spinosa* (L.) Thw.

Common name(s) :

Kohila, Kohila, Kohowila, Mahakohila, Engili-kohila (S);
Kohila, Kohila- kilangu (T).

Distribution :

In marshy places of the tropics. In Sri Lanka it is frequently cultivated in the moist low-country.

Description of plant

General : A stout, spiny plant, with spiny root stock. Flowering from October to December.

Leaves : Simple, rigidly coriaceous, young leaves hastate or sagitate, old ones pinnatifid, 15-45 cm long, 5-32 cm broad.

Flower : In spikes or spadix; spathe yellowish brown with yellow margin, spirally twisted above the spadix, open at the base only when pollen is discharged, 20-35 cm long; spadix cylindrical, blunt at apex, orange red in color, densely clothed with bisexual flowers.

Fruit : Rare.

Uses

Young leaves and rhizomes cooked and eaten as a vegetable. Medicinally the leaves stems, and roots are used as a remedy for haemorrhoids.

Propagation : By rhizome.

7.4 *Syngodium angustatum* Schott. (Fig. 7.1)

Common name(s) :

Wel-Kohila.

Distribution :

Reported to be from Central America. Introduced to Sri Lanka, now found growing in lowlands and midlands up to 1000 m elevation. Very often grown in home gardens as an ornamental vine.

Description of plant

General : A perennial vine.

Leaves : Pssately compound, with 7-9 narrow leaflets; central leaflet 25 cm long, 7 cm broad.

Flower : In inflorescence. spathe 7-19 cm long, creamy, reflexing; spadix 5.5 cm, female for 2 cm, constricted and sterile for 1 cm male for 3 cm.

Fruit : Not seen.

Uses

Young leaves are cooked and eaten as a vegetable. Plants are also grown as ornamentals.

Propagation : By cuttings.



Fig. 7.1 *Syngodium angustatum* Schott. Top of the plant with leaves and viny stem.

7.5 *Xanthosoma sagittifolia* (L.) Schott (Fig. 7.?)

Common name (s) :

Desa-ala, Rata-ala, Kiri-habarala (S)

Distribution :

Cultivated throughout the tropics. In Sri Lanka cultivated in the mid and Pow country.

Distribution of plants

General : A robust herb.

Leaves : Large, bright green, triangular sagitate, with strongly marked whitish midrib.

Flower : In spike or spadix: pale greenish yellow, with slightly offensive smell, 20-30cm long spadix shorter than spathe, female inflorescence yellow, narrowly ovoid. ca 3cm long, male inflorescence white up to 5 cm long.

Fruit : Not setting in Sri Lanka

Uses :

The tubers are boiled or cooked as a curry and eaten. Medicinally the plant is reported as useful in treating anasarca.

Propagation : By root stock.



Fig. 7.2 *Xanthosoma sagittifolia* (L.) Schott

8.0 ARALIACEAE (PANAX FAMILY)

A dicotyledonous family including about 60 genera and some 700 species. The members of the family are perennials. They are natives of many temperate and tropical countries of the world tolerating a wide range of habitats. Some members of the family such as panax are grown for ornamental purposes while others such as ginseng are used medicinally. Few members yield wood. This family is closely allied to the Apiaceae (Carrot family).

Features of the family:

General : Herbs, shrubs, trees and vines.

Leaves : Simple or compound (palmate or feather like), alternate or rarely opposite, stipules commonly present.

Flower : Commonly in narrow clusters, heads or umbels, small, greenish or white, regular, perfect or male female flowers separate.

Fruit : Berry or drupe.

Species included :

8.1 *Panax fruticosum* L.

8.1 *Panax fruticosum* L. (Fig. 8.1, Plate 8.1)

Common name(s) :

Koppa-kola (S).

Distribution :

Cultivated throughout warmer parts of India, Malaysia and Polynesia. In Sri Lanka it is common in moist parts up to an elevation of 1000 m.

Description of plant

General : A shrub growing up to 6 m tall.

Leaves : Alternate, simple, stipulated, stipules adnate to stem, broadly ovate, ca. 5 - 10 cm broad, codate at base, obtuse at apex, margins serrulated, elevated to form a shallow cup.

Flower : **In** laxly clustered umbells, greenish or whitish in color, regular, perfect.

Fruit : A berry or drup.

Uses :

Young leaves are cooked and eaten as a vegetable.

Propagation : By cuttings

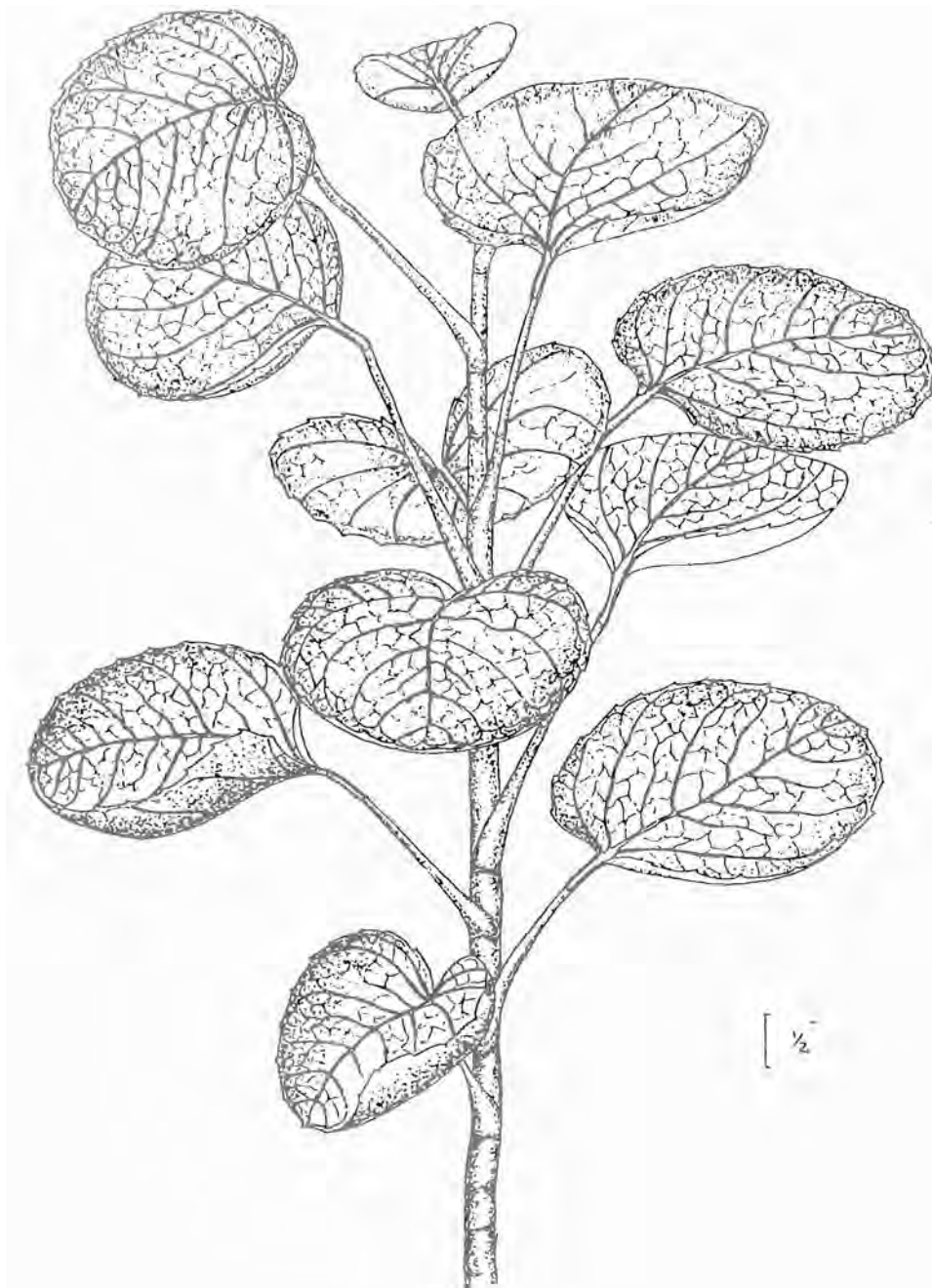


Fig. 8.1 *Panax fruiticosum* L. Top of the plant with leaves.



Plate 8.1: *Panax fruiticosum* L.

9.0 ASCLEPIADACEAE (MILKWEED FAMILY)

Asclepiadaceae is a dicotyledonous family including about 220 genera and some 2000 species. Members of this family are perennials with milky juice which is poisonous in some plants. The species are widely distributed but are mainly confined to the tropics. Many are grown as ornamentals, a few yield useful products such as oils, fibers and medicine. This family is closely allied to the Apocynaceae (Plumeria family).

Features of the family:

General	Herbs, shrubs and vines.
Leaves	Opposite, whorled.
Flower	In clusters or umbels, cymes or racemes. at branch axils or leaf axils: perfect, regular white, greenish or yellowish, rarely red or blue; calyx with five sepals, free or slightly joined; corolla tubular, five-lobed, crown commonly present; stamens five commonly attached to the base of petals, filaments commonly joined into a tube; pollen joined in masses as in orchids; ovary superior of two separate carpels each with one cell and many ovules; styles two. short. joined in a thick disc-shaped stigma.
Fruit	Two follicles; seed commonly tipped with a tuft of long silky hairs.

Species included :

- 9.1 *Gymnema lactiferum* (L.) R.Br. ex Schult.
var. *lactiferum*
- 9.2 *Wattakaka volubilis* (L.f.) Stapf.

**9.1 *Gymnema lactiferum* (L.) R.Br. ex Schult
var *lactiferum***

Common name(s) :

Kurinnan (S, T).

Distribution :

In Assam, Malay Peninsula, Malasia and Sri Lanka. In Sri Lanka it is found in the moister parts up to an elevation of 1000 m. Now also found in the dry zone.

Description of plant

General : Twining woody plant. Flowering from July to November.

Leaves : Broadly ovate to ovate-lanceolate, usually 2 or 3 times as long as wide, 3 - 10 cm long, 1 - 5 cm broad obtuse at the base, acuminate at apex.

Flower : In cymes; calyx puberulous 1 - 2 mm long, corolla ovate 0.4 - 3.5 cm long,

Fruit : Not seen,

Uses :

The leaves are cooked and eaten as a vegetable.

Propagation : By cuttings,

9.2 *Wattakaka volubilis* (L.f.) Stapf. (Fig. 9.1, Plate 9.1)

Common name(s) :

Anguna, Kiri-anguna, Titta-anguna (S); Kamal, Kodippalai, Kudasappalai, Kurinja, Kurinjakkirai, Palaikkodi, Singittam, Sivandi, Vandittam (T).

Distribution

In tropical Asia. It is rather common in Sri Lanka up to 1000 m altitude.

Description of plant

General : Large, twining shrub with glabrous branches; flowering during March and April.

Leaves : Simple, opposite, broadly ovate, rounded or subcordate at base, 7 - 10 cm long, 3 - 7 cm broad.

Flower : On umbellate cymes; flowers numerous, regular, bisexual, green or yellowish green, sweet scented.

Fruit : Follicle, slightly tapering to a blunt point, cylindrical, shallowly grooved, dull yellow in color, 7 - 10 cm long.

Uses :

The leaves are eaten as a vegetable. The plants and seeds are reported to contain an active principle and used in medicine for their emetic and expectorant properties.

Propagation : By seeds

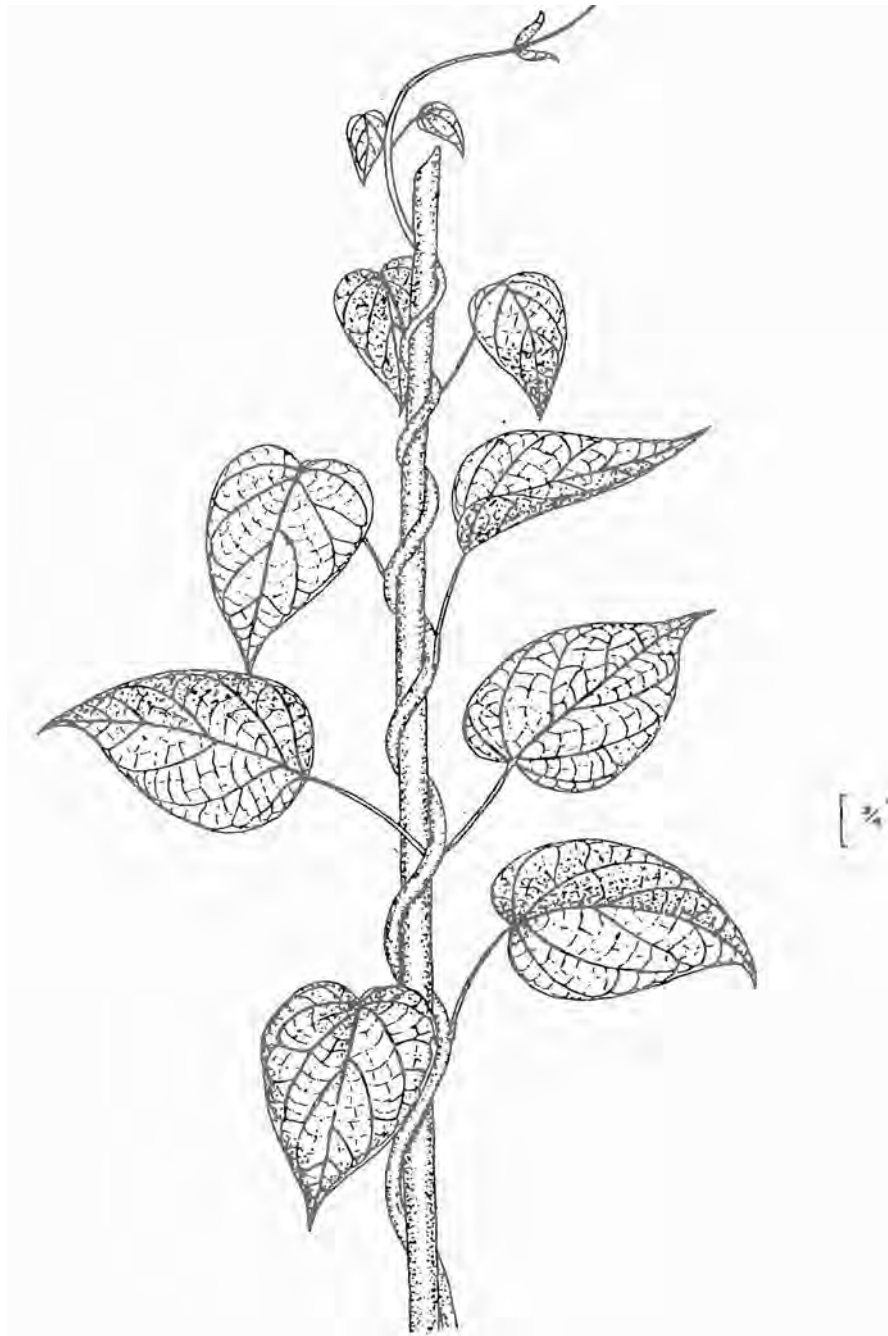


Fig. 9.1 *Wattakaka volubilis* (L.f.) Stapf. Top of the plant with leaves and twining stem.



Plate 9.1: *Wattakka volubilis*. Vinning plant growing in a home garden.

10.0 BASELLACEAE (MADEIRA-VINE FAMILY)

A dicotyledonous family including about five genera and about 20 species. The members of the family are perennials. Most are smooth, more or less succulent plants distributed in Asia, Africa and Tropical America, preferring to grow in shaded areas. Some plants yield edible tubers or greens and some are grown as ornamentals. This family is closely allied to the Portulaccaceae (Purslane family).

Features of the family :

General : Mostly weak-stemmed, climbing or succulent plants.

Leaves : Alternate, simple, entire, broad-ovate, more or less succulent.

Flower : In spikes or clusters; small, perfect, regular; sepals 2; petals 5, more or less fused, commonly white or red; stamens opposite; ovary superior, one-celled, one ovule; stigma entire or deeply 3-cleft.

Fruit : Indehiscent, utricle, surrounded by fleshy calyx.

Species included :

10.1 *Basella alba* L.

10.1 *Basella alba* L. (Fig. 20.1, Plate 10.1)

Common name(s) :

Nivithi, Rat-nivithi (S); Passali, Shivappuvasalakkirai (T); Spinach, Indian spinach (E).

Distribution :

In Tropical Asia and Africa. In Sri Lanka it is rather rare in forests. Widely cultivated for use as a vegetable. Provinces.

Description of plant

General : Perennial, straggling, succulent climber much branched; some of the various forms are purplish-stemmed, while others are green-stemmed; flowering from September to December.

Leaves : Simple, alternate, broadly ovate, heart-shaped, 10-18 cm long, 6-17 cm broad.

Flower : In pedunculate spikes; regular, bisexual, pink-colored.

Fruit : Globose urticle, enclosed in an enlarged fleshy persistent perianth, purple in color; seed globose, ca.5mm long.

Uses

The plant is a popular vegetable reported to be rich in Calcium, Iron and vitamin A, A3, B, B3 and medicinally it is used to treat many ailments.

Propagation : By cuttings.

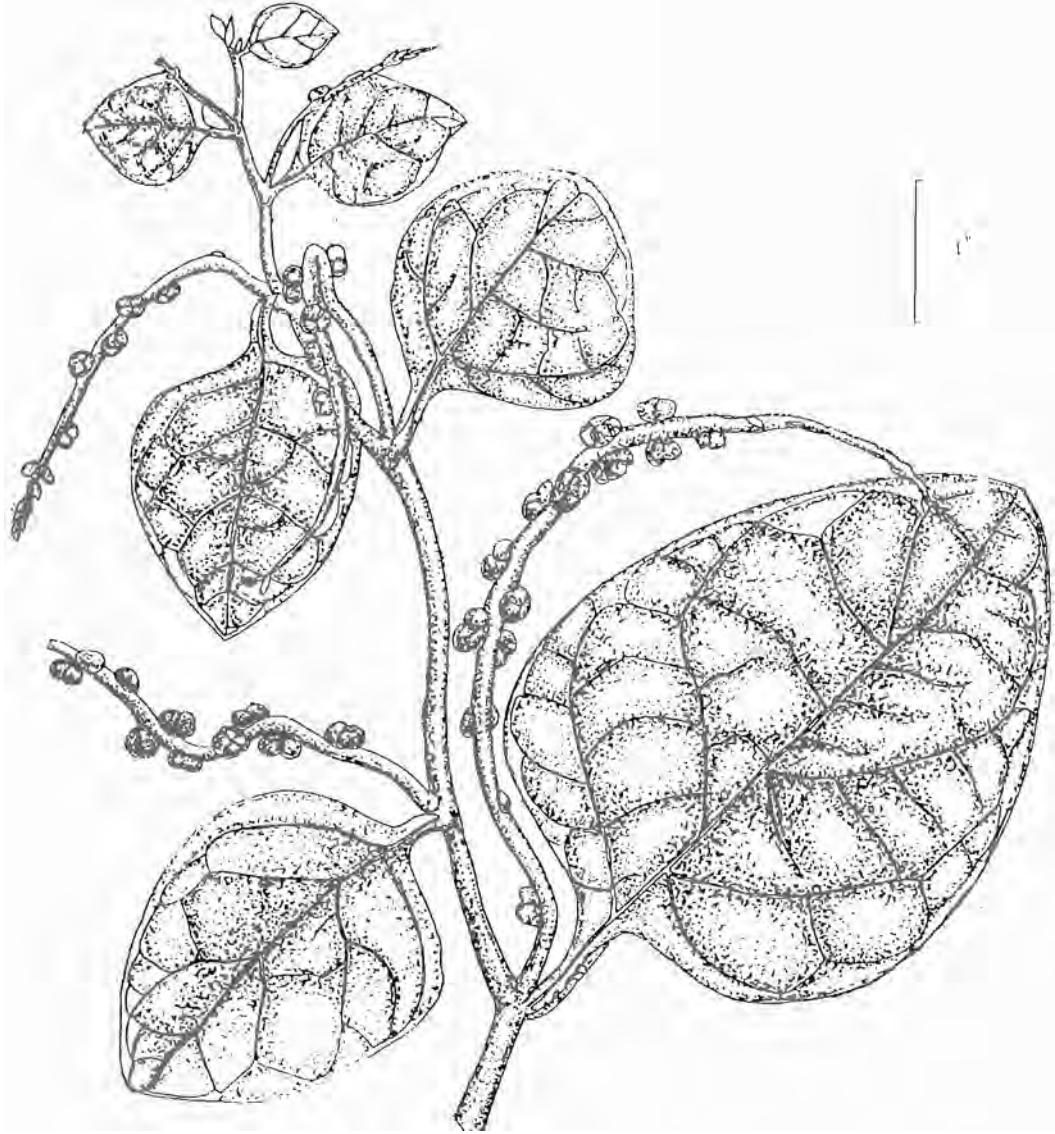


Fig. 10.1 *Basella alba* L. Top of the plant with leaves and fruits.



Plate 10.1 *Basella alba*. A, Plants green stem B, Plant with red stem.

11.0 BORAGINACEAE (HELIOTROPE FAMILY)

This dicotyyledonary family includes about 90 genera and sixteen hundred species: herbs, shrubs and trees widely distributed in the tropics. Many are grown ornamentally, one yields a red dye, one a popular perfume; a few yield useful wood, medicine or edible fruit. The family is closely related to the Hydrophyllaceae (water-leaf family) and the Verbenaceae (Verbena family).

Features of the family:

- General** : Herbs, shrubs or trees; some rough or bearing bristly hairs, others smooth.
- Leaves** : Alternate or rarely opposite, simple, commonly entire, no stipules.
- Flower** : Borne in coiled, one-sided clusters or terminal or axillary, commonly regular and perfect.
- Fruit** : A drupe, or four nutlets each with one seed, or two nutlets each with two seeds.

Species included

11.1 *Cordia dichotoma* Forst. f.

11.1 *Cordia dichotoma* Forst.f. (Plate 11.1)

Common names :

Lolu (S); Sebesten, Sebesten plum (E).

Distribution :

Distributed from Egypt and South Asia to northern Australia. In Sri Lanka thrives well in the dry regions.

Description of plant

General : A tree reaching up to 10 m or more

Leaves : Stiff, oval, 4 to 10 cm long, shallow-toothed in upper half or not.

Flower : Small, inconspicuous, whitish, with lobed calyx.

Fruit : Cherrylike, pink to cream in color, ovoid. up to 0.5 cm long.

Uses :

The young leaves are cooked and eaten as a vegetable. The fruit has an edible mucilaginous pulp. In India the bark is used medicinally as a tonic and also yields a rather weak fibre for ropes. The wood is soft, has many uses. and is one of the best wood for kindling fire by friction.

Propagation : By seed.



Plate 11.1 *Cordia dichotoma* Forst. f.

12.0 CONVULVACEAE (MORNING-GLORYFAMILY)

This dicotyledonous morning-glory family includes about 55 genera and 1650 species. The members of the family include mostly perennials. These species are widely distributed but most common in the tropics occupying a wide range of habitats. Many are grown ornamentally, some are widely used food plants such as sweet potato, several yield medicines such as purgators or astringents, some are used as cover plants, which some others are weeds. This family is closely allied to the Solanaceae (Tomato family).

Features of the family

- General :** Herbs, shrubs, trees and vines, some leafless parasites, some are with milky juice.
- Leaves :** Alternate, simple or compound, entire or lobed or reduced to small scales.
- Flower :** Solitary or arranged in clusters at leaf axils; large and showy, commonly accompanied by two bracts. perfect, regular; calyx with five free sepals, persistent; corolla commonly funnel-shaped tube with five lobes or angles; stamens five, mostly attached to base of corolla; ovary superior, commonly two-celled, ovules one or two in each cell.
- Fruit :** Capsule, splitting into two or four carpels or not. or berry like; seeds hairy or not.

Species included

12.1 *Argyreia populifolia* Choisy

12.2 *Ipomoea aquatica* Forsk.

12.3 *Ipomoea batatas* L.

12.1 *Argyreia populifolia* Choisy (Plate 12.1)

Common name(s) :

Girithilla (S).

Distribution :

Endemic to Sri Lanka, distributed mainly in the wet zone.

Description of plant

General : Liana, woody near the base.

Leaves : Simple, glabrous, cordate, 6 - 16 cm. long, basally cordate, apex obtuse, abruptly short acuminate.

Flower : In dense cymose inflorescences; bracts elliptic to obovate; flower lavender to white, tube usually purple; sepals ovate; corolla funneliform 3 - 5 cm long.

Fruit : Globose to depressed-globose, 10 - 15 mm long, wider than long, yellow. Seeds white, 3 in number.

Uses

Leaves are eaten as mallun. Fruits are occasionally eaten.

Propagation : By seeds.



Plate 12.1 *Argyreia populifolia* Choisy

12.2 *Ipomoea aquatica* Forsk. (Fig. 12.1, Plate 112.2)

Common name(s) :

Kan-kun (S) Kan-kun kirai, koilengu, Sarkareivalli
(T) Swamp cabbage (E).

Distribution :

Native of the old world tropics, now distributed in many countries of the New World. In Sri Lanka the plant is restricted to wet sites, particularly tank margins, canals, paddy field margins and shallow, slow running stream beds.

Description of plant

General : Annual or biennial vine, prostrate, trailing over water or mud, hollow stemmed, rooting at the nodes; flowering from August to November.

Leaves : Simple, alternate, ovate-oblong, base usually dilated and hastate with rounded lobes; 5-12 cm long, 4-7 cm broad.

Flower : Solitary, regular, bisexual, large, purple in color; petals fused into a tubular funnel shaped-corolla.

Fruit : Capsule dehiscent globose.

Uses :

Leaves are used as spinach, reported as an excellent source of iron, calcium, vitamin B, C, and protein. Medicinally it is used against diabetes.

Propagation : By cuttings.



Fig. 12.1 *Ipomoea aquatica* Forsk. Part of the plant with leaves and prostrate, trailing stem.



Plate 12.2. *Ipomoea aquatica* Forsk. Plants growing under natural conditions.

12.3 *Ipomoea batatas* (L.) Lam. (Fig. 112.2)

Common name(s) :

Batala (S); Vel-kilangu, Vattalai (T); Sweet potato (E).

Distribution :

Originally from the New World now cultivated throughout the world, mostly in the tropics. In Sri Lanka it thrives well in both dry and wet zone.

Description of the plant

General : Perennial vines treated as an annual in cultivation, somewhat succulent but sometimes slender and herbaceous.

Leaves : Simple, alternate, variable from cordate to ovate, entire, or often deeply lobed.

Flower : In inflorescences or solitary, absent in some varieties; flower when present lavender or purple- lavender in color.

Fruit : Rarely formed. When present a glabrous dehiscent capsule, 5-8 mm. in diameter. with upto 4 seeds; seed black, angular, glabrous

Uses :

It is cultivated mainly for its yam which is eaten either boiled or made into a form of curry. Also the young leaves are cooked and eaten as vegetable. In many countries the tubers are used for canning, dehydrating, flour manufacture and as a source of starch, glucose, syrup and alcohol.

Propagation : By cutting.

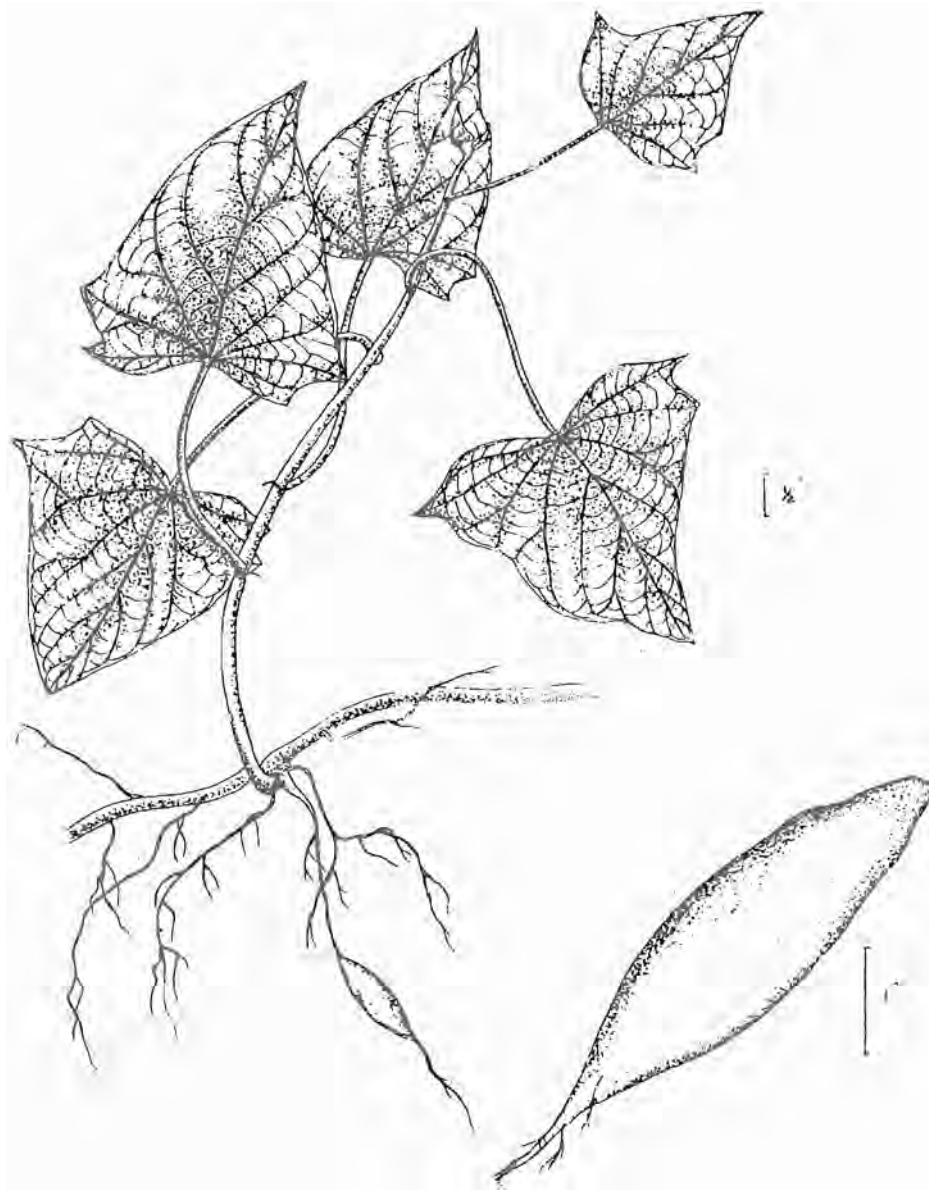


Fig. 12.2 *Ipomoea batatas* (L.) Lam. A, Vine with stem and leaves. B, Yam.

13.0 CUCURBITACEAE (GOURD FAMILY)

This dicotyledonous gourd family includes about 110 genera and some 640 species. The members of the family includes annuals and perennials. These species are native to tropical and temperate regions of the world inhabiting a range of habitats. Some are grown ornamentally and many for food such as vegetables, fruits and seeds. Others yield fibers and drugs. This family is closely allied to the Begoniaceae (Begonia family).

Features of the family :

- General :** Herbs and few small shrubs, more or less rough or hairy with climbing or prostrate stems, commonly with spiral tendrils.
- Leaves :** Alternate, simple or compound, lobed or entire, ovoid, commonly heart- shaped.
- Flower :** Solitary or clustered; rarely perfect, sexes commonly separate on the same or different plants, regular, calyx tube five parted; corolla with five separate petals or more or less tubular and five-lobed, female flowers with inferior ovaries, style one or three.
- Fruit :** Berry-like, with hard rind, softer inner layer and central pulp with flat seeds.

Species included :

- 13.1 *Benincasa hispida* (Thunb.) Cogn.
- 13.2 *Coccinea grandis* (L.) J.O.Voigt
- 13.3 *Cucumis melo* var. *egrestis* Naud.
- 13.4 *Cucumis sativus* L.
- 13.5 *Cucurbita maxima* Duchesne
- 13.6 *Lagenaria siceraria* (Molina) Standl.
- 13.7 *Luffa acutangula* Roxb.
- 13.8 *Luffa cylindrica* (L.) M.J. Roem
- 13.9 *Momordica charantia* L.
- 13.10 *Momordica dioica* Roxb. ex Willd.
- 13.11 *Tricosanthes cucumerina* L.

13.1 *Benincasa hispida* (Thunb.) Cogn. (Plate 13.1)

Common name(s) :

Alupuhul, Puhul (S); Kalyanappusan- ikkay, Neethu pusanikkai, Pusini (T); Ash pumkin, Chinese preserving melon (E).

Distribution :

Throughout tropical countries, probably native to Java. Cultivated in Sri Lanka during the rainy season in the dry zone.

Description of plant

General : A large trailing or climbing plant with 2-fid tendrils arising at the nodes.

Leaves : Reniform-orbicular, cordate, deeply 5-lobed, 10 - 25 cm in diameter.

Flower : Large, yellow, monoecious, solitary, without bracts.

Fruit : Broadly cylindrical, covered with waxy bloom; seeds many, oblong compressed.

Uses :

The unripe fruit is cooked and eaten as a vegetable. Sugar preserves are made from the mature fruit. The seeds are roasted and eaten. Medicinally the fresh juice of the fruit is used as an antidote for mercuric, alcoholic and snake-bite poisoning.

Propagation: By seeds.



Plate 13 1 *Benincasa hispida*. (Thunb.) Cogn.

13.2 *Coccinea grandis* (L.) J.O.Voigt (Fig. 13.1)

Common name(s) :

Kem-wel, Kowakka, Kobawakka (S); Kovai, Kowai (T).

Distribution :

Tropics of the old world. In Sri Lanka it is common in the low country especially in dry regions.

Description of plant

General : Perennial climber with simple tendrils. Flowering from June to August.

Leaves : Simple, alternate, usually broadly cordate-ovate, 5-lobed, 5 - 10 cm long, 4-9 cm broad.

Flower : Regular, unisexual, dioecious, solitary, axillary.

Fruit : Fusiform-ovoid, cylindrical, slightly beaked, bright scarlet when ripe; seeds oblong-ovoid, compressed smooth yellowish-grey.

Uses :

The leaves are cooked and eaten. The plant is a popular medicinal plant.

Propagation: By seeds.



Fig. 13.1 *Coccinea grandis* (L.) J.O.Voigt

13.3 *Cucumis melo* var. *egrestis* Naud. (Fig. 13.2, Plate 13.2)

Common name(s) :

Hen-kekiri, Kekiri (S); Kekkiri (T), Melon (E)

Distribution :

In Sri Lanka it is often common in waste ground and cultivated in Chenas in the low country.

Description of plant

General : Annual climber with tendrils.

Leaves : Simple, alternate, broadly cordate-ovate, basal lobed round, margin dentate, 7 - 11 cm long.

Flower : Regular, unisexual, monoecious, yellow in color; male flowers in clusters, female flowers solitary.

Fruit : Very variable in size and shape ovoid-globose, smooth, light green in color; seeds narrowly ovoid, compressed and smooth.

Uses :

The mature fruit is cooked and eaten; as a vegetable. The fresh flesh of the fruit is eaten out of the rind.

Propagation : By seeds



Fig. 13.2 *Cucumis melo* var. *egrestis* Naud. A, Top of the plant with leaves, flowers and tendrils. B, Fruit.



Plate 13.2 *Cucumis melo* var. *ergrestris*. cultivated plant with fruit.

13.4 *Cucumis sativus* L. (Plate 13.3)

Common name(s) :

Pipingha, Pipinga (S); Pipinghay, Vellarikkai (T);
Cucumber (E).

Distribution :

Cultivated throughout India, Indo- China, the Philippine Islands. cultivated throughout Sri Lanka.

Description of plant

General : Annual climber with tendrils.

Leaves : Simple, alternate, broadly ovate- cordate, acuminate, 3 - 5 lobed, hairy, 11 - 16 cm long, 10 -14 cm broad.

Flower : Unisexual on the same plant, bright yellow; male flowers in clusters, female flowers solitary.

Fruit : Large, globular to oblong elongate, yellowish or brown; seeds flat, white ca. 6 mm long.

Uses :

Fruit used as a vegetable or in salads. Also used for medicinal purposes.

Propagation : By seeds.



Plate 13.3 *Cucumis sativus* L.

13.5 *Cucurbita maxima* Duchesne (Fig. 13.3, Plate 13.4)

Common name(s) :

Kumbala, Ran-wattakka, Ratalabu (S); Pusanikai, (T):
Pumkin, Squash Squash gourd (E).

Distribution :

Cultivated throughout the tropics. In Sri Lanka it grows best in the dry zone specially after the rains.

Description of plant

General : Climbing or prostrate, annual herb with 4-fid tendrils. Flowering throughout the year.

Leaves : Simple, alternate, orbicular in out line. cordate, somewhat 5-lobed, 15 - 30 cm long, slightly broader more in with.

Flower : Regular, yellow, monoecious.

Fruit : Variable, large fleshy indehiscent; hard-shelled; seed-ovoid, compressed.

Uses :

The young shoots, flowers and the mature fruits are used as vegetable. Fruit is boiled and eaten for breakfast or cooked into curry.

Propagation: By seeds.

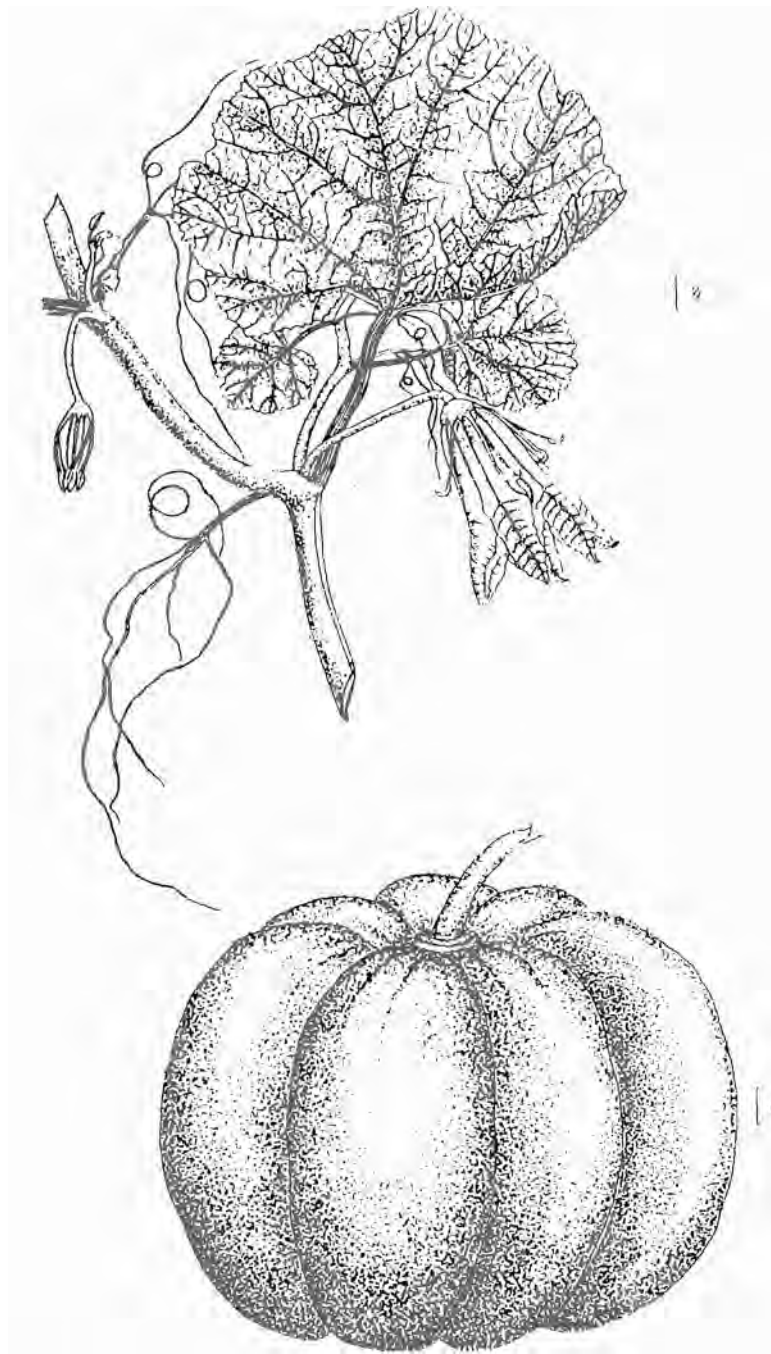


Fig. 13.3 *Cucurbita maxima* Duchesne **A**, Top of the plant with leaves and tendrils. **B**, Fruit.



Plate 13.4 *Cucurbita* maxima. A, top of the plant with leaves and tendrils. B, Fruit.

13.6 *Lagenaria siceraria* (Molina) Standl. (Fig. 13.4)

Common name(s) :

Diya-labu, Labu, (S); Churakkai, Shorakkai (T); Bottle gourd (E).

Distribution :

Indigenous to tropical Africa and Asia. It is cultivated in Sri Lanka, India and Philippine Islands.

Description of plant

General : Climber with tendrils, stem 5-angled. Flowering throughout the year.

Leaves : Simple, alternate, broadly ovate or orbicular, slightly 5-lobed, deeply cordate at base, 13- 20 cm across.

Flower : Unisexual, regular solitary, both male and female on the, same plant, brownish white.

Fruit : Variable in shape and size, globular, bottle- or club-shaped; indehiscent; seeds many horizontally compressed.

Uses :

Fruit eaten as a vegetable. The rind of the fruit emptied dried and use as a bottle. Also used in native medicine.

Propagation : By seeds.

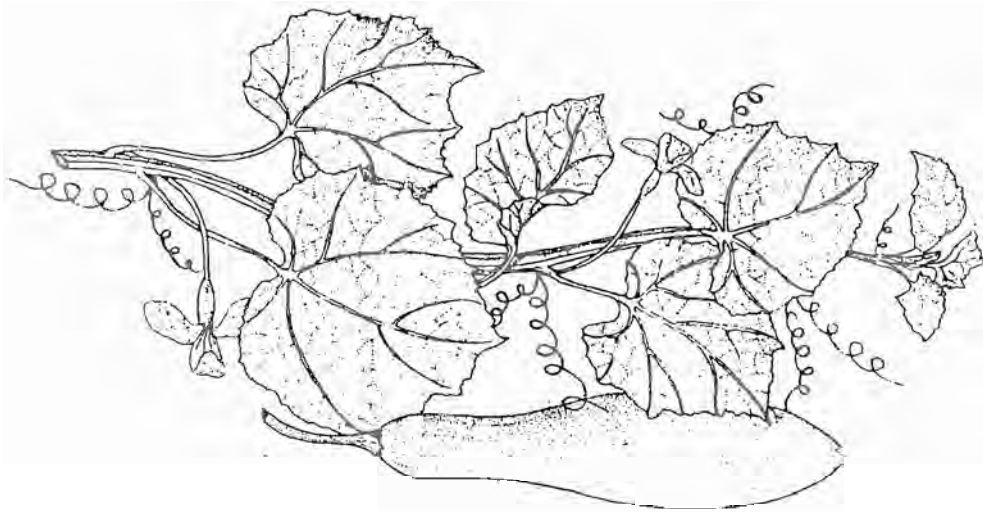


Fig. 13.4 *Lagenaria siceraria* (Molina) Standl.

13.7 *Luffa acutangula* (L.) Roxb. (Plate 13.5)

Common name(s) :

Daravetakolu, Vetakolu (S); Peerkam- kai, Pekankai, Pekunkai, Peyppichukku (T); Dishcloth gourd, Angled loofa (E).

Distribution :

Cultivated mainly throughout India and the East. Also cultivated in other tropical countries. In Sri Lanka it is frequently cultivated in the mid and low country.

Description of plant

General : Annual climber with 3-fid tendrils, foetid when bruised. Flowering all year round

Leaves : Simple, alternate, orbicular in outline, cordate at base, 6 - 23 cm across.

Flower : Unisexual, male flowers in clusters, female flowers solitary

Fruit : Clavate-oblong, tapering to base, longitudinally ribbed, with 10 sharp ridges; seeds numerous, oblong- ovoid, compressed, black in color.

Uses :

The fruit is cooked and consumed as a vegetable. Also used in local medicine. Fibers used in making hats in many African countries.

Propagation: By seed.



Plate 13.5 *Luffa acutangula* (L.) Roxb.



Plate 13.6 *Luffa cylindrica* (L.) M.J. Roem

13.9 *Momordica charantia* L. (Fig. 13.5, Plate 13.7)

Common name(s) :

Karavila, Karawila (S); Pahat-kai, Pakai, Pavakkachedi; Pavakkayi (T); Bitter melon, Bitter gourd (E).

Distribution :

Cultivated throughout India, Malaya, China and Tropical Africa. In Sri Lanka it is cultivated mainly in the low country.

Description of plant

General : Annual tendril climber. much branched, stem 5-angled. Flowering from January to August.

Leaves : Simple, alternate, circular in outline. palmately-lobed, with 7 to 9 lobes, 6 - 13 cm long.

Flower : Regular. solitary, axillary. unisexual, monoecious, lemon yellow in color.

Fruit : Large, pendulous, fusiform, pointed or beaked, closely tubercled, orange when ripe. 7 - 15 cm long; Seeds large, ovoid. compressed, ca. 1.5 cm long.

Uses :

The green fruit is used as a vegetable and has a high medicinal value. Various parts of the plant used for medicinal purposes.

Propagation : By seed



Fig. 13.5 *Momordica charantia* L. A, Top of the plant with leaves, flower and tendrils. B, Fruit.



Plate 13.7 *Momordica charantia* L. Cultivated plant with flower and fruit.

13.10 *Momordica dioica* Roxb. ex Willd. (Plate 13.8)

Common name(s) :

Tumba-karavila, Tumba-karawila (S); Chinna-pahat-kai (T); Bitter gourd (E).

Distribution :

Occurs from India to Singapore. In Sri Lanka it is common in the low country specially in the dry regions.

Description of plant

General : Perennial, tendriled climber, with tuberous roots. Flowering from June to August.

Leaves : Simple, alternate, variable, broadly ovate in outline, deeply lobed into 3 or 5 lobes, 5 - 10 cm long, 4 - 7 cm broad.

Flower : Regular, unisexual, dioecious, solitary, pale lemon in color.

Fruit : Oblong-ovoid, beaked, evenly covered with equal-pointed papillae, many seeded. 5 - 7 cm long; seed broadly oblong, compressed.

Uses :

The fruit is cooked and eaten as a vegetable. The plant is used in many local medicines.

Propagation : By seed.



Plate 13.8 *Momordica dioica* Roxb. ex Willd.

13.11 *Tricosanthes cucumerina* L. (Plate 13.9)

Common name(s) :

Patola (S); Podalangai, Padivilangu (T); Snake gourd (E).

Distribution :

Widely cultivated in Tropical Asia. In Sri Lanka it is extensively grown in the mid and low country.

Description of plant

General : Annual, climber with 3-fid tendrils; stem 5-angled.

Leaves : Simple, alternate, broadly ovate, 3 - 7-lobed, 10 - 25 cm across.

Flower : Unisexual, monoecious, female flower flowers in racemes; female solitary

Fruit : Long, green, striped in white, changing to orange color when ripe, 0.3 - 1.5 m long.

Uses:

Immature fruit is either boiled or made into curry and eaten.

Propagation: By seed.



Plate 13.11 *Tricosanthes cucumerina* L. cultivated plants with fruits

14.0 DIOSCOREACEAE (YAM FAMILY)

This monocotyledonous family includes 5 genera and about 750 species. These are distributed in the temperate and tropical regions of the world, inhabiting moist habitats. Roots of some species yield edible tubers or yams, while roots of some others yield a fish poison, while roots of still others yield cortisone and a medicine used in the treatment of arthritis. This family is closely allied to the Smilacaceae (Smilax family).

Feature of the family

- General** : Herbaceous or shrubby climbers, with tuberous or thick underground stems.
- Leaves** : Opposite or alternate, entire and heart-shaped or palmately three- parted.
- Flower** : In small narrow clusters, greenish, commonly unisexual, two sexes on the same plant or on separate plants.
- Fruit** : Capsule, three-lobed; seeds flat or winged.

Species Included:

- 14.1 *Dioscorea alata* L.
- 14.2 *Disocorea bulbifera* L.
- 14.3 *Dioscorea esculenta* (Lour.) Burk.
- 14.4 *Dioscorea pentaphylla* L.

14.1. *Dioscorea alata* L. (Fig. 14.1)

Common name(s) :

Kaharata-ala, Kahata-kondol, Kondol, Raja-ala (S); Yam (E).

Distribution.

Supposedly native to Southeast Asia, now distributed throughout Tropical Asia and the Pacific Islands. In Sri Lanka it is cultivated in the dry zone and the intermediate zone.

Description of plant

General : A vine with tuberous rootstock, stem square in cross-section and winged. Wings green or reddish-colored.

Leaves : Opposite, ovate to heart-shaped, 7.5 to 15 cm in length.

Flower : In inflorescences, unisexual, small, inconspicuous, without petals, with light yellow or greenish-yellow calyx.

Uses :

Yams boiled and eaten or cooked into curry. Also used in treating coughs, constipation and dysentery.

Propagation : By root stock.



Fig. 14.1 *Dioscorea alata* L.

14.2 *Dioscorea bulbifera* L. (Plate 14.1)

Common name(s) :

Kahata-ala (S); Erasawelli (T); Potato Yam (E).

Distribution :

Believed to have originated in the Indo-Malayan region, spreading later to the South Pacific and the West Indies. Wild forms are also reported from Asia and Africa. In Sri Lanka it is frequently found in mid and low contsy.

Description of plant

- General** : A climbing vine growing up to 10 m in length with cylindrical stems, producing aerial tubers or bulbils at the leaf axils.
- Leaves** : Simple, alternate or opposite, cordate at the base, acuminate, up to 30 cm in length; petiole enlarged at the base.
- Flower** : Dioecious, unisexual, male spikes slender, up to 20 cm in length, female spikes usually paired; ovary inferior.
- Fruit** : Three-locular, elongated, winged, 2-5 cm in length, 1-5 cm in diameter; seeds rarely formed, surrounded by membranous wing.

Uses :

Aerial tubers thoroughly cooked or roasted are eaten

Propagation : By underground tubers.



Plate 14.1 *Dioscorea bulbifera* L.

14.3 *Dioscorea esculenta* (Lour.) Burk.

Common name(s) :

Lesser yam (E)

Distribution :

Reported to be in cultivation in China from the third century AD. Now widely grown throughout the tropics particularly tropical Asia and the Pacific. In Sri Lanka it is cultivated in the mid and low country.

Description of plant

General : A climbing vine growing up to 2-3 m in length with spiny cylindrical stems, stems sometimes purple at base. Rarely flowering.

Leaves : Alternate, 10-12 cm in length, 10-15 cm across, apex acute; petiole often with 4 spines at base.

Flower : Dioecious, unisexual, male spikes- like racemes; female flowers also in spikes.

Fruit : Rarely produced.

Uses :

In general the tubers used as a cooked vegetable.

Propagation : By tubers

14.4 *Dioscorea pentaphylla* L. (Plate 14.2)

Common name(s) :

Katu-ala (S).

Distribution :

Possibly native to South East Asia, now distributed throughout tropical Asia eastward to Polynesia. In Sri Lanka it is cultivated in the dry zone and the intermediate zone.

Description of Plant

General : A vine with tuberous rootstock; root stock with stiff woody, spiny rootlets. Aerial tubers scattered along the axils of stems. Stems round in cross-section.

Leaves : Alternate, palmately compound with fairly long petioles, leaf divided into 3 -5 leaflets.

Flower : In inflorescences, unisexual, small inconspicuous male flower, yellow in color, fragrant.

Fruit : Not seen.

Uses :

Yams boiled and eaten or cooked into curry.

Propagation : By rootstock.



Plate 14.2 *Dioscorea pentnphylla* L.

15.0 EUPNORBIACEAE (POINSETTIA FAMILY)

This dicotyledonous family includes 300 genera and some 5000 species. The members of the family include annuals, biennials and perennials. Many contain milky juice which is poisonous. The species are distributed in many parts of the world, chiefly in the tropics, inhabiting a wide range of habitats. Some inhabit deserts and resemble cacti plants in having thick green stems, with thorns and spines and without leaves. Others range from small prostrate herbs to large forest-trees. The members of the family vary widely in form and floral structure. The family includes valuable economic plants, yielding rubber, fiber, oil, starch, medicine, poisons, dyes, resins, woods, edible fruits and many ornamentals. This family is closely allied to the Buxaceae (Box family).

Feature of the family

General : Herbs, shrubs, trees, and few climbers.

Leaves : Alternate, some opposite, simple or divided, rarely rudimentary.

Flower : Commonly small, sexes separate on same or different plants, usually regular; ovaries and stamens reduced; sepals 3 - 5; Petals 3 - 5, but rarely present; stamens one to many, free or joined; Ovary superior, usually 3-celled; ovules one to two to each cell; style two-lobed.

Fruit : Capsule or drupe.

Species Included:

15.1 *Manihot esculenta* Crantz

15.1. *Manihot esculenta* Crantz (Plate 15.1)

Common name(s) :

Manyokka (S); Marawalli-elai (T); Cassava, Manioc. Manioka, Tapioka plant (E).

Distribution :

A native of Brazil, now cultivated in many parts of the world specially in the tropics and the sub-tropics. In Sri Lanka it widely cultivated or seen as a garden plant in the wet and dry zones.

Description of plant

General : Bushy shrub, 1 to 3 m high.

Leaves : Alternate, simple, palmately divided almost to the base into 3 - 7 narrow pointed divisions.

Flower : May not develop or may produce only a few flowers, arising at leaf axils.

Fruit : Ovoid capsule.

Uses :

Mainly grown for its tubers. The tubers are boiled or cooked into curry or fried into chips. The tender leaves are also cooked and eaten as a vegetable. Care should be taken to eliminate the presence of hydrocyanic glucoside.

Propagation : By stem cuttings.



Plate 15.1 *Manihot esculenta* Crantz

16.0 FABACEAE - LEGUMINOSAE (BEAN OR LEGUME FAMILY)

This dicotyledonous family is the third largest family of flowering plants and includes about 600 genera and some 12000 species. The members of the family are distributed widely over the world in many different environments, from wet land to deserts. Lateral roots of almost all species have swellings (root nodules) containing bacteria that absorb nitrogen from the atmosphere and which in turn is absorbed by the plants. Such plants not only grow in poor soils but enrich them, when the nitrogenous roots decay or when the whole plant is ploughed under.

Many legumes have great economic value. The seeds of numerous species are important foods and the pods of some others are also eaten. Many are fodder plants and many other plants yield valuable timber. Other important products include fiber, gums, resins and insecticides. Many authors divide this family into three sub-families: 1. Mimosoideae (Mimosa Sub-family), 2. Caesalpinioideae (Caesalpinia Sub-family), 3. Papilionidae (Pea Sub-family). Legume family is closely allied to the Rosaceae (Rose family).

Feature of the family :

- General** : Great deal of variation in habit- trees, shrubs, water plants, xerophytes, climbers etc.
- Leaves** : Usually alternate, stipulate, compound, some have very small leaves and flat green stems, many species with only phyllodes.
- Flower** : In inflorescences, racemes or panicles or spikes or heads; flower vary in sub-families generally regular or irregular, bisexual; calyx usually 5; sepals 5; stamens overall 10 -infinite; gynoecium superior, with one carpal; ovules in two rows.
- Fruit** : Extremely variable, typically a legume.

Species Included:

- 16.1 *Cassia auriculata* L.
- 16.2 *Cassia tora* L.
- 16.3 *Canavalia ensiformis* (L.) DC.
- 16.4 *Cyamopsis tetragonoloba* (L.) Taub.
- 16.5 *Phaseolus lunatus* L.
- 16.6 *Phaseolus vulgaris* L.
- 16.7 *Psophocarpus tetragonolobus* (L.) DC.
- 16.8 *Cesbania grandiflora* Pers.
- 16.9 *Vigna mungo* L.
- 16.10 *Vigna unguiculata* subsp. *sesquipedala* (L.) Verdc.

16.1 *Cassia auriculata* L. (Fig. 16.4)

Common name(s) :

Avara, Ranawara (S); Avarai, Avaram, Sadurguli, Semmalai, Summalai (T); Tanner Cassia, Avaram (E).

Distribution :

A Native of India. Also occurs in dry regions of Tanzania. In Sri Lanka it is common along the sea coast and the dry zone.

Description of plant

General : Large much branched shrub, flowering in February and March.

Leaves : Paripinnately compound, alternate; leaflets 16 to 24, shortly stalked, oval-oblong, 2 - 3 cm long, 1 - 1.3 cm broad.

Flower : Crowded in axils of upper leaves to form a large terminal inflorescence; flower large, irregular, bisexual, bright yellow in color.

Fruit : Legume, 7 - 11 cm long, 1.5 cm broad.

Uses

Leaves eaten as mallun. However, the plant is reputed for its medicinal properties. The dried flowers and the leaves are used as a substitute for tea for diabetic patients. In India it is cultivated for its bark, which is an important source of tannin material.

Propagation : By seed.

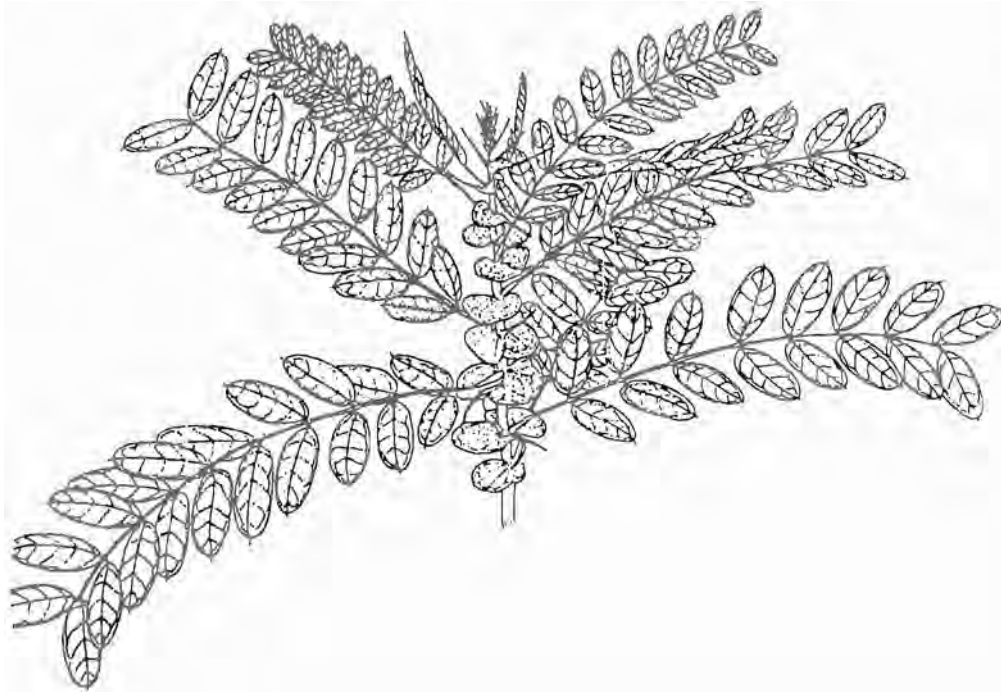


Fig. 16.1 *Cassia auriculata* L. A plant with leaves.

16.2. *Cassia tora* L. (Plate 16.4)

Common name(s) :

Peti-tora, Tora (S); Senavu, Sirutagarai, Tagarai, Usittagarai, Vanamavaram, Veddutakarai, Vindu (T); Fetid cassia (E)

Distribution :

Occurs throughout the Tropics. In Sri Lanka, it is found in the low country by the road side and on waste ground. It is very common in the dry regions.

Description of plant

General : Annual herb with a characteristic smell when crushed; with spreading branches. Flowering in January and March,

Leaves : Alternate, stipulate, paripinnately compound; leaflets 3-paired, 2.5 - 4.0 cm long, terminal pairs the largest, obovate.

Flower : Solitary or in pairs, axillary, irregular, bisexual, pale orange yellow.

Fruit : Legume, 15 to 20 cm long and ca. 5 mm wide; seeds very hard.

Uses :

Leaves are eaten as mallun and also used as a laxative which is useful in case of habitual constipation and haemorrhoids. The seeds are reputed to have anti-parasitic properties and are applied in ring worm and scabies.

Propagation : By seed.



Plate 16.1 *Cassia tora* L.

16.3. *Canavalia ensiformis* (L.) DC. (Fig. 16.2)

Common name(s) :

Awara (S); Awara-kai (T) Jack bean, Horsebean(E)

Distribution :

The center of origin is believed to be Central America and the Caribbean. Now distributed throughout the tropics. In Sri Lanka it is cultivated mainly in the Low and Mid country.

Description of plant

General : Generally bushy, erect, short-lived perennial or annual herb, 1-1.5 m in height, some with twining or climbing habit. Stems ribbed, some times hollow, becoming woody.

Leaves : Trifoliate, alternate, leaflets are petioled with pulvinus; leaflets elliptic or ovate 6-16 cm x 5-10 cm.

Flower : In curved racemes, 2-2.5 cm long, calyx with two upper and three smaller lower lobes, corolla pink or purple; stamens 10, anthers globose.

Fruit : Pendant, pale brown; pods 20-30 cm x 2-2.5 cm; seed white or pale brown, ca. 20 mm x 130 mm, flattened.

Uses :

The young pods and seeds are used as a vegetable but must be cooked thoroughly.

Propagation : By seed.



Fig. 16.2 *Canavalia ensiformis* (L.) DC.

16.4. *Cyamopsis tetragonoloba* (L.) Taub.

Common name(s) :

Kotaranga (S) & (T); Cluster bean (E).

Distribution :

Center of origin probably India but possibly Africa. Now widely distributed throughout the tropics, particularly Asia. In Sri Lanka it is cultivated mainly in the low and mid country.

Description of plant

General : Bush or erect, robust annual, 1-3 m in height, stamens normally with white hairs.

Leaves : Trifoliate, alternate, leaflets 5-10 cm in length, margins slightly serrate; petiole with prominent pulvulus at base.

Flower : Borne in axillary racemes; calyx 5- pointed; Corolla white to pink; stamens 10; style curved.

Fruit : Pods straight, hairy, pale green, 4- 10 cm. long, seed oval, ca. 5 mm. in length, white, grey or black.

Uses :

Young leaves, pods and seeds are eaten as a vegetable after cooking thoroughly.

Propagation : By seeds.

16.5 *Phaseolus lunatus* L. (Plate 16.2)

Common name(s) :

Potu-dambala (S); Butter bean, Sieva beans (E).

Distribution :

It is reported that the centre of origin is Central and South America where wild forms still exist. Now widely distributed in tropical regions of the world. In Sri Lanka it is cultivated in the low and mid country.

Description of plant

General : A variable species including twining perennial and annual herbs.

Leaves : Trifoliate, alternate, lateral leaflets oblique, 5-12 cm x 3-9 cm.

Flower : In axillary racemes, flower wing petal white, standard pale green, sometimes mauve; stamens 10.

Fruit : A pod, oblong, recurved, 5-12 cm x 1.5-2.5 cm, seed variable in different cultivars.

Uses :

The young leaves and pods are used as cooked vegetable. Dry beans are reported to have a high nutritional value being rich in protein, fiber, calcium and iron.

Propagation : By seeds.



Plate 16.2 *Phaseolus lunatus* L.

16.6. *Phaseolus vulgaris* L. (Plate 16.3)

Common name(s) :

Bonchi, (S); Avaraikkai-bonchi (T); Kidney bean, French bean (E).

Distribution :

New world in origin. Now widely cultivated in many parts of the tropics and subtropics and throughout the temperate regions. In Sri Lanka it is cultivated in the mid and low country.

Description of plant

General : A twining or erect annual herb, showing considerable variation in structure.

Leaves : Alternate, tri-foliolate; petiole long, grooved above, marked pulvinus at the base, leaflet ovate, entire, acuminate, 8 - 15 cm long, 5 - 10 cm broad.

Flower : Axillary; calyx up to 3 - 4 mm long, corolla yellowish pink or violet.

Fruit : Pod, slender, narrow 2 - 20 cm long, 1 - 1.5 cm broad; 4 -6-seeded, light to dark green in color; seed variable in color, size and shape.

Uses :

The immature pods are cooked and eaten as a vegetable. Ripe seeds are also cooked and eaten. The leaves are used as a pot herb.

Propagation : By seeds.



Plate 16.3 *Phaseolus vulgaris* L.

16.7. *Psophocarpus tetragonolobus* (L.) DC. (Fig. 16.3, Plate 16.4)

Common name(s) :

Dambala (S); Sirahu avarai (T); Winged bean, Asparagus pea, Fourangled bean (E).

Distribution :

Probably originated in tropical Asia where it is now mainly cultivated. Now introduced into West Indies. In Sri Lanka it is cultivated in the wet and the intermediate zone.

Description of plant

General : Perennial herb usually grown as a twining annual.

Leaves : Trifoliate, leaflets broadly ovate, entire, acute, 8 - 15 cm long, 4 - 12 cm broad.

Flower : In axillary racemes, up to 15 cm long with 2 - 20 flowers; flower large white or pale blue.

Fruit : Pod, more or less square, with 4 longitudinal jagged edges, 15 - 30 cm 2.5 - 3.5 cm broad; seed embedded in tissue of pod, globular up to 1 cm long, white, yellow, brown or black.

Uses :

The immature pods are cut and cooked eaten as a vegetable. The ripe seeds are reported to be eaten after parching. The young leaves, shoots and flowers are also eaten as a vegetable.

Propagation : By seeds.

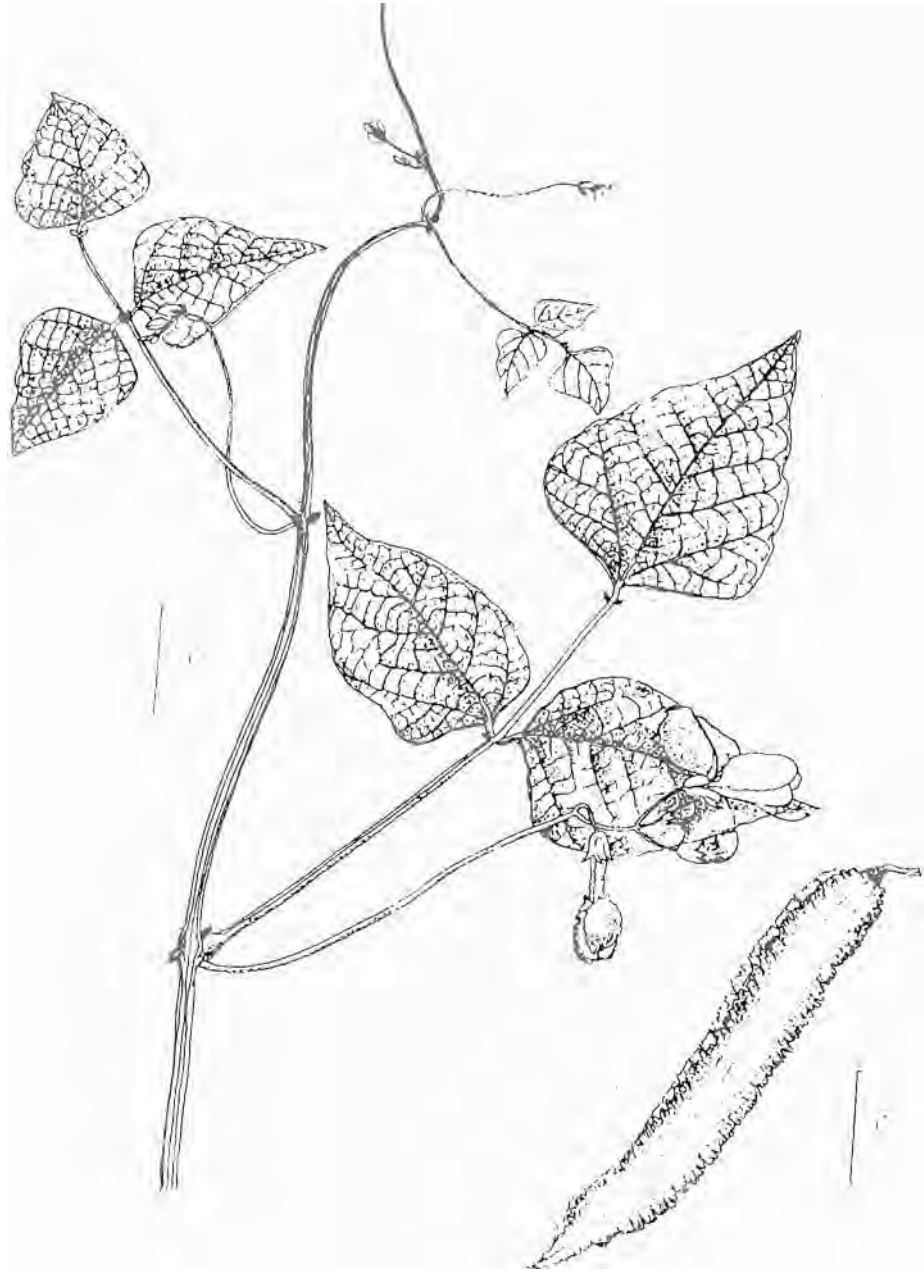


Fig.16.3 *Psophocarpus tetragonolobus* (L.) DC



Plate 16.4 *Psophocarpus tetragonolobus* (L.) DC

16.8. *Sesbania grandiflora* Pers.(Fig. 16.4, Plate 16.5)

Common Name(s):

Katuru-murunga (s); **Acham**, Agatti, Akatti-kirai, **Kariram**, Mini, Peragatti, Sevvagatti (T).

Distribution :

Found in North Australia, Malaya and Cultivated in many parts of the world. In Sri **Lanka**, it is a common garden plant specially in the mid and low country.

Description of plant

General : Perennial, slender tree; flowering and fruiting throughout the year.

Leaves : Alternate, paripinnately compound, 15 - 30 cm long; leaflets linear-oblong, sessile.

Flower : In peduncles, **axillary** racemes, irregular, bisexual, large white.

Fruit : A pod, ca. 50 cm long, many seeded.

Uses :

The leaves and flowers eaten as **mallun** or **cooked** and eaten. Medicinally used to cure rheumatic swellings, catarrh and sinusitis.

Propagation : By seed



Fig. 16.4 *Sesbania grandiflora* Pers.



Plate 16.5 *Sesbania grandiflora*. A. Branch with leaves and flowers (red variety).

16.9. *Vigna mungo* L. (Plate 16.6)

Common name(s) :

Mung, Mung-eta (S); Patchaipayara (T); Green gram (E).

Distribution :

Extensively cultivated in India, Malaya, China and Philippine Islands. In Sri Lanka it is mainly cultivated in dry regions.

Description of plant

General : Annual herb with erect branching stem; flowering from November to February.

Leaves : Alternate, three foliate; leaflet oval, more or less hairy on both sides, 5 - 8 cm long.

Flower : 4 - 6 crowded on peduncles, irregular, bisexual, pale yellow in color.

Fruit : Legume, nearly cylindrical, 5 - 7 cm long; seeds small, oblong-ovoid, truncate or blunt at the end, green or blackish.

Uses :

Seeds extensively used in various preparations as source of food. Medicinally used externally in treating nervous disorders. Commonly boiled or made into curry and eaten. Seeds are also ground into flour out of which various food preparations are made.

Propagation : By seeds.



Plate 16.6 *Vigna mungo* L.

16.10 *Vigna unguiculata* subsp. *sesquipedala* (L.) Verdc. (Fig. 16.6, Plate 16.7)

Common name(s) :

Polon-me (S); Asparagus bean, String bean, Snake bean (E).

Distribution :

Center of origin is believed to be India and China. Now distributed throughout the tropical regions. In Sri Lanka it is cultivated mainly in the low and mid country.

Description of plant

General : Often climbing annual herb, with twining stems.

Leaves : Trifoliate, alternate, leaflets ovate, 7-12 cm in length.

Flower : Borne on long peduncles, yellow or violet.

Fruit : Pods variable in length from 30-60 cm x 1.25 cm in diameter, white, green, red-purple, fleshy. Seeds 9-12 cm in length, normally brown or red.

Uses

Fresh seeds and immature pods are used as cooked vegetable.

Propagation : By seeds.

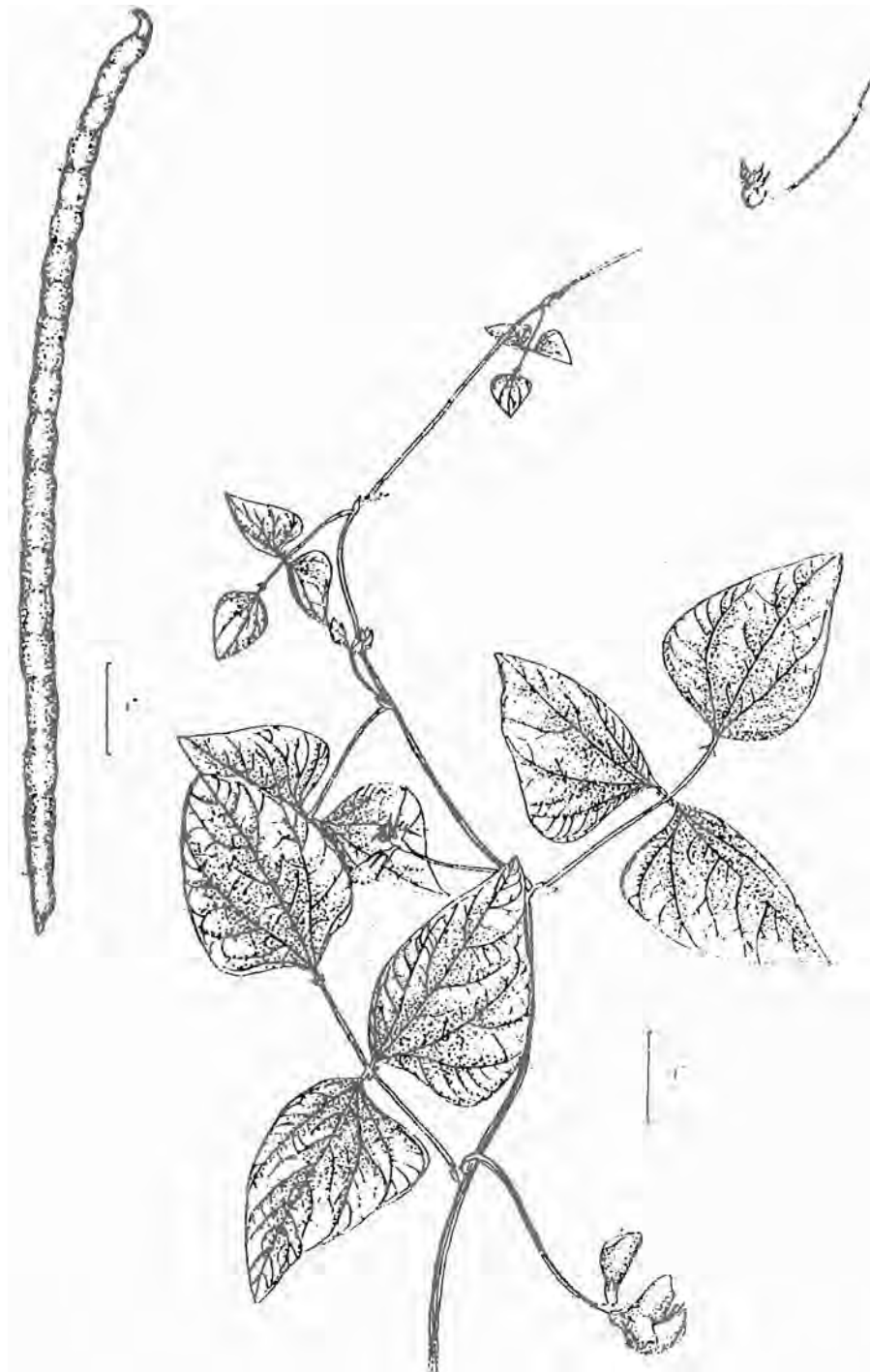


Fig. 16.5 *Vigna unguiculata* subsp. *sesquipedala* (L.) Verdc. A, top of plants with leaves and flower. B, fruit



Plate 16.7 *Vigna unguiculata* subsp. *sesquipedalis*. Cultivated plant with pods.

17.0 LAMIACEAE - LABIATAE (COLEUS FAMILY/MINT FAMILY)

Dicotyledonous plant family including 160 genera and about 3000 species. These are widely distributed. They have quadrangular branches and are commonly scented. Some are grown ornamentally, others are used as kitchen herbs, for perfume, insect repellants, flavouring and medicine and one is valued for its potato like roots. The mint family is closely related to Verbenaceae (Verbena family) differing chiefly in having the style attached to the base between the two carpels.

Feature of the family

General : Herbs and shrubs, commonly scented with quadrangular branches.

Leaves : Opposite or whorled, simple, nonstipulate

Flower : Commonly clustered at branch tips of leaf axils, accompanied by two bracts, perfect, irregular, calyx five-lobed, regular or two-parted, persistent; corolla tubular, four or five-lobed; stamens four or two; ovary superior, style attached to base of ovary between carpels; stigma two-parted.

Fruit : Four one-seeded nutlets, separate or paired, rarely a drupe.

Species Included :

17.1 *Collius rotundifolius* (Poir.) A. Chev. & Perr.

17.2 *Leucas zeylanica* (L.) R.Br.

17.1 *Collius rotundifolius* (Poir.) A.Chev. & Perr. (Plate 17.1)

Common Name(s):

Innala (S); Hausa potato, Country potato (E)

Distribution :

Reported to be Ethiopian in origin, now widely distributed in South-east Asia and tropical Africa. In Sri Lanka it is found grown in the mid wet zone.

Description of plant

General : An annual herb, with prostrate or ascending habit, 15-30 cm in length. Root tubers small, dark brown, formed in clusters around the base of the stem.

Leaves : Aromatic, some forms with a central purple marking on the lamina.

Flower : In elongated terminal racemes, small, violet in colour.

Fruit : Not seen.

Uses :

Both the tubers and leaves are used as cooked vegetable.

Propagation : By tubers



Plate 17.1 *Collinus rotundifolius* (Poir.) A.Chev. & Perr.

17.2 *Leucas zeylanica* (L.) R.Br. (Plate 17.2)

Common Name :

Geta-thumb, Thumb (S); Mudithumpai (T).

Distribution :

Reported from Assam in India, Malaysia, Burma, China and the Philippines. In Sri Lanka it is common in waste grounds.

Description of plant

General : An annual herb with an erect stem 30 - 60 cm tall and long spreading, main stem quadrangular and hispid-hairy. Flowering from September to February.

Leaves : Simple, opposite, variable in size, 2.5 - 8.7 cm long, 0.8 - 1.3 cm broad, nearly sessile, linear or lanceolate-linear, tapering to base, obtuse, shallowly serrate.

Flower : Crowded in two or three whorls, usually combined to form terminal head, irregular, bisexual, purple white; bracts numerous, linear, bristle-pointed; sepals 8, fused into a tubular, funnel-shaped calyx, 0.6 mm long; petals 5, fused into two lipped, corolla 2 cm long; stamen 4, didynamous on corolla tube; ovary superior, 2-carpellary, 4 locular, with a single ovule in each locule.

Fruit : Four small, dry, 1-seeded achenes.

Uses :

Young stem and leaves cooked and eaten as vegetable. The plant is also used in local medicine.

Propagation : By cuttings or seeds.



Plate 17.2: *Leucas zeylanica* (L.) R.Br.

18.0 LIMNOCHARITACEAE

This monocot family includes 4 genera and 7 species all of which are aquatic herbs distributed mainly in the tropics.

Features of the family

General : A perennial marsh plants with bulky rhizomes or coms. A yellow latex is exudate when damage to the plant.

Leaves : Variable in size, simple, the 'broad or broadly ovate, broadly cuneate or cordate at base.

Flower : In often umbellate inflorescence, regular, bisexual; sepals broadly ovate, green in color; petals obovate, usually yellow in color.

Fruit : A follicetum.

Species Included:

18.1 *Limnocharis flava* (L.) Buch.

18.1 *Limnocharis flava* (L.) Buch. (Fig. 18.1;

Common Name :

Diya gova (S); Yellow Burhead (E).

Distribution :

A common marsh plant of South America introduced in South Burma and then spread to Thailand, India and Sri Lanka.

Description of plant

General : A perennial erect marsh herb with somewhat bulky rhizome. Scaps angular and reach to ca. 50 cm in height. Flowering from May to June.

Leaves : Simple, variable in size, 18 - 20 cm long, 10 - 12 cm broad, broadly ovate, cuneate or cordate at base.

Flower : Borne in umbellate inflorescence, regular, bisexual, yellow in color; sepals broadly ovate greenish in color; petals broadly ovate or orbicular, bright yellow in color. Stamens many; ovary superior, carpels 16 or more, united below; ovules numerous, scattered on the inner surface of the ovary wall.

Fruit . Afollicetum.

Uses :

Young leaves cooked and eaten as vegetable.

Propagation : By cuttings and seeds.



Fig. 18.1 *Limnocharis flava* (L.) Buch.

19.0 MALVACEAE (HIBISCUS FAMILY)

Malvaceae is a dicotyledonous family including about 80 genera and 1000 species distributed in the temperate and tropical regions of the world. The members of the family are noted to have soft wood, more or less fibrous bark, bearing star-shaped hairs or small scales on young growth and leaves. The family includes many ornamentals and some weeds, many are useful - yielding cotton and other fibers, oil, a vegetable, a fruit (roselle), wood, medicine and perfume. This family is closely related to families such as Bombacaceae (Bombax family) and the Sterculiaceae (Sterculia family).

Feature of the family :

- General :** Erect herbs to trees.
- Leaves :** Alternate, entire or lobed, commonly palmately veined.
- Flower :** Clustered or single, regular, perfect, or rarely male and female flowers separate, many large and brightly colored; sepals three to five; petals five, free, may be joined at base to staminal column; stamens numerous, borne on column around pistil. Ovary superior, one to five-celled.
- Fruit :** Capsules or with berry like lobes.

Species Included :

19.1 *Hibiscus esculentus* L.

19.1 *Hibiscus esculentus* L. (Fig. 19.1, Plate 19.1)

Common name(s) :

Bandakka (S); Vendikkaim (T); Ladies fingers (E).

Distribution :

Possibly originated in Tropical Africa now cultivated throughout the tropics and subtropics. In Sri Lanka it is cultivated in the dry and wet zone.

Description of plant :

General : A strong more or less hairy annual, to 1.5 - 2 m in height.

Leaves : Heart-shaped, three to nine-lobed, edges toothed, 3 cm to 50 cm in breadth.

Flower : Develops singly at leaf axils, yellow with dark red center, ca. 5 cm. long.

Fruit : A capsule, 10 cm long or longer, ridged outside and contains numerous seeds.

Uses :

Mucilaginous fruit is cooked while green and tender. Stems and ripe fruits yield fiber manufactured into paper and textile.

Propagation : By seeds.



Fig. 19.1 *Hibiscus esculentus* L. A, top of the plant with leaves, flower and young fruit. B, mature fruit



Plate 19.1 *Hibiscus esculentus* L. Plants with leaves, flower and fruit.

28.0 MORACEAE (FIG FAMILY)

A dicotyledonous family which includes about 60 genera and 1000 species many with milky juice. Most are distributed in the Tropics. Some are planted as ornamentals; many others yield useful products: fruits (eg. fig, mulberry, bread fruit etc.), fiber (e.g. hemp), yellow dye (e.g. fustic), bow wood [e.g. *Maclura pomifera* (Raf.) Schnied.], flavoring (e.g. *Dorstenia* sp.) rubber (e.g. *Castilla* sp.) milk and wood (e.g. *Brosimum* sp.), hops (e.g. *Humulus* sp.), greens (e.g. leaves of *Allaeanthus*), and forage (leaves of several species). Our world famous Bo tree at Anuradhapura which is a sapling of the Bo tree from India under which Lord Buddha attained his Buddhahood belongs to this family. This family is closely related to the Cannabinaceae (Ganja family).

Features of the family :

- General :** Trees, vines, shrubs and a few herbs, with milky sap.
- Leaves :** Alternate, less commonly opposite, entire, toothed or palmately-lobed; palmately or feather-veined.
- Flower :** Small, inconspicuous, two sexes separate, on the same plant or on different plants, rarely solitary or few together; commonly many, in heads or spikes, covering inner surface of hollow receptacle or covering outside of globose, flat or long receptacles, radially symmetrical, no corolla.
- Fruit :** Drupaceous, discrete or more or less connate in large fleshy syncarps.

Species Included :

- 20.1 *Artocarpus heterophyllus* Lam.
20.2 *Artocarpus incisus* L.

20.1 *Artocarpus heterophyllus* Lam. (Plate 20.1)

Common name(s) :

Herali, Kos (S); Pala, Palakkai (T); Jack, Jack fruit (E).

Distribution :

Origin unknown, possibly south India. More widely cultivated throughout the Tropics especially in South East Asia. In Sri Lanka it is common throughout the island. There are two forms in Sri Lanka "waraka" has firm pulp in ripe fruit where as "wela" has soft pulp.

Description of plant :

General : Ever green tree, with reddish-brown bark.

Leaves : Elliptic, 5 - 25 x 3.5 - 12 cm with 6- 10 pairs of lateral veins.

Flower : In solitary inflorescences, axillary, male and female inflorescence separate; male inflorescence barrel- shaped; female inflorescence as the male but massive.

Fruit : Syncarp, 30 - 100 x 25 - 50 cm, green, covered by closely set conical processes. Fruiting perianths, yellow to light orange. Seeds 25 - 30 x 15 - 20 mm.

Uses :

The fruit is cooked and eaten at various stages of its development. The mature seeds are eaten cooked or roasted. The leaves are eaten by animals and sometimes eaten cooked by people. The wood which changes with age from yellow to mahogany color is excellent for wood work and is highly prized in Sri Lanka.

Propagation : By seeds.



Plate 20.1 *Artocarpus heterophyllus* Lam.

20.2 *Artocarpus incisus* L.f (Fig. 20.1, Plate 20.2)

Common name(s) :

Del (S); Era-pala, Erapalakkai (T); Bread fruit (E).

Distribution :

Supposed to have originated in Malaysia and now distributed throughout Tropical Asia and Polynesia. In Sri Lanka it is frequently found growing in the wet zone upto 700 m altitude. It is often a house garden tree.

Description of plant :

General : Ever green tree, reaching up to 25 m. with heavy crown. Flowering in June.

Leaves : Obovate, deeply insized, margin entire, lateral veins 4 - 6 pairs, 12 - 14 cm x 18 - 23 cm.

Flower : In inflorescences, axillary, solitary or paired, male head cylindrical covered by flowers and bracts. Female heads stouter, covered with peltate bracts.

Fruit : Syncarp, cylindrical, green color, 20- 30 cm, seed small or absent.

Uses :

The fruit is baked or cooked or made into curry. Wood is used for various purposes.

Propagation : Commonly by root suckers.

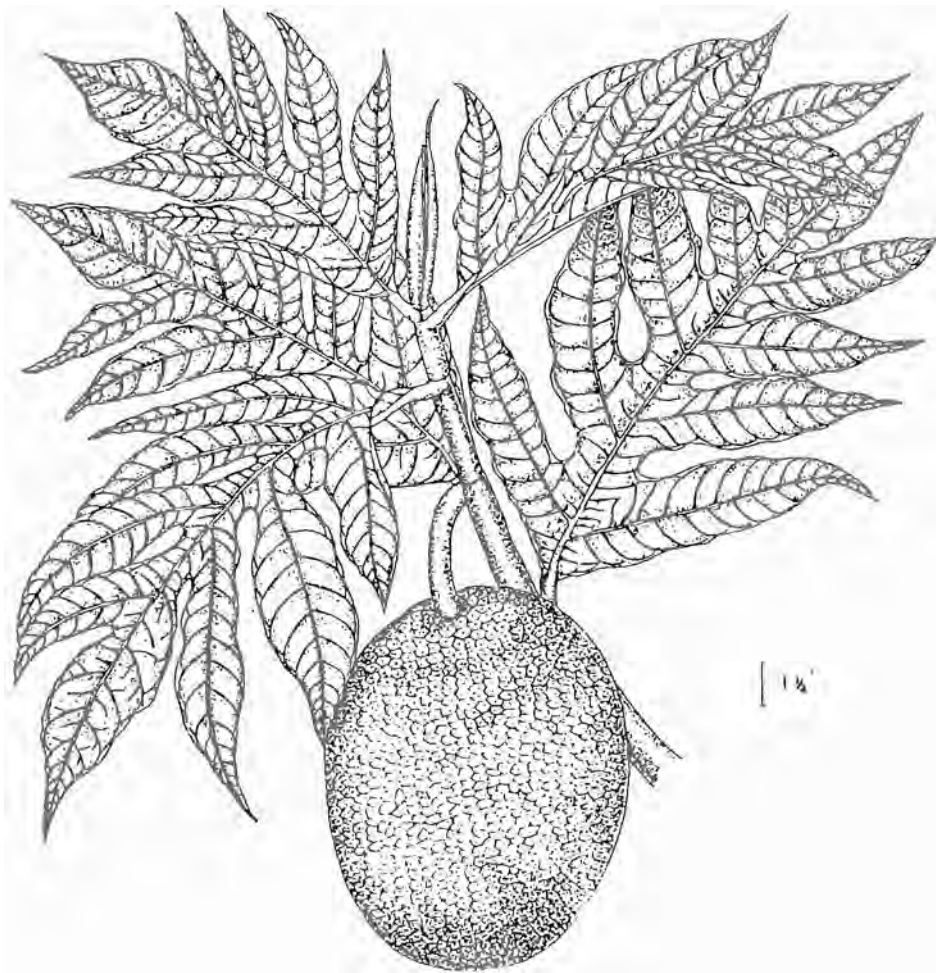


Fig. 20.1 *Artocarpus incisus* L.f Branch with leaves and fruits



Plate 20.2: *Artocarpus incisus* L.f

26.0 MORINGACEAE (HORSE-RADISH FAMILY)

The moringa family includes only one genus and about 12 species distributed from tropical Africa to India. They are deciduous and are dry- land trees. The family is closely related to Brassicaceae (Mustard family).

Features of the family :

General : Trees with thick stem.

Leaves : Alternate, pinnate to tri-pinnately compound, deciduous.

Flower : In many flowered inflorescences; flower bisexual, zygomorphic; calyx 5, imbricate, corolla 5, imbricate, unequal; stamens 5 plus 4; gynoecium superior.

Fruit : Capsule, elongated, 3 - 12 angled, 3- valved, 1 locule; seeds large 3- winged or unwinged.

Species Included :

21.1 *Moringa oleifera* Earn.

21.1 *Moringa oleifera* Lam. (Plate 21.1)

Common name(s)

Murunga (S); Murungai (T); Ben tree, Horse radish tree, Drum stick (E).

Distribution :

Probably native to East India, widely propagated in tropical countries. In Sri Lanka it is mainly found in the dry zone.

Description of plant :

- General** : A small fast growing tree with pale bark and soft wood. The tree is sometimes mistaken for a legume.
- Leaves** : Tri-pinnately compound, generally with 6 pairs of leaflets; leaflets obovate.
- Flower** : In panicles, sweet scented, cream colored.
- Fruit** : Three angled pod, about 30 cm long, with round black winged oily seeds.

Uses :

The leaves, sliced young pods and flowers are cooked and eaten. Bark contains a rough fiber and a reddish gum (ben gum). Seeds fried and eaten, also pressed for oil (ben oil), locally different parts of the plant are used for treatment of various diseases.

Propagation : Easily by cuttings.



Plate 21.1 *Moringa oleifera* Lam. Branch with flowers and fruit

22.0 MUSACEAE (BANANA FAMILY)

This Monocotyledenous family includes 5 or 6 genera and more than 125 species from tropical countries around the world. A few species are tree like but most are small to tall perennial herbs with creeping underground stems, consisting of wide, overlapping leaf sheaths.. In some species new plants develop from shoots at the base of mature plants. Rich well-watered soil spread their growth. Among them are widely known food-producing and fibre-yielding plants and many fine ornamentals. Numerous members of the family are valuable in various ways to natives of the tropics. Some have sap that will stain cloth brown. The family is closely related to the Iris family (Iridaceae) and the Ginger family (Zingiberaceae).

Features of the family :

General : Most species are perennials with under ground creeping rhizomes. Trees or herbs.

Leaves : Arranged spirally or in two rows, petiole stiff with overlapping sheaths, blades chiefly large, oblong to long and narrow.

Flower : In long spikes or panicles, small to large, irregular, borne with large bracts; calyx ordinarily three parted to the base or joined; corolla three- parted to the base or joined .

Fruit : A berry or a capsule.

Species Included :

22.1 *Musa acuminata* Colla

22.1 *Musa acuminata* Colla (Plate 22.1)

Common Name(s):

Alu kesel (S); Samba vale (T); Cooking banana(E)

Distribution:

Native of tropics of the Old World. In Sri Lanka it is cultivated almost throughout the Island.

Description of plant:

General : The stem is an underground rhizome.

Leaves : Spirally arranged, fibrous leaf bases overlapping and forming more or less a trunk, leaf stems thick, blades large some over 4 m by 1 m, thick, smooth, at first entire but soon splitting like a feather.

Flower Borne on a thick erect or drooping stem issuing from top of trunk or center of leaf cluster, commonly in flat groups under large dark to light purple - red bracts; male flowers at stem tip; female flowers at base.

Fruit : Thick-skinned, green berries, fleshy, cylindrical, borne in bunches, flesh white. Seeds none or few to many, small.

Uses :

Mature berries and male inflorescences are cooked and eaten as vegetable.

Propagation : By succers.



Plate 22.1 *Musa acuminata* Colla. Plant with fruits.

23.0 NYCTAGINACEAE (BOUGAINVILLEA FAMILY)

This family includes 30 genera and about 300 species distributed throughout the warm regions, abundant in Tropical America. Some are weeds, a few ornamentals, some are eaten as a green and some other used as medicinal plants. The family is closely related to the Phytolaccaceae (Pokeweed family).

Features of the family

- General** : Herbs, shrubs, and trees, sometimes woody vines.
- Leaves** : Opposite or alternate, simple, entire.
- Flower** : Commonly in cymes, some accompanied by brightly colored, more or less calyx like bracts, perfect or sexes separate, regular, no petals; calyx tubular; stamens, one to many, free or joined at base; ovary superior, one-celled.
- Fruit** : An achene, ridged or winged, enclosed by persistent base of calyx or not.

Species Included :

- 23.1 *Boerhavia diffusa* L.
23.2 *Pisonia grandis* R.Br.

23.1 *Boerhavia diffusa* L. (Plate 23.1)

Common name(s) :

Sarana, Pitasudupala, Pitasudu- sarana (S); Charanai (T); Alena, Boerhavia, Hogweed, Pigweed (E).

Distribution :

Occurs in all tropical and subtropical regions of Asia, Africa and America. It is a very common weed in Sri Lanka in sandy waste ground, specially near the coast.

Description of plant :

General : Prostrate, perennial herb branching from the base and spreading over the ground, 30 cm to 1.5 m or more. Flowers all year round.

Leaves : Simple, opposite, ovate to broadly oval, nearly round, 2 cm to 3 cm long.

Flower : Pink in color, tiny, tubular, five lobed, regular, bisexual.

Fruit : Membranous, closely invested with persistent perianth tube which is oblong-ovoid, broadly and bluntly 5-ribbed, very glandular, seeds solitary.

Uses :

The leaves are cooked and eaten as a curry or mellun. The extract of the plant is used in native medicine.

Propagation : By cuttings.



Plate 23.1 *Boerhavia diffusa* L. Plant with flowers growing under natural conditions.

23.2 *Pisonia grandis* R.Br. (Plate 23.2)

Common name(s)

Watha Banga (S); Chandi, Ilachaikketiylai, Lechchakkottai, Muruval (T); Lady-love, Lettuce-tree (E).

Distribution

Found in Malaysia, Polynesian Islands, Andaman Islands and it is cultivated in India and Sri Lanka. In Sri Lanka it is a common plant along the coast and inland up to the mid country.

Description of plant :

- General** : A tree reaching to a height of ca. 10 - 15 m. Young leaves paler than the older ones in color.
- Leaves** : Simple, opposite, or alternate, 15 - 25 cm long, 6 - 8 cm broad, ovate or oblong, acute or acuminate at base.
- Flower** : Borne in dense panicle or corymbose terminal cymes; small, dioecious; male flower, perianth campanulate, lobes 5-lobed, stamens 8; anthers didynamous; female flowers, perianth tubular, enlarged at base; ovary superior.
- Fruit** : Long pedicelled enclosed in coriaceous perianth base, 5 angled with one row of prickles, seed with a hyaline testa adnate to the pericarp.

Uses :

Immature leaves cooked into mullu and eaten.

Propagation : By cuttings and seeds.



Plate 23.2: *Pisonia grandis* R.Br.

24.0 NYMPHAEACEAE (WATER LILY FAMILY)

This dicotyledonous family includes **3** genera and **75** aquatic species distributed in tropical and temperate regions of the world. Most are ornamental and foody plants. The family is closely related to the Ceratophyllaceae (Hornwort family).

Features of the family

- General** : Perennial water plants. Rhizome short stout, erect and long-lived.
- Leaves** : Floating or rising above the water, commonly on long petioles directly from rhizome. Mostly large and simple, round and peltate or heart- shaped.
- Flower** : Floating or rising above the water, solitary, regular, perfect, large or small, showy, more or less fragrant; sepals 4; petals five to many, if many grading to stamens, stamens numerous; ovaries many and joined, superior to inferior; ovules one to many in each division.
- Fruit** : Spongy berry, dehiscence by swelling of mucilage surrounding, the seeds.

Species included :

24.1 *Nelumbo nucifera* Gaertn.

24.2 *Nymphaea lotus* L.

24.3 *Nymphaea stellata* Willd.

24.1 *Nelumbo nucifera* Gaertn. (Plate 24.1)

Common name(s) :

Nelum, Tamburu (S); Ambal, Sivapputamarai, Tamarai (T); Chinese water-lily, Indian lotus, Sacred lotus (E).

Distribution :

Occurs in stagnant waters throughout the warmer regions from Persia to Australia. It is common in tanks of the dry zone in Sri Lanka.

Description of plant :

General : Large aquatic herb with slender, elongated, branched, creeping stem with tufts of roots at nodes. Flowers from February to August.

Leaves : Large, some erect, others floating, simple, peltate, concave or flat, rounded, entire, radially veined, 30 -40 cm diameter.

Flower : Regular, bisexual, white or rose- colored, sweet-scented, solitary, large, 10 - 25 cm diameter; sepals 4 or 5, petals 15 or more; stamens numerous; ovary superior, carpels small, 10 - 20 separately sunk on top of a large obconical receptacle.

Fruit : Spongy berry.

Uses :

The fresh flowers are used as temple offerings. The rhizome, young petioles are cooked and used as a vegetable and the seeds are boiled or roasted or grounded into flour and eaten. The plant is used for native medicinal purposes.

Propagation : By rhizome.



Plate 24.1 *Nelumbo nucifera* Gaertn.

24.2 *Nymphaea lotus* L. (Plate 24.2)

Common name(s) :

Zt-olu, Olu, Otu (S); Allitamarai, Ambal (T).

Distribution :

Occurs throughout tropical Asia, Africa, Java and Philippine Islands. In Sri Lanka it is very common in streams, ponds and tanks throughout the low country up to 350 m. elevation.

Description of plant :

General : Aquatic herb with short; erect, roundish tuberous root stock. Flowers throughout the year. The mature flowers sink below the surface and the fruit matures and ripens under water.

Leaves : Solitary, floating, peltate, sagittate-rotund, obtuse with narrow or wide sinus, finely velvety. tomentose beneath, 15 - 20 cm in diameter.

Flower : Solitary, regular, bisexual, white, pale or dark rose-colored, fragrant, open only in the morning, 12.5 - 17.5 cm diameter; sepals 4, petals ca. 12; stamens ca. 40; ovary superior, many carpellary, sunk in globular spongy receptacle.

Fruit : Globular, spongy berry, with numerous seeds, 3 - 4 cm diameter, seed ovoid-globose.

Uses :

Flowers are used as temple offerings, similar to *N. nucifera*, the rhizome and young petioles are used as vegetable. The seeds are cooked and eaten and also used in native medicine.

Propagation : By seeds.



Plate 24.2 *Nymphaea lotus* L.

24.3 *Nymphaea stellata* Willd. (Plate 24.3)

Common name(s) :

Manel, Nilupul (S); Blue water-lily (E)

Distribution :

Occurs in warmer parts in India, Tropical Asia and Africa. In Sri Lanka it is common in shallow streams, tanks and ponds throughout the low country.

Description of plant :

General : Aquatic herb with stout, erect, ovoid root stock. Flower all the year round.

Leaves : Floating, sagittate-rotund, margin entire.

Flower : Regular, bisexual, solitary, pale blue or violet, open all day; sepals 4; petals numerous; stamens numerous; ovary superior; carpels numerous, sunk into the fleshy receptacle to form many-locular ovary.

Fruit : Soft, globular, spongy berry, bursting irregularly, seeds numerous, small.

Uses:

Similar to *N. nucifera* and *N. lotus*, the starchy rhizomes are roasted or cooked and eaten.

Propagation : Root stock.



Plate 24.3 *Nymphaea stellata* Willd. Floating leaves of plant with flower

25.0 OXALIDACEAE (WOOD-SORREL FAMILY)

Oxalidaceae is a dicotyledonous plant family which includes 8 genera and about 900 species of which about 800 belong to the genus *Oxalis*. They are from temperate and tropical regions and among them are weeds, ornamentals, and edible plants. This family is closely related to the Geraniaceae (Geranium family).

Features of the family

General : Includes herbs, shrubs and trees

Leaves : Opposite or alternate, palmately or pinnately compound, commonly closing at night. Stipules present or absent.

Flower : Perfect, regular, solitary or in umbels or clusters, at leaf bases or on branches or trunks; sepals five, overlapping; petals five, spirally arranged; stamens 10, joined at base; ovary superior, five-celled, with five separate styles.

Fruit : Capsular or fleshy, opening or not.

Species included :

25.1 *Averrhoa bilimbi* L.

25.2 *Averrhoa carambola* L.

25.1 *Averrhoa bilimbi* L. (Plate 26.4)

Common name(s) :

Bilin, Bimbiri (S); Kochittamarattai, Pilimbi, Pulichakkay, Pulima (T); Bilimbi, Bilinbing, Cucumber tree (E).

Distribution :

Found in India and Malaya. Cultivated in many other tropical countries. In Sri Lanka it is a commonly cultivated garden plant in the mid and low country.

Description of plant :

General : A small tree reaching to height of about 7 m. Young parts and petioles rusty pubescent. Flowering from March to May and in November.

Leaves : Alternate, imparipinnately compound, each leaf with 11 - 35 leaflets; leaflets entire, 3.7 - 5 cm long, 1.8 cm broad, oblong, more or less pubescent.

Flower : Arising from trunk and branches, regular, bisexual, small, sepals 5, imbricate, ovate-lanceolate, pubescent outside; Petals 5, red-purple, hypogynous contorted, oblong-sagittate, twice as long as sepals; stamens 10; Ovary superior, 5 carpellary, 5-locular, pubescent.

Fruit : Oblong berry, fleshy, large, drooping, 5 cm long, furrowed longitudinally.

Uses:

The mature and dried fruits are used as a vegetable. Different parts of the plant are used for treating various diseases.

Propagation : By seeds or root suckers.



Plate 25.1 *Averrhoa bilimbi* L.

25.2 *Averrhoa carambola* L. (Plate 25.2)

Common name(s) :

Kamaranga (S); Kandasagadam. Sagadam, Sigam, Sisam, Tamaratti (T) Carambola apple, Chinese gooseberry (E).

Distribution :

Originally from the Malayan region. Now widely cultivated in the tropics. In Sri Lanka it is somewhat common in the mid and low country.

Description of plant :

General : A tree with many branches and dense evergreen foliage reaching up to a height of 6 m. Flowering from May to August and November.

Leaves : Alternate, imparipinnately compound, leaflets 5 -11 cm, 3.7 - 6.2 cm long, 1.8 - 3. cm broad, ovate- oblong, acuminate, entire, base oblique, acute, petioles short.

Flower : In short axillary racemes, regular, bisexual, sepals 5, imbricate, petals 5, hypogynous contorted, more than twice as long as sepals, oblong- ovate, variegated white and purple, stamens 10, of which 5 are short and without anthers; ovary superior, 5 carpellary, 5 locular with axile ovules.

Fruit : Ovoid, ellipsoid or oblong acute- angled with 3 - 5 deep ribs, yellow, pulpy, 7.5 - 12.5 cm long.

Uses:

Fruit cooked and eaten or preserved and eaten. The leaves, flowers and fruits used in medicines. The fruit is reported to be a good source of iron, vitamin B and C.

Propagation : Seed or root suckers.



Plate 25.2 *Averrhoa carambola* L.

26.0 PORTULACCACEAE (PURSLANE FAMILY)

Portulacaceae a dicotyledonous family includes about 19 genera and about 500 species, commonly succulent plants. The species are widely spread throughout the world, specially in dry open places. A few yield food, a few are ornamental. This family is closely related the Basellaceae (Basella family).

Features of the family

General : Annuals or perennials, prostrate to erect, commonly succulent herbs and small shrubs.

Leaves : Alternate, opposite or whorled, commonly succulent and smooth, small, entire, joined at base or not. stipules ordinarily present.

Flower Clustered or single, terminal, perfect, regular or slightly irregular; sepal two or more; petals 4 - 6, free or joined at base; stamens are opposite each petal or numerous; ovary superior or half inferior, one-celled, ovules one to many, style 2 - 8 -parted.

Fruit : Capsule, opening by a lid or 3 - valved; seed many.

Species included:

26.1 *Portulaca oleracea* L.

26.2 *Talinum triangulare* (Jacq.) Willd

26.1 *Portulaca oleraceae* L. (Plate 26.1)

Common name(s) :

Genda-kola, Genda-pala (S); Purslane, Wild portulaca (E).

Distributor :

Cosmopolitan. In Sri Lanka it is a common weed.

Description of plant :

General : Smooth plant, lying close to the ground.

Leaves : Alternate or clustered at the branch ends, small, flat, succulent, reddish or dull green, spatulate shaped, ca. 1.5 to 2.5 cm long, short petioled.

Flower : Few to a head, ca. 1.5 cm in diameter; sepals 2, petals 5, thin, stamens 7 - 12.

Fruit : Capsule, opening by a lid.

Uses :

The tender parts are cooked and eaten in many countries.

Propagation : By seeds or cuttings.



Plate 26.1 *Portulaca oleraceae* L. Plant growing under natural conditions

26.2 *Talinum triangulare* (Jacq.) Willd. (Fig. 26.1, Plate 26.2)

Common name(s) :

Gas-Niviti (S), Sweet heart (E).

Distribution :

West Indies and South American species now cultivated in many places such as West Africa, Trinidad and Java, In Sri Lanka it is grown as a house garden plant specially in the wet zone.

Description of plant :

General : Herb, growing up to about 60 cm, somewhat woody at base, with fleshy leaves and flattened or triangular stems.

Leaves : Nearly opposite, simple, fleshy, oval, or inverted ovate tapering into petiole.

Flower : In terminal, few flowered panicles, pink, red, white or even yellow; sepals 2; petals 5; stamens 15 - 20.

Fruit : Capsule, globose, three-valved.

Uses :

The short lateral shoots are broken off and lightly cooked, boiled or steamed as vegetable.

Propagation : By seed or cuttings.



Fig. 26.1 *Talinum triangulare* (Jacq.) Willd.



Plate 26.2 *Talinum triangulare*. Plants with leaves and flowers.

27.0 SAPINDACEAE (SOAP FAMILY)

The Soap family include about 140 genera and 2000 species distributed widely in tropical and warm regions. Some are ornamentals, some yield edible fruits, a beverage (guarana), shellac, a soap substitute, poisons, hard timber. One of the most useful trees in the family is the lac tree (*Schleichera trijuga* Willd.) a native of Southern Asia, a source of timber, shellac, edible fruit pulp and of macassar oil from the seeds for cooking, as hair oil and for lighting. The family is closely related to the Akaniaceae.

Features of the family

- General** : Trees, shrubs and a few herbs, climbing or not,
- Leaves** : Commonly alternate, and compound, divided feather-fashioned or palmately, in some entire.
- Flower** : In numerous or wide clusters, regular or irregular, reduced or not, sexes separate or each flower perfect; sepals four or five, free or joined; petals three to five or absent, equal or not; stamens commonly 8 separate or joined; ovary superior, entire or lobed.
- Fruit** : Berry-like, drupe like or a capsule.

Species Included:

27.1 *Cardiospermum helicacabum* L.

27.1 *Cardiospermum halicacabum* L. (Fig. 27.1, Plate 27.1)

Common name(s) :

Penela, Penela-wel (S); Kottavan, Mudakottam (T); Baloon vine, Heart seed (E).

Distribution :

Occurs in the tropical and subtropical regions of the world
In Sri Lanka it grows in the mid and low country.

Description of plant :

General : Annual, climber with a slender, strongly furrowed glabrous stem. Flowering all year around.

Leaves : Alternate, biternate, leaflet sessile or shortly stalked, ovate, tapering at base, deeply incised-serrate.

Flower : In small cymes with 2 opposite reflexed circinate hooked tendrils. Irregular, polygamous, dioecious, white, very small.

Fruit : An inflated 3-chambered, membranous, loculicidal capsule, bladder-like, seeds globose, black, 4 - 6 mm long.

Uses :

The whole plant is used in native medicine. The young leaves are cooked and eaten and the juice is extracted and cooked with rice to form a porridge.

Propagation : By seeds.



Fig. 27.1 *Cardiospermum halicacabum* L. Climber with leaves and fruit



Plate 27.1: *Cardiospermum halicacabum* L.

28.0 SOLANACEAE (TOMATO FAMILY)

This dicotyledonous family includes 90 genera and 2000 species widely distributed in tropical and temperate regions. The few members which are trees are confined only to the tropics. Many are grown for ornament. Others yield valuable foods (such as potato and tomatoes) flavoring (peppers) and medicine [belladonna (*Atropa*) and *Datura*] some are used for chewing and smoking (tobacco), one for magic (mandrake); many are poisonous. The family is closely related to the Convolvulaceae (Morning glory family).

Features of the family

General : Herbs, shrubs, small trees and vines, smooth or prickly.

Leaves : Commonly alternate, simple or compound, entire or toothed.

Flower : Solitary or in cymes at branch or stem tips, at leaf axils or extra-axillary, perfect, commonly regular, calyx five-lobed, persistent, corolla tubular to wheel-shaped, generally five-lobed; stamens as many as corolla lobes; ovary superior, commonly 2-celled, ovules 1 to many.

Fruit : Berry or capsule; seeds 1 to many

Species Included:

28.1 *Solanum macrocarpon* L.

28.2 *Solanum melongena* L.

28.3 *Solanum violaceum* Ortega

28.1 *Solanum macrocarpon* L. (Plate 28.1)

Common name(s) :

Wambatu (S); Kattarikkai (T); Eggplant (E)

Distribution :

Native to South Eastern Asia now occurs in many parts of the tropics and sub tropics. In Sri Lanka it is cultivated mainly in the dry zone.

Description of plant :

General : Large downy perennial herbs or small shrub, 60cm-1m tall, spiny or not.

Leaves : Thick, oblong to oval 15 -35cm long, more or less angled or lobed unequal at base.

Flower : Solitary opposite the leaves, violet in color, 5cm in diameter.

Fruit : Solid pulpy berry, shinny, bleaching violet-purple, yellow, white or stripped, 4-30cm long.

Uses :

The fruit is fried, cooked and eaten or mixed to form pickles. Also it is used in local medicine. Number of different plants are known.

Propagation : By seeds.



Plate 28.1 *Solanum macrocarpon* L.

28.2 *Solanum melongera* L. (Fig. 28.1)

Common name(s) :

Elabatu, Thalanabatu (S); Vaddu (T).

Distribution :

Occurs in India and Tropical Asia, Australia and Polynesian islands. In Sri Lanka it is a common roadside weed upto 2000 m altitude.

Description of plant :

General : Semi-woody perennial herb, 30-90 cm high, with spreading branches, with yellow prickles. Flowering all the year round.

Leaves : Simple, alternate, oblong-oval, pinnately lobed, 6 - 10 cm long.

Flower : In 1 flowered cymes, regular, bisexual, bright mauve purple, large sepals 5, fused, with long prickled, petals 5 fused into a rotate corolla, 2.5 cm diameter, stamens 5 inserted in corolla throat, anthers connivent into an exerted cone, ovary superior 2 lobed.

Fruit : Smooth shiny, berry, yellow or whitish with green veins, 2.5 cm long.

Uses:

The mature fruit is cooked and eaten as a vegetable. Also the plant is used in local medicine.

Propagation : By seeds.



[1/2]

Fig. 28.1 *Solanum melongena* L. Branch with leaves, flower and fruit

28.3 *Solanum violaceurn* Ortega. (Fig. 28.2, Plate 28.2)

Common name(s) :

Tibbatu (S); Kandal, Karirnullu, Naymulli, Urusi (T)

Distribution :

Occurs in tropical India, Malaysia, China, the Philippines and Africa. In Sri Lanka it is a weed in waste ground and road sides up to 2000 m altitude.

Description of plant:

General : shrubby perennial with stout much branched stems with sharp prickles. Flowers in April and May.

Leaves : Simple, alternate, ovate in outline, cordate or rounded 10 - 15 cm long.

Flower : On cymes, regular, bisexual, violet or purple or large, sepals 5 fused, petals 5 fused into a rotate corolla, 2.5-3.7 cm diameter, stamens 5, inserted on corolla anthers joined into an exerted cone, ovary superior 2 locular.

Fruit : Smooth berry, surrounded at base by spreading calyx, 1cm long.

Uses:

The half ripe berries are cooked and eaten. Also plant is used in native medicine.

Propagation : By seeds.



Fig. 28.2 *Solanum violaceum* Ortega. Branch with leaves, flower and fruit.



Plate 28.3 *Solanum violaceum* Ortega. Branch with leaves, flowers and fruit.

29.0 VERBANACEAE (VERBENA FAMILY),

Dicotyledonous family Verbanaceae includes 76 genera and about 3242 species and number of subspecies distributed mainly in the tropics and south temperate zone. Many are grown ornamentally, a few yielding valuable wood (eg. Teak). This family is closely related to the Lamiaceae (Mint family).

Features of the family

General : Includes herbs, shrubs, trees and vines. commonly with quadrangular branches.

Leaves : Opposite, rarely whorled or alternate, simple or compound, entire or toothed, stipules absent.

Flower : Commonly clustered at branch tips or leaf axils, perfect, commonly irregular. accompanied by bracts; sepals 4 - 5, fused; petals 4 - 5, fused to a tubular corolla 4 - 5 lobed, two lipped or not; stamens 4- 5, attached to corolla; ovary superior 4-celled. ovules one or two in each cell.

Fruit : A drupe, berry or capsule, commonly with 2 or 4 cells. each with one seed.

Species Included:

29.1 *Premna procumbens* Moon

29.1 *Premna gracumbens* Moon (Fig. 29.1)

Common name(s) :

Lekolapala (S); Mulla, Mullai (T)

Distribution :

Moldenke in the Flora of Sri Lanka is of the opinion that this species is possibly endemic to Sri Lanka. In Sri Lanka it is cultivated or found in the mid and the Bow country.

Description of plant

General : Small shrub or undershrub, sometimes straggling, young parts finely short-pubescent.

Leaves : Opposite, readily detached, coriaceous or chartaceous, dark green above, lighter beneath, oblong or ovate-oblong, 4.5 - 11.5 cm long, 1.7 - 4.3 cm broad; petiole very slender.

Flower : In cymes with many flowers, sepals fused to campanulate tube ca. 2 mm long; petals fused into corolla tube ca. 3 mm long, green, white or greenish-white with a patch of yellow; stamens exerted.

Fruit : Adupe.

Use; :

The leaves are fried or made into salad and mellun and eaten with rice.

Propagation : By cuttings or root suckers.



Fig. 29.1 *Premna procumbens* Moon

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INDEX OF FAMILY NAMES

	Page
AIZOACEAE (CARPET -WEED FAMILY)	1
AMARANTHACEAE (COCKS-COMB FAMILY)	5
AMARYLIDACEAE (AMARILIS FAMILY)	21
ANACARDIACEAE (MANGO FAMILY)	24
APIACEAE - UMBELIFERAE (CARROT FAMILY)	31
APONOGETANACEAE (APONOGETON FAMILY)	34
ARACEAE (ANTHURIUM FAMILY)	37
ARALIACEAE (PANAX FAMILY)	47
ASCLEPIADACEAE (MILKWEED FAMILY)	51
BASELLACEAE (MADDEIRA-VINE FAMILY)	56
BORAGINACEAE (HELIOTROPE FAMILY)	60
CONVOLVULACEAE (MORNING-GLORY FAMILY)	63
CUCURBITACEAE (GOURD FAMILY)	71
DIOSCOREACEAE (YAM FAMILY)	97
EUPHORBIACEAE (POINSETTIA FAMILY)	105
FABACEAE-LEGUMINOSAE (BEAN OR LEGUME FAMILY)	108
LAMIACEAE - LABIATAE (COLEUS FAMILY/MINT FAMILY)	132
LIMNOCHAIUTACEAE	137
MALVACEAE (HIBISCUS FAMILY)	140
MORACEAE (FIG FAMILY)	144
MORINGACEAE (HORSE-RADISH FAMILY)	150
MUSACEAE	153
NYCTAGINACEAE (BOUGAINVILLEA FAMILY)	156
NYMPHAEACEAE (WATER LILY FAMILY)	161
QXALIDACEAE (WOOD-SORREL FAMILY)	168
PQRTULACACEAE (PURSELANE FAMILY)	173
SAPINDACEAE (SOAP FAMILY)	179
SOLANACEAE (TOMATO FAMILY)	183
VERBENACEAE (VERBENA FAMILY)	191

INDEX OF SCIENTIFIC NAMES

	Page
<i>Aerva lanata</i> (L.) Juss. ex Schult	6
<i>Alternanthera sessili</i> (L.) DC.	8
<i>Allium cepa</i> L. var. <i>aggregatum</i> G.Don	22
<i>Alocasia macrorrhiza</i> (L.) Schott.	38
<i>Amaranthus spinosus</i> L.	11
<i>Amaranthus tricolor</i> L.	14
<i>Amaranthus viridis</i> L.	16
<i>Anacardium occidentale</i> L.	25
<i>Aponogeton jacobsenii</i> Brugger	35
<i>Argyrea populifolia</i> Choisy	64
<i>Artocarpus heterophyllus</i> Lam..	145
<i>Artocarpus incisus</i> L.f.	147
<i>Averrhoa carambola</i> L.	171
<i>Averrhoa bilimbi</i> L.	169
<i>Basella alba</i> L.	57
<i>Benincasa hispida</i> (Thunb.) Cogn.	72
<i>Roerhavia diffusa</i> L.	157
<i>Canavalia ensiformis</i> (L.) DC	114
<i>Cardiospermum halicacabum</i> L.	180
<i>Cassia tora</i> L.	112
<i>Cassia auriculata</i> L.	110
<i>Celosia argentea</i> L.	19
<i>Centella asiatica</i> (L.) Urb.	32
<i>Coccinea grandis</i> (L.) J.O. Voigt	74
<i>Collius rotundifolius</i> (Poir) A.Chev. & Perr	133
<i>Colocasia esculenta</i> (L.) Schott.	40
<i>Cordia dichotoma</i> Forst.f.	61
<i>Cucumis melo</i> var. <i>egrestis</i> Naud.	76
<i>Cucumis sativus</i> L.	79
<i>Cucurbita maxima</i> Duchsene	81
<i>Cyamopsis tetragonoloba</i> (L.) Taub.	116
<i>Dioscorea alata</i> L.	98
<i>Dioscorea bulbifera</i> L.	98
<i>Dioscorea esculenta</i> (Lour.) Burk.	102
<i>Dioscorea pentaphylla</i> L.	103
<i>Glinus oppositifolius</i> (L.) A. DC.	2
<i>Gymnema lactiferum</i> (L.) R.Br. ex Schult. var. <i>lactiferum</i>	52
<i>Hibiscus esculentus</i> L.	141
<i>Ipomoea aquatica</i> Forsk	66
<i>Ipomoea batatas</i> (L.) Lam.	69

<i>Lagenaria siceraria</i> (Molina) Standl.	84
<i>Lasia spinosa</i> (L.) Thw.	42
<i>Leucas zeylanica</i> (L.) R.Br.	135
<i>Limnocharis flava</i> (L.) Bucn.	138
<i>Luffa cylindrica</i> (L.) M.J. Roem	88
<i>Luffa acutangula</i> Roxb.	86
<i>Mangifera indica</i> L.	27
<i>Manihot esculenta</i> Carrntz.	106
<i>Momordica chcrantia</i> L.	90
<i>Momordica dioica</i> Roxb. ex Willd.	93
<i>Moringa oleifera</i> Lam.	151
<i>Musa acuminata</i> Colla	154
<i>Nelumbo nucifera</i> Gaertn.	162
<i>Nymphaea lotus</i> L.	164
<i>Nymphaea stellata</i> Willd.	166
<i>Panax fruticosum</i> L.	48
<i>Phaseolus lunatus</i> L.	117
<i>Phaseolus vulgaris</i> L.	119
<i>Pisonia grandis</i> R.Br.	159
<i>Portulacca oleraceae</i> L.	174
<i>Premna procumbens</i> Moon.	192
<i>Psophocarpus tetragonolobus</i> (L.) DC.	121
<i>Sesbania grandiflora</i> Pers.	124
<i>Solanum melongena</i> L.	186
<i>Solanum macrocarpon</i> L.	184
<i>Solanum violaceum</i> Ortega.	188
<i>Solenostemon rotudifolius</i> (Poir.) A.Chev. & Perr.	133
<i>Spondias dulcis</i> Soland. ex Parkinson	29
<i>Syngodium angustatum</i> Schott.	43
<i>Talinum triangulare</i> (Jacq.) Willd.	176
<i>Trianthema portulacastrum</i> L.	3
<i>Tricosanthes cucumerina</i> L.	95
<i>Vigna mungo</i> L.	127
<i>Vigna unguiculata</i> subsp. <i>sesquipedala</i> (L.) Verdc.	129
<i>Wuttakaka volubilis</i> (L.f.) Stapf.	53
<i>Xanthosoma sagittifolia</i> (L.) Schott.	45

INDEX OF SINHALA NAMES

SINHALA NAME	SCIENTIFIC NAME	PAGE
Alupuhul	<i>Benincasa hispida</i>	72
Amba	<i>Mangifera indica</i>	27
Anguna	<i>Wattakaka volubilis</i>	53
Avara	<i>Cassia auriculata</i>	110
Bandakka	<i>Hibiscus esculentus</i>	141
Batala	<i>Igomoea batatas</i>	69
Bilin	<i>Averrhoa bilimbi</i>	169
Bimbiri	<i>Averrhoa bilimbi</i>	169
Bonchi	<i>Paseolus vulgaris</i>	119
Dambala	<i>Psophocarpus tetragonolobus</i>	121
Daravetakolu	<i>Luffa acutangula</i>	86
Del	<i>Artocarpus incisa</i>	147
Desa-ala	<i>Xanthosoma sagittifolia</i>	45
Diya-labu	<i>Lagenaria siceraria</i>	84
Elabatu	<i>Solanum melongena</i>	186
Embarella	<i>Spondias dulcis</i>	29
Engili-kohila	<i>Lasia spinosa</i>	42
Et-olu	<i>Nymphaea lotus</i>	164
Gahala	<i>Colocasia esculenta</i>	40
Gas-niviti	<i>Talinum triangulare</i>	176
Genda-kola	<i>Portulaca oleraceae</i>	174
Genda-pala	<i>Portulaca oleraceae</i>	174
Geta-thumbu	<i>Leucas zeylanica</i>	135
Giritilla	<i>Argyreia populifolia</i>	64
Gotukola	<i>Centella asiatica</i>	32
Habarala	<i>Alocasia macrorrhiza</i>	38
Heen-pala	<i>Glinus oppositifolius</i>	2
Heen sarana	<i>Trianthema portulacastrum</i>	3
Heeni-pala	<i>Glinus oppositifolius</i>	2
Hen-kekiri	<i>Cucumis melo var. egrestis</i>	76
Herali	<i>Artocarpus heterophyllus</i>	145
Hinipala	<i>Glinus oppositifolius</i>	2
Hin sarana	<i>Trianthema portulacastrum</i>	3
Innala	<i>Collius rotundifolius</i>	133

Kadju	<i>Anacardium occidentale</i>	25
Kaharata-ala	<i>Dioscorea alata</i>	98
Kahata-kondol	<i>Dioscorea alata</i>	98
Kalu-habarala	<i>Alocasia macrorrhizos</i>	38
Kalu-kahandala	<i>Colocasia esculenta</i>	40
Kamaranga	<i>Averrhoa carambola</i>	171
Kan-kun	<i>Ipomoea aquatica</i>	66
Kandala	<i>Colocasia esculenta</i>	40
Karavila	<i>Momordica charantia</i>	90
Karawila	<i>Momordica charantia</i>	90
Katu-ala	<i>Dioscorea pentaphylla</i>	103
Katu-kira	<i>Amaranthus spinosus</i>	11
Katu-tampala	<i>Amaranthus spinosus</i>	11
Katuru-murunga	<i>Sesbania grandiflora</i>	124
Kekatiya	<i>Aponogeton jacobsenii</i>	35
Kekiri	<i>Cucurmis melo var egestis</i>	76
Kem-wel	<i>Coccinea grandis</i>	74
Kiri-anguna	<i>Wattakaka volubilis</i>	53
Kiri-habarala	<i>Xanthosoma sagittifolia</i>	45
Kiri-henda	<i>Celosia argentea</i>	19
Kowakka	<i>Coccinea grandis</i>	74
Kohila	<i>Lasia spinosa</i>	42
Kohowila	<i>Lasia spinosa</i>	42
Kondol	<i>Dioscorea alata</i>	98
Koppa-kola	<i>Panax fruticosam</i>	48
Kos	<i>Artocarpus heterophyllus</i>	145
Kowakka	<i>Coccinea grandis</i>	74
Kumbala	<i>Cucurbita maxima</i>	81
Kumudu	<i>Nymphaea stellata</i>	166
Kura-tampala	<i>Amaranthus viridis</i>	16
Kurinnan	<i>Gymnema lactiferum var. lactiferum</i>	52
Labu	<i>Lugenaria siceraria</i>	84
Leekolapala	<i>Premna procumbens</i>	192
Lolu	<i>Cordia dichotoma</i>	61
Mahakohila	<i>Lasia spinosa</i>	42
Manel	<i>Nymphaea stellata</i>	166
Manyokka	<i>Manihot esculenta</i>	106
Mukunu-wenna	<i>Alternanthera sessilis</i>	8
Mung	<i>Vigna mungo</i>	127
Mung-eta	<i>Vigna mungo</i>	127
Murunga	<i>Moringa oleifera</i>	151
Nelum	<i>Nelumbo nucifera</i>	162

Nivithi	<i>Basella alba</i>	
Olu	<i>Nymphaea lotus</i>	164
Otu	<i>Nymphaea lotus</i>	164
Patola	<i>Tricosanthes cucumerina</i>	95
Penela	<i>Cardiospermum halicacabum</i>	180
Penela-wel	<i>Cardiospermum halicacabum</i>	180
Peti-tora	<i>Cassia tora</i>	112
Pipinga	<i>Cucumis sativus</i>	79
Pipingha	<i>Cucumis sativus</i>	79
Pitasudupala	<i>Boerhavia diffusa</i>	157
Pitasudusarana	<i>Boerhavia diffusa</i>	157
Pol-kudu-pala	<i>Aerva lanata</i>	6
Polpala	<i>Aerva lanata</i>	6
Puhul	<i>Benincasa hispida</i>	72
Raja-ala	<i>Dioscorea alata</i>	98
Ran-wattakka	<i>Cucurbita maxima</i>	81
Ranawara	<i>Cassia auriculata</i>	110
Rat-nivithi	<i>Basella alba</i>	57
Rata-ala	<i>Xanthosoma sagittifolia</i>	45
Ratalabu	<i>Cucurbita maxima</i>	81
Ratu-lunu	<i>Allium cepa</i> var. <i>aggregatum</i>	22
Sarana	<i>Boerhavia diffusa</i>	157
Sudu-habarala	<i>Alocasia macrorrhizos</i>	38
Sudu-tampala	<i>Amaranthus tricolor</i>	14
Tadala	<i>Colocasia esculenta</i>	40
Tarnburu	<i>Nelumbo nucifera</i>	162
Tampala	<i>Amaranthus tricolor</i>	14
Thalanabatu	<i>Solanum melongena</i>	186
Titta-anguna	<i>Wattakaka volubilis</i>	53
Thumba	<i>Leucas zeylanica</i>	135
Tibbatu	<i>Solanum violaceum</i>	188
Tora	<i>Cassia tora</i>	112
Tumba-karavila	<i>Momordica dioica</i>	93
Tumba-karawila	<i>Momordica dioica</i>	93
Vetakolu	<i>Luffa acutangula</i>	86
Wambatu	<i>Solanum macrocarpon</i>	184
Washun-habarala	<i>Alocasiu macrorrhiza</i>	38

Wel-kohila

Syngodium angustatum

INDEX OF TAMIL NAMES

TAMIL NAME	SCIENTIFIC NAME	PAGE
Acham	<i>Sesbania grandiflora</i>	124
Adiselarayam	<i>Mangifera indica</i>	27
Agatti	<i>Sesbania grandiflora</i>	121
Akatti-kirai	<i>Sesbania grandiflora</i>	121
Allitamarai	<i>Nymphaea lotus</i>	164
Ambal	<i>Nelumbo nucifera</i>	162
Ambal	<i>Nymphaea lotus</i>	164
Amblam	<i>Spondias dulcis</i>	29
Ambaralankai	<i>Spondias dulcis</i>	29
Ambiram	<i>Mangifera indica</i>	27
Ambiram	<i>Spondias dulcis</i>	29
Amiram	<i>Mangifera indica</i>	27
Andima	<i>Anacardium occidentale</i>	25
Araikkirai	<i>Amaranthus viridis</i>	16
Arikkirai	<i>Amaranthus tricolor</i>	14
Avarai	<i>Cassia auriculata</i>	110
Avaraikkai-bonchi	<i>Paseolus vulgaris</i>	119
Avaram	<i>Cassia auriculata</i>	110
Charanai	<i>Boerhavia diffusa</i>	157
Chinna-pahat-kai	<i>Momordica dioica</i>	93
Chirukirai	<i>Amaranthus tricolour</i>	14
Churakkai	<i>Lagenaria siceraria</i>	84
Era-pala	<i>Artocarpus incisa</i>	147
Erapalakkai	<i>Artocarpus incisa</i>	147
Iradam	<i>Mangifera indica</i>	27
Iravengayam	<i>Allium cepa</i> var. <i>aggregatum</i>	22
Kachakkar	<i>Mangifera indica</i>	27
Kachantarai	<i>Glinus oppositifolius</i>	2
Kallarama	<i>Anacardium occidentale</i>	25
Kalyanappusanikkay	<i>Benincasa hispida</i>	72
Kamal	<i>Wattakaka volubilis</i>	53
Kan-kun kirai	<i>Zpomoea aquatica</i>	66
Kandal	<i>Solanum violaceum</i>	188
Kandasagadarn	<i>Averrhoa carambola</i>	171
Karimullu	<i>Solanum violaceum</i>	188
Kariram	<i>Sesbania grandiflora</i>	124

Kattarik kai	<i>Solanum macrocarpon</i>	184
Kekkiri	<i>Cucumis melo</i> var. <i>egrestis</i>	76
Kochittamarattai	<i>Averrhoa bilimbi</i>	169
Kodippalai	<i>Wattakaka volubilis</i>	53
Kohila	<i>Lasia spinosa</i>	42
Kohila-kilangu	<i>Lasia spinosa</i>	42
Koilengu	<i>Ipomoea aquatica</i>	66
Kottaimundiri	<i>Anacardium occidentale</i>	25
Kottavan	<i>Cardiospermum halicacabum</i>	180
Kovai	<i>Coccinea grandis</i>	74
Kowai	<i>Coccinea grandis</i>	74
Kudasappalai	<i>Wattakaka volubilis</i>	53
Kurinja	<i>Wattakaka volubilis</i>	53
Kurinjakkirai	<i>Wattakaka volubilis</i>	53
Kurinnan	<i>Gymnema lactiferum</i> var. <i>lactiferum</i>	52
Manga	<i>Mangifera indica</i>	27
Marawilli-elai	<i>Manihot esculenta</i>	106
Mini	<i>Sesbania grandiflora</i>	124
Mudakottam	<i>Cardiospermum halicacabum</i>	180
Mudithumpai	<i>Leucas zeylanica</i>	135
Mudkirai	<i>Amaranthus spinosus</i>	11
Mulai-kirai	<i>Amaranthus tricolor</i>	14
Mulla	<i>Premna procumbens</i>	192
Mullai	<i>Premna procumbens</i>	192
Mullukkirai	<i>Amaranthus spinosus</i>	11
Mundiri	<i>Anacardium occidentale</i>	25
Muntin-kai	<i>Anacardium occidentale</i>	25
Murungai	<i>Moringa oleifera</i>	151
Naymulli	<i>Solanum violaceum</i>	188
Neethu pusanikka:	<i>Benincasa hispida</i>	72
Padivilangu	<i>Tircosantes cucumerina</i>	95
Pahat-kai	<i>Momordica charantia</i>	90
Pakai	<i>Momordica charantia</i>	90
Pala	<i>Artocarpus heterophyllus</i>	145
Palaikkodi	<i>Wattakaka volubilis</i>	53
Palakkai	<i>Artocarpus heterophyllus</i>	145
Param-sem bu	<i>Alocasia macrorrhizos</i>	38
Passali	<i>Basella alba</i>	57
Patchaipayara	<i>Vigna mungo</i>	127
Pavakkachedi	<i>Momordica charantia</i>	90
Pavakkayi	<i>Momordica charantia</i>	90

Peerkamkai	<i>Luffa acutangula</i>	86
Pekankai	<i>Luffa acutangula</i>	86
Pekunkai	<i>Luffa acutangula</i>	86
Peragatti	<i>Sesbania grandiflora</i>	124
Peypichkku	<i>Luffa acutangula</i>	86
Pilimbi	<i>Averrhoa bilimbi</i>	169
Pipinghay	<i>Cucumis sativus</i>	79
Podalangai	<i>Ticosanthes cucumerina</i>	95
Ponnankani	<i>Alternanthera sessilis</i>	8
Pulichakkay	<i>Averrhoa bilimbi</i>	169
Pulima	<i>Averrhoa bilimbi</i>	169
Pusanikai	<i>Cucurbita maxima</i>	81
Pusini	<i>Benincasa hispida</i>	72
Sadurguli	<i>Cassia auriculata</i>	110
Sagadam	<i>Averrhoa carambola</i>	171
Samakkilangu	<i>Colocasia esculenta</i>	40
Saram	<i>Anacardium occidentale</i>	25
Sarkareivalli	<i>Ipomoea aquatica</i>	66
Semakkalengu	<i>Colocasia esculenta</i>	40
Semmalai	<i>Cassia auriculata</i>	110
Senavu	<i>Cassia tora</i>	112
Sevvagatti	<i>Sesbania grandiflora</i>	124
Sharunnai	<i>Trianthema portulacastrum</i>	3
Shavalai	<i>Trianthema portulacastrum</i>	3
Shivappuvasalakkirai	<i>Baseila alba</i>	57
Shorakkai	<i>Lagenaria siceraria</i>	84
Sigam	<i>Averrhoa carambola</i>	171
Sigidima	<i>Anacardium occidentale</i>	25
Singittam	<i>Wattakaka volubilis</i>	53
Sirahu-avarai	<i>Psophocarpus tetragonolobus</i>	121
Sirupulai	<i>Aerva lanata</i>	6
Sirutagarai	<i>Cassia tora</i>	112
Sisam	<i>Averrhoa carambola</i>	171
Sivandi	<i>Wattakaka volubilis</i>	53
Sivapputamarai	<i>Nelumbo nucifera</i>	162
Summalai	<i>Cassia auriculata</i>	110
Tagarai	<i>Cassia tora</i>	112
Tamarai	<i>Nelumbo nucifera</i>	162
Tamaratti	<i>Averrhoa carambola</i>	171
Thengapoo-kirai	<i>Aerva lanata</i>	6
Tirigai	<i>Anacardium occidentale</i>	25

Urusi	<i>Solanum violaceum</i>	188
Usittagarai	<i>Cassia tora</i>	112
Uttumbalam	<i>Anacardium occidentale</i>	25
Vallarai	<i>Centella asiatica</i>	32
Vanamavaram	<i>Cassia tora</i>	112
Vandittam	<i>Wattakaka volubilis</i>	53
Vattalai	<i>Ipomoea batatas</i>	69
Veddu	<i>Solanum melongena</i>	186
Veddutakarai	<i>Cassia tora</i>	112
Vel-kilangu	<i>Ipomoea batatas</i>	69
Vellarikkai	<i>Cucumis sativus</i>	79
Vendikkaim	<i>Hibiscus esculentus</i>	141
Vengayam	<i>Allium cepa</i> var. <i>aggregatum</i>	22
Vengayam	<i>Allium cepa</i> var. <i>aggregatum</i>	22
Vindu	<i>Cassia tora</i>	112

INDEX OF ENGLISH NAMES

ENGLISH	SCIENTIFIC NAME	PAGE
Alena	<i>Boerhavia diffusa</i>	157
Alternanthera	<i>Alternanthera sessilis</i>	8
Amaranth	<i>Amaranthus tricolor</i>	14
Amra	<i>Spondias dulcis</i>	29
Angled loofa	<i>Luffa acutangula</i>	86
Ash pumpkin	<i>Benincasa hispida</i>	72
Asiatic penny wart	<i>Centella asiatica</i>	32
Asparagus pea	<i>Psophocarpus tetragonolobus</i>	121
Asparagus bean	<i>Vigna unguiculata</i> subsp. <i>sesquipedala</i>	129
Avaram	<i>Cassia auriculata</i>	110
Baloon vine	<i>Cardiospermum halicacabum</i>	180
Ben tree	<i>Moringa oleifera</i>	151
Bile tree	<i>Spondias dulcis</i>	29
Bilimbi	<i>Averrhoa bilimbi</i>	169
Bilimbing	<i>Averrhoa bilimbi</i>	169
Bitter gourd	<i>Momordica dioica</i>	93
Bitter gourd	<i>Momordica charantia</i>	90
Bitter malon	<i>Momordica charantia</i>	90
Blue water-lily	<i>Nymphaea stellata</i>	166
Boerhavia	<i>Boerhavia diffusa</i>	157
Bottle gourd	<i>Lagernaria siceraria</i>	84
Bread fruit	<i>Artocarpus incisa</i>	147
Butter bean	<i>Phaseolus lunatus</i>	117
Carambola apple	<i>Averrhoa carambola</i>	171
Cashew	<i>Anacardium occidentale</i>	25
Cassava	<i>Manihot esculenta</i>	106
Chinese gooseberry	<i>Averrhoa carambola</i>	171
Chinese water-lily	<i>Nelumbo nucifera</i>	162
Chinese preserving melon	<i>Benincasa hispida</i>	72
Cluster bean	<i>Cyamopsis tetragonoloba</i>	116
Cocks comb	<i>Celosia argentea</i>	19
Cooking banana	<i>Musa acuminata</i>	154
Country potato	<i>Collius rotundifolius</i>	133
Cucumber tree	<i>Averrhoa bilimbi</i>	169
Cucumber	<i>Cucumis sativus</i>	79

Dishcloth gourd	<i>Luffa acutangula</i>	86
Drum stick	<i>Moringa oleifera</i>	151
Eggplant	<i>Solanum macrocarpon</i>	184
Fetid cassia	<i>Cassia tora</i>	112
Fourangled bean	<i>Psophocarpus tetragonolobus</i>	121
French bean	<i>Phaseolus vulgaris</i>	119
Green gram	<i>Vigna mungo</i>	127
Hausa potato	<i>Collius rotundifolius</i>	133
Heart seed	<i>Cardiospermum halicacabum</i>	180
Hogweed	<i>Boerhavia diffusa</i>	157
Horse raddish	<i>Moringa oleifera</i>	151
Horse purslane	<i>Trianthema portulacastrum</i>	3
Horsebean	<i>Canavalia ensiformis</i>	114
Indian spinach	<i>Basella alba</i>	57
Indian lotus	<i>Nelumbo nucifera</i>	162
Jack	<i>Artocarpus heterophyllus</i>	145
Jack bean	<i>Canavalia ensiformis</i>	114
Joseph's coat	<i>Amaranthus tricolor</i>	14
Kack fruit	<i>Artocarpus heterophyllus</i>	145
Kidney bean	<i>Phaseolus vulgaris</i>	119
Ladies fingers	<i>Hibiscus esculentus</i>	141
Lesser yam	<i>Dioscorea esculenta</i>	102
Love-lies bleeding	<i>Amaranthus tricolor</i>	14
Mango	<i>Mangifera indica</i>	27
Manioc	<i>Manihot esculenta</i>	106
Manioka	<i>Manihot esculenta</i>	106
Melon	<i>Cucumis melo</i> var. <i>egretis</i>	76
Pigweed	<i>Boerhavia diffusa</i>	157
Potato yam	<i>Dioscorea bulbifera</i>	100
Prickly amaranth	<i>Amaranthus spinosus</i>	11
Pumpkin	<i>Cucurbita maxima</i>	81
Purslane	<i>Portulacca oleraceae</i>	174
Red onion	<i>Allium cepa</i> var. <i>aggregatum</i>	22
Red cocks-comb	<i>Amaranthus tricolor</i>	14

Sacred lotus	<i>Nelumbo nucifera</i>	162
Sebesten	<i>Cordia dichotoma</i>	61
Sebesten plum	<i>Cordia dichotoma</i>	61
Shallot	<i>Allium cepa</i> var. <i>aggregatum</i>	22
Sieva beans	<i>Phaseolus lunatus</i>	117
Slender amaranth	<i>Amaranthus viridis</i>	16
Smooth loofa	<i>Luffa cylindrica</i>	88
Snake bean	<i>Vigna unguiculata</i> subsp. <i>sesquipedala</i>	129
Snake gourd	<i>Tricosanthes cucumerina</i>	95
Spinach	<i>Basella alba</i>	57
Squash goura	<i>Cucurbita maxima</i>	81
Squash	<i>Cucurbita maxima</i>	81
String bean	<i>Vigna unguiculata</i> subsp. <i>sesquipedala</i>	129
Swamp cabbage	<i>Ipomoea aquatica</i>	66
Sweet potato	<i>Ipomoea batatas</i>	69
Sweet heart	<i>Talinum triangulare</i>	176
Tannera cassia	<i>Cassia auriculata</i>	110
Tapioka plant	<i>Manihot esculenta</i>	106
Taro	<i>Colocasia esculenta</i>	40
Wild portulacca	<i>Portulacca oleraceae</i>	174
Winged bean	<i>Psophocarpus tetragonolobus</i>	121
Yam	<i>Dioscorea alata</i>	98