TAMILNADU AGRICULTURAL UNIVERSITY



AGRICULTURAL COLLEGE, COIMBATORE-3

Name.....

Class.....

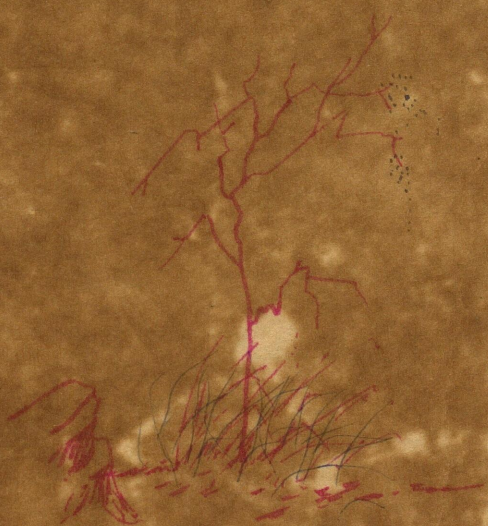
Batch..... Regd. No.....

Ranjit R J Daniel
II B.Sc Agri.
Dec. 1977

'Encyclopaedia'

Agriculture – Botany.

RJRD.



Agricultural Botany & Horticulture.

I Cereals Family. GRAMINAE.

1. Rice - Oryza[1] sativa - India
O. glaberima[2] - Africa.
(wild species) Oryza[3] fatua [India]
O. stapfii[4], O. breevilignlata[5]
O. perennis[6].

2. Cholam (Sorghum): Sorghum sp.
wild sp. S. halapense
S. arundinaceum[8], S. verticilliflorum[9] [E. central Africa.]
S. ethiopicum[10]
S. sudanense[11]

3. Ragi - (finger millet)
Eleusine coracana[12] [India]
wild sp: E. indica[13].

4. Cumbu - (pearl millet) [Africa.]
Pennisetum[14] typhoides (glaucus)

5. Corn or Maize. — Zea[15] mays

Pop corn - Zea mays var. everata[16,17]
flour corn - " " var. amylacea

wild Relatives: Teiosinte[18] sp.;[19] Euchlaena[a] mexicana [America]

(Minor millets)

6. Thenai — (fox-tail millet)[20]
Setaria italica [Central Asia & China]
wild sp: Setaria viridis[21]

7. Kuthirai vali: Echinocloa[22] colona var. frumentacea
wild sp. E. crusgalli[23] [India]

8. Varagu: Paspalum[24] scrobiculatum
wild sp. P. dilatatum[25]
P. sanguinale[26] [Asia & India]

9. Samai — (little millet)[27]
Panicum miliare [India & Ceylon]

10. Pani Varagu : Panicum[28] miliaceum.

[Central Asia]

(winter cereals).

11. Wheat : Triticum[29] sp.

sp. T. vulgare[29] (bread wheat) [Asia minor mediterranean Abyssinia]
T. monococcum[30]
T. durum[31]
T. dicocoides[32] (um)

12. Rye - Secale[33] cereale [Mediterranean]
(Wheat × Rye = Triticale)

13. Oats - Avena[34] sativa [Mediterranean]

14. Barley - Hordeum[35] vulgare
[S.W. Asia]

II PULSES.

Family: Leguminoideae

subfamily: Papilionoideae

1. Pigeon Pea. Cajanus cajan.[34]
   [Tamil: Thuvarai
   Hindi: Tur] [India or S. Africa]

2. Chick pea - Bengal gram.
   Cicer arietinum[35] [India]

3. Dolichos sp. [India]
   Garden bean - Avarai[36]
   Lablab niger var. typicus
   field bean Mochai var. Lignosus
   Lablab bifloras - Horse gram[37] - Kollu.

4. Cowpea - Vigna unguiculata[38] or Sinensis

wild relatives V. sinensis[39]
V. sinensis var. catjang[40]
V. sinensis var. sesquipedalis
[Central Africa and S. Asia]

5. Black gram (Urdu)
Vigna mungo [41]
(Phaseolus mungo)
wild sp P. trinervis [42]
P. sublobatum [43] [India]

6. Green gram - V. radiata [44]
'Mung' (wild sp & origin as Black gram.)

7. Pillipesera: Vigna trilobus [45] [India]

8. Dewgram - Nari payaru - [46]
V. aconitifolia [47] [India]

9. Soy(a) bean - Glycine max [48] [Manchuria + China]

10. Peas - Pisum sativum [49] [mediterranean]
Fieldpea - P. sativum [50] var. arverse

11. French bean: Phaseolus vulgaris. [51]

12. Lima bean - P. lunatus [52] (SE Asia)

13. Broad " - Vicia faba [53]

OTHER CROPS

fy. Agavaceae (Amaryllidaceae)

Agave : Agave americana [54]

A. sisalana [55]

Aloe or Sothu kathalai - Aloe spp [56]

Fy. Amaranthaceae

Amaranthus: Amaranthus gangeticus[57]

Arakeerai - A. tristis.[58]

Grain varieties: A. leucocarpus[59]
A. edulis[60]
A. orientus[61]

Kuppai keerai - A. viridis[62]

Seru keerai - A. blitum[63]

Ponnankanni - Alternanthera triandra[64]

Cock's comb - Celosia Argentata.[65]

Aerva sp[66]

Red Tresine.

Anacardiaceae

Mango: Mangifera indica [67]

Cashew: Anacardium [68] zeylanica

Araceae

Cryptocoryne [69]

Monstera sp [70]

Pothos sp [72]

Alocasia sp [73]

Dieffenbachia [74] sp

Caladium [75] candidum

Anthurium sp [76]

Philodendron [77] sp

Pistia [71] stratiotes

Annonaceae

Custard apple – Annona[78] squamosa
Bullsheart – A. reticulata[79]
Cherimoya – A. cherimoya[80] (cherimola)

Polyalthia longifolia[81]
P. pendulifolia.[82]
Artabotrys odoratissimus.[83]
Annona muricata[84]

Araceae:

Sweet flag or Vasambu – Acorus calamus[85]
Colocasia esculentum[86]

Cannaceae

Queensland arrow-root. [87]
Canna edulis [Australia]

Pomae

Pyrus malus (Malus sylvestris) [88]
– Apple.

Pear – Pyrus communis [89]

Prunae

Prunus salicina [90] – Plum (domestica)
Prunus persica [91] – Peach

Rosae

Strawberry – Fragaria vesca [92].

Mangosteen – Garcinia mangostana [93]
Fy Guttiferae

Caricaceae

Papaya: Carica papaya.[94]

Rambutan - Nephelium lappaceum[95]
fy Sapindaceae (Hairy litchi).

Carambola - Averrhoa carambola[96]
fy Oxalidaceae

Durian - Durio zebethenus[97]
fy Bombaceae

Langsat - Lansium domesticum[98]
Meliaceae

Litchi - Litchi sinensis[99]
Sapindaceae.

Pineapple - Ananas comosus[100]
A. sativus.[101]
fy Bromeliaceae

Compositae

Niger oil - Guizotia abyssinica [102]

safflower - Carthamus tinctorius [103]

sunflower - Helianthus annuus [104]

[(Tam: 'Peyellu': Hindi: Rantil) - Niger peyellu].

Lactuca sativa - Lettuce [105]

Chicorium intybus - chicory [106]

Artemesia pallens - Kolunthu.

Convolvulaceae

Sweet potato - *Ipomoea batatus* [107]

Wood rose - *I. tuberosa* [108]

~~Moonflower~~ - *I. palmata* [109]

Cruciferae

Mustard - *Brassica sp.* (*campestris*) [110]

Radish - *Raphanus sativus* [111]

Mustard - *B. campestris* [111]
B. juncea [112]
B. nigra [113]
B. alba [114]

Turnip - *Brassica rapa* [115]

cabbage - *B. oleracea* var *capitata* [116]

cauliflower - *B. oleracea* var *botrytis* [117]

Chinese cabbage - *B. chinensis* [118]

Kohl Rabi - *B. caulorapa* [119]

Cucurbitaceae

Bitter gourd - Momordica[120] charantia
Snake " - Trichosanthes[121] anguina
T. dioica (short)[122]
Ribbed gourd:- Luffa acutangula[123]
Bottle gourd - Lagenaria siceraria[124]
Sponge " - Cylindrica sp.[125]
Chow-chow - Sechium edule[126]
Cucumber - Cucumis sativus[127]
Water melon - Citrullus ~~mas~~ vulgaris[128]
Winter squash - Cucurbita maxima[129]

Summer squash - Cucurbita pepo[130]
C. moschata[131]
Pumpkin -

Cycadaceae

Japanese sago - Cycas circinnalis[132] (?)

Cyperaceae

Japanese Sago - ~~Cycas circinnalis~~
(Bastard ")
Umbrella plant - Cyperus[133] alternifolia
C. rotundus[134] nut grass

Dioscoreaceae

Dioscorea - Dioscorea alata 135

D. amada 136

Euphorbiaceae

Lung oil - Aburites montana 137

Candle " - A. mollucana 138

Castor - Ricinus communis 139

Tapioca or Cassava - Manihot utilissima 140

(or)

M. edulis [S. America]

M. esculenta

Rubber - Hevea brasiliensis 141

Castiola elastica 142

Manihot glossiovi 143

~~Ficus elastica~~

Poinsettia - E. pulcherima 144

Star Goose berry - Phyllanthus acidus 145

Indian " Emblica officinalis 146

Geraniaceae

Geranium: Pelargonium sp. 147

Graminae

Sugarcane - Saccharum officinarum 148
S. sinensis 149 [India, Burma, China]

Lemon grass - Cymbopogan citiatus 150 (x)

Khuskhus - Vetiveria zizanoides 151

sugarcane - (wild sp) S. spontaneam 152
S. barberi 153

(x) Andropogon citratus (syn).

Labiatae

Peppermint oil - Menthol: Mentha piperita 154
Mentha piperata

Coleus, 155
Salvia splendens 156

Origanum majoranum 157

Lauraceae

Avacado-Butterfruit: Persea 158 americana
/ Gratissima

Lavangam (Pattai)
- Cinnamomum 159 zeylanicum

Leguminosae

Groundnut - Arachis hypogea [160]

Sun hemp - Crotalaria juncea [161] → [Papilionaceae]

Pungam - Pongamia glabra [162] ["]
(Indian peach).

Dividivi Caesalpinia ~~coryllea~~ coriaria [163] - [Caesalpiniaceae]

Gul Mohr - Delonix regia (Red) [164]

Yellow " or Copper pod - Peltophorum ferruginum [165]

Vendyam - Trigonella foenum graecum [166]
- Papilionaceae.

Senna or tinnelveli senna (Nilavagai) - Cassia acutifolia [167]
(Mimosoidae)

~~Fennel - Foeniculum vulgare~~
~~Asofoetida - Ferrula asofoetida~~

Liniaceae

Linseed - Linum usilatissinum. [168]

Malvaceae

Cotton Gossypium arboreum 169

Wild sp.
G. raimondii 173
G. anamalum 174

G. hirsutum 170
G. barbadense 171
G. herbaceum 172

Mesta or Madras jute

Hibiscus cannabinus 175
H. subdarifa 176

shoe flower - H. rosa sinensis. 177
Bhendi - Abelmoschus esculentus. 178
Portia - Thespesia populnea. 179

Marantàceae

W. Indian arrowroot - Maranta[180] arundinaceae

[Tropical America]

Malpighinaceae[181]

W. Indian cherry - Malpighia punicifolia

Musaceae[182]

Manila hemp - Musa textilis

Banana - Musa sp.[183]

wild sp. - M. acuminata[184]

M. balbisiana[185]

Ornamental - M. coccinia[186], Ensete superba[187]

Traveller's Palm - Ravenala[188] madagascariensis

Rosaceae Myrtaceae [189]

Eucalyptus - Blue gum: Eucalyptus terrestroides [190] E. ministicin; E. glabulus. [191]

Guava - Psidium guajava [192]

Clove - Eugenia caryophyllata [193] Cor. Aromatica

Jambulana - E. jambulana [194]

E. Jambos (Rose apple) [195]

Palmae

Palm oil - Elaeis guinensis [196]

Coconut - Cocos nucifera [197]

Palmyrah - Borassus flabellifer [198]

Date - Phoenix dactylifer [199]

Sago palm - Metroxylon sagu [200]

Areca nut - Areca catechu [201]

Bastard sago - Caryota urens [202]

Eachai (wild date) Phoenix sylvestris [203]

Royal palm - Oriodoxa regia [204]

Bramble palm - Hyphaene thebaica [205]

Passifloraceae

Passionfruit – Passiflora[206] quadrangularis

Giant – Granalida

Pedaliaceae

Gingelly – Sesamum[207] orientale (or) indicum

Piperaceae

Black pepper – Piper nigrum[208] [India]

Betel – Piper betle[209]

Polygonaceae

Rhubarb – Rheum[210] rhaponticum

Punicaceae (fit is Balaustra)

Pomegranate - Punica granatum 211

Rutaceae

Brazilian orange - Laranga selecta 212

Sour orange - Citrus aurantium 213

citron - C. medica 214 X = Bizzaria Orange

Trifoliate orange - Poncirus trifoliata 215

Lemon - C. limon 216

lime - Citrus aurantifolia 217

Mandarin - C. reticulata 218

Sweet orange - C. Sinensis 219

Grapefruit - C. paradisi 220

Pumelo - C. grandis 221

Fortunella sp 222

sweet lime - Citrus lementoides 223

Rough lemon - C. jambheri 224

Curry leaf - Murraya koenigii 225

Sapotaceae

Mahua (butter) – Bassia latifolia 226

Mauve " – B. longifolia 227

Sapota – Achras sapota 228

Pala – Manilkhara hexandra 229

Spinaceae

Spinaceae oleraceae – Spinach. 230

Solanaceae

Potato: *Solanum tuberosum* 231 [Peru & chile]

chilly: *Capsicum annuum* 232

C. fruitescence & *C. microcarpum*. 233/234

Tomato: *Lycopersicon esculentum* 235

Brinjal: *Solanum melongena* 236

Night shade: *S. nigrum*. 237

Tobacco - *Nicotiana tobacum* 238

N. rustica 239

Belladona - *Atropa bellodona* 240

S. elaengefolia 241

Sterculiaceae

cocoa - *Theobroma cacoa* 242

Tiliaceae

Jute (Bengal): Corchorus olitorius 243
C. capsularis 244

Rhalsa: Rubia asiatica 245

Vitaceae: Grapes

Vitis vinifera 246
V. labrusca 247
V. rugosa ; V. parvifolia 248, 249

Cissus quadrangularis 250

Zingiberaceae

E. Indian arrowroot: Curcuma angustifolia
Ginger - Zingiber officinalis. [India]
Turmeric - C. longa.
Mango ginger - C. amada.
Cardamom - Elettaria Cardamomum
Curcuma zodoana
C. aromatica

Oleaceae

Olive - Olea europea
Jasmines.

Aceraceae (Sapindaceae)

Sugar maple - Acer saccharum

Chenopodiaceae

Beeta sugar – Beta vulgaris
wild sp. – B. maritima.

(Leafy vegetable) – B. vulgaris var. cicla.
Palak.
→ Beet root – B. vulgaris var. cicla.

Bombacaceae

Kapok – silkcotton: Ceiba pentandra

Urticaceae

Ramie – Boeh(m)eria nivea

Liliaceae

Bow string hemp: Sansivieria [Africa & Asia]

Bellari onion - Allium cepa

Small onion - A. cepa var. aggregatum

Garlick - A. sativa.

Aloe.

Cannabiaceae

Ganja - Cannabis sativus

Santalaceae

Sandal wood - Santalum album

~~Eleva~~ pharu 'Aini' – A. hirsuta

Bread fruit – Artocarpus Utilis

Jambulana (Naval) – Eugenia jambulana

Clove – E. aromatica

Che kur manis – Sauropus androgynous

Elephant yam – Amorphophallus campanulatus

Colocasia – colocasia esculenta

Cork tree – Millingtonia hortensis

Tamarind – Tamarindus indica

Casuarina – Casuarina equisitifolia

– Prosopis juliflora

Yellow oleander – Thevetia neirifolia

Kodukka puzhi – Pythecolobium dulci

Pear – Pyrus communis

Quince – Cydonia ~~Plactylon~~ sp.

Crab apple – Malus baccata

Prunus sp

European plum - Prunus domestica

Japanese " - P. salicina

Peach - P. persica

Poa bulbosa -

Lupinus articus -

Jasmines — Oleaceae

Pitchi or Jathimalli - Jasminum grandiflorum

Paari mullai - J. auriculatum

Cundu malli - J. sambac

- J. flexile.

Nutmeg - Myristica fragrance - fy Myristicaceae

- Acalypha densiflora.

Safron - Crocus sativum - Iridaceae.

Vanilla - Vanilla planifolia - Orchidaceae.

Ficus elastica - Rubber.

Umbelliferae

Cumin (Geeragam)

Cuminum Cyminum

Coriander - Coriandrum sativum

(Perungeeragam)

~~Fenugreek~~ - Foeniculum vulgare (Fennel)

Omum - Carum capticum

Asafoetida (kaayum)

- Ferula foetida

carrot - Daucus carota

Rubiaceae

Coffea arabica - Arabian coffee

C. robusta - Congo "

C. liberia - liberian coffee.

Quinine - Cinchona calisaya

~~Theaceae~~ ~~Ternstroemiaceae~~ Camelliaceae

Tea - Thea sinensis.

(Camellia sinensis)

Fodder Grass. [Graminae]

Guinea grass - Panicum maximum

Para grass, Buffalo grass or Water grass
- Brachiaria mutica

[Cumbu Napier hybrid
P. typhoides + P. purpurea]

White Kozhukattai - Cenchrus ciliaris
Black " - C. setigirus
Blue Buffel - C. glaucus

Rhodes grass - Chloris gayana

Denanath - Pennisetum pedicillatum

Marvel grass - Dicanthium annulatum

Spear grass - Heteropogon contortus.

Blue panic or
Australian drought resistant } - Panicum antidotale

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Leguminous fodder

[Leguminosae]

Lucerne (Alfalfa) - Medicago sativa

Cowpea - Vigna sinensis

Wild cowpea - V. ~~weightii~~ marina

[Sangupushpam] - Clitoria ternatea.

[Sirsatio - Phaseolus atropurpureus
(new name)

Australian wonder legume } - Macroptelium atropurpureum

Centro - Centrosema pubescens

Glycine weightii - Wild Soya.

Ricebean - Phaseolus calcaratus.

Phaseolus aconitifolius - Moth bean or Dew gram.

Desmodium sp

Stylo - Stylosanthes gracilis
S. hemata
S. guyanensis

Agathi - Sesbania grandiflora

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Ku-Babul - Leucana glauca
Sittagathi - Sesbania aegyptiaca.

Moraceae

F. Lamarata - fiddle tree.

Fig - Ficus carica
(Rubba) - Ficus elastica peepal tree.
Banyan - F. bengalensis ; " F. religiosa

Bread fruit - Artocarpus ultilis
Jack - A. heterophylla
Mulberry - Morus alba & M. rubra.

Zinziberaceae

Chitharathai - Alpheria officinalis
Peraraanai - A. galanga

Ethikai or Nuxvomica - fy. Loganiaceae
Strychnos nuxvomica

Cocaine - Erythroxylon coca
fy. Erythraceae.

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Opium – Papaver Somniferum

fy. Papaveraceae

Ixora – fy. Rubiaceae.

Ixora coccinea 346

Paddy – GRAMINAE.

Oryza sativa [Origin - S. W. Himalayas]

Tribe – Oryzeae

Section sativa

1. O. perennis
2. O. sativa
3. O. glaberima
4. O. stapfii
5. O. breeviligulata
6. O. sativa var. fatua
7. O. Australiensis

section officinalis

8. O. officinalis
9. O. punctata
10. O. alta
11. O. malampuzensis
12. O. latifolia
13. O. minuta
14. O. schweinfurthiana
15. O. nivarensis.

section. granulata

16. O. granulata
17. O. brachyantha
18. O. meyeriana
19. O. eichengiri
20. O. angustifolia
21. O. ridleyi
22. O. coarctata.

Sorghum [Africa/abyssinia/ India]

Sorghum vulgare

tribe - Sorghasteae.

1. S. versicolor
2. S. drummondii
3. S. purpurea
4. S. sereceum
5. S. dimidatum
6. S. sudense
7. S. alterimum
8. S. nitens
9. S. guinensi
10. S. roxburghii
11. S. membranaceum
12. S. nervosum
13. S. splendidum
14. S. dochna
15. S. bicolor
16. S. elegans
17. S. nigricans
18. S. caudatum
19. S. durra.
20. S. glaberescens
21. S. cernuum
22. S. halapense
23. S. almum
24. S. nitidum
25. S. stipodeum
26. S. plumosum
27. S. macrospermum
28. S. laxiflorum.

Cumbu [Africa]

Pennisetum typhoides

tribe - Paniceae

1. P. purpureum :

2. P. perrotetti ; 6. P. mollisemum

3. P. violaceum ; 7. P. versicolor

4. P. adoense ; 8. P. gymnothrix

* Cultivated

5. P. typhoides – grain

Fodder

9. P. clevedesinum ; 12. P. lanatum

10. P. Orientale ; 13. P. rupellii

11. P. purpureum ; 14. P. polystachyon

Wild sp

15. P. massaicum

16. P. ramosum

17. P. villosum

18. P. divisum

19. P. pflaccidum

20. P. Sturbegia

21. P. spicatum

4/4

Ragi [India / Africa]

Eleusine coracana

Tribe - Paniceae.

Cultivated	Wild sp
1. E. coracana	3. E. compresa
2. E. africana	4. E. verticillata
	5. E. oligostachya
	6. E. tristachya
	7. E. cagoporides

Maize [America / Mexico]

Zea mays

* Tribe - Maydeae

1. Dent corn - Zea mays var. indentata
2. Flint corn - Zea mays var. indurata
3. Pop corn - Zea mays var. everata
4. Sweet corn - Zea mays var. saccharata
5. Pod corn - Zea mays var. amylacea
6. Waxy corn - Zea mays var. tunicata

Tenai [foxtail or Italian millet]

Setaria italica

Cultivated sp.

S. italica ; S. viridis

S. glauca ; S. intermedia

S. farbesiana ; S. verticillata

S. pallidifusca

Panivaragu [Common or Proso or Hog-millet]

Panicum miliaceum

Samai [little millet]

P. miliare

Kuthiraivali [Barnyard millet]

Echinochloa colona var. frumentacea

Wild sp. E. Crus galli

Varagu [kodo millet)

Paspalum scrobiculatum.

Wild sp. P. dilatatum.

P. sanguinale.

[Origin - 1) Asia minor
2) Mediterranean region & abyssinia
3) Afghanistan]

Wheat

Triticum vulgare

Einkorn (2n : 14) diploid.

1. T. monococcum (cultivated)
2. T. aegilopoides (wild)
3. T. thaoudar

Emmer (2n : 28 - tetraploid)

4. T. dicoccoides - (wild)
5. T. dicoccoccum (cultivated)
6. T. durum (Cultivated - Samba)
7. T. turgidum (cultivated)
8. T. persicum (cltd) Persian
9. T. polanicum (cltd) Poland
10. T. timopheevi (wild)

Vulgare (2n : 42 - Hexaploid)

11. T. vulgare - club wheat - (cltd)
12. T. spelta - Spelta " - (cltd)
13. T. sphaerococcum - dwarf
14. T. macha ; 15. T. vavilovi
16. T. aestivum

Pulses

Red gram – [S. Africa]

Cajanus cajan or indicus

('Pigeon pea' 'Congo pea'.)

Cancebird stock

Atylosia trinervia

A. sericea

Cajanus cajan var flora – S. Sudan

C. cajan var. bicolor – N. Sudan.

Oilseeds

Groundnut – Brazil.

'Pea nut' / 'monkey nut'.

Arachis hypogaea (2n: 40)

wild sp 1) A. villosa

2. A. prostrata

3. A. monticola

4. A. marginata

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Arachis sp × *A. villosa*
(2n : 20) (2n : 20)

↓

F1 fertile (2n : 20)
doubled
A. hypogaea (2n : 40)

A. hypogaea var. *fastigata* - bushy
A. hypogaea var. *procumbens* - spreading

5. *A. glabrata*
6. *A. paraguinensis*
7. *A. pusilla* 8. *A. tuberosa*
9. *A. guaranitica* 10. *A. diogoi*
11. *A. angustifolia*
12. *A. helodes*
13. *A. nambyquarae*
14. *A. villosulicarpa*

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Gingelly (India – Africa/E. Indies)
[fy Pedaliaceae]

Sesamum indica (2n: 26) Indian
S. orientale
S. laciniatum (2n: 32) Indian
S. prostratum (2n: 32) "

Wild sp.

1. S. angolense (2n: 32)
2. S. radiatum (2n: 64)
3. S. occidentale (2n: 64)
4. S. alatum (2n: 26)
5. S. capense (2n: 26)
6. S. grandiflorum (2n: 26)
7. S. malabaricum (2n: 26)

Castor (India)
(fy Euphorbiaceae)

Ricinus communis.
R. macrocarpus
R. microcarpus

Subspecies.

1. Persian variety — subsp. Persicus
2. Chinese " — " chinensis
3. Zanzibar " — " Zangiberisnus
4. Blood red " — " sanguineus
5. African " — " Africanus
6. Mexican " — " mexicanus

Chenopodium album
(white goose foot)
Chenopodium rubra
— Chenopodiaceae

Greens

Portulaca oleracea
P quadrifida
Rumex vesicarius

celery — Apium graveolens
Parsnip — Pastinaca sativa } umbelliferae.

Common weeds

Aquatic

485 Pistia stratiotes — Araceae

483 Aponogeton natans — Pond weed - Candle Aponogeton naiad

484 Hydrilla verticillata

485 Vallisneria spiralis } Hydrocharitaceae

486 Ottelia alismoides }

487 Commelina benghalensis — Commelinaceae

488 Pergularia daemia Asclepiadaceae
(milk weed) " Veli Paruthi "

489 Parthenium hysterophorus Compositae

490 Vicoa indica "

491 Cassia occidentalis — Leguminosae

492 Cissus quadrangularis Vitaceae

493 Biophytum sensitivum Oxalidaceae

493 Argemone mexicana — Papaveraceae

Oxalis corniculata – Oxalidaceae

Centella asiatica – Umbelliferae

Oldenlandia umbellata sp. Rubiaceae

Lagasca mollis – Compositae.

Calotropis sp. Asclepiadiaceae

(?) Pentatropis microphylla " – [illegible]

~~Cryptostegia grandiflora~~ " (~~[illegible]~~)

Carallumа pauciflora " – (castus)

500 Hemidesmus indicus " Leaf bicolor
(nannari)

Cleome viscosa
Cleome gynandra – Capparidaceae
(Gynandropsis pentaphylla)

Cadiospermum halicacabum Sapindaceae

Crotolaria verunosa
Indigofera sp } Leguminosae

Abrus precatorius Leguminosae (Red & Bl seeds)

Citrullus ~~colo~~ colocynthis cucurbitaceae

Randia dumentorum var. floribunda

Canthium parviflorum — (Rubiaceae)

Barleria sp — Acanthaceae.

~~Asystasia gangetica~~ " (~~[illegible]~~)

Asystasia gangetica "

Trees

Calophyllum inophyllum Cyclitiferae

Morinda tinctoria — Rubiaceae.

Tectona grandis — Verbenaceae

Kigelia pinnata } Bignoniaceae

Tecoma stans

Albizzia lebbek — Leguminosae

Pithecolobium dulci ↗

518

Crown of Thorns - Euphorbia ~~milii~~ splendens

African tulip tree - Spathodea campanu-
lata
— Bignoniaceae

Madagascan Periwinkle - Vinca rosea

Mussaenda sp. — Rubiaceae

Baobab - Adansonia digitata.
— Bombacaceae

Strelitzia reginae Bird of Paradise
flower - Musaceae

Jasminum - Oleaceae.

Michelia champaca - Magnoliaceae

Lagerstroemia speciosa - Queen of Fls
Lythraceae

Garcinia mangostana - Guttiferae

Callistemon - Bottle brush
myrtaceae

529

543

Helichrysum Bracteatum - Compositae

Gaillardia - Compositae

Commelinaceae - Wandering Jew

Zebrina pendula

Setcreasea purpurea ; Rheo discolor

Amaranthus candatus - Amaranthaceae

Althaea rosea (Hollyhock) Malvaceae

Sedum + Sempervivum tectorum - Crassulaceae

Coleus - Labiatae

Crossandra -
Thunbergia - } Acanthaceae

Kalanchoe - Crassulaceae.

Catharanthus roseus (Vinca rosea)

Aloe - Liliaceae / Agavaceae

543

Golden rod – Solidago sp – Compositae

Alyssum saxatile – Golden dust
– Cruciferae

Saponaria – Caryophyllaceae

Adiantum – maiden hair
Polypodium sp fern } Polypodiaceae

Antirrhinum majus – Snap dragon
– Scrophulariaceae

Tagetes erecta – marigold (French)
T. patula } Compositae
Zinnia elegans

Calendula officinalis pot marigold "

Matthiola incana – Cruciferae

Impatiens balsamina Balsamiaceae

Gazania splendens – Compositae

Hydrangea sp – Saxifragaceae

Mahogony – Mahonia sp – Meliaceae

Cleome sp Capparaceae

Allamanda – Apocynaceae.

Shrubs

Nerium oleander – Apocynaceae

Malvaceae
- Hibiscus rosasinensis
- H. schizopetalis
- H. mutabilis,
- H. syriacum – Rose of sharon'

Malvaviscus arborens

Duranta plumieri – verbenaceae

Murraya exotica – Rutaceae

Hamelia patens – Rubiaceae

Lagerstroemia indica – Lythraceae

510

Acalypha hispida - Euphorbiaceae

Myrtus communis - Myrtaceae

Dombeya spectabilis - Sterculiaceae

Ligustrum roxburghii - Oleaceae

Barleria cristata - Acanthaceae

Jatropha multifida coral plant
- Euphorbiaceae

Eranthemum - Acanthaceae

Thevetia neriifolia - Apocynaceae

Clerodendron inerme (white flrs)
- Verbenaceae

Caesalpinia pulcherima - Caesalpi-
niaceae

Cestrum nocturnum (night queen)
- Solanaceae

Pandanus odoratissimus - Pandanaceae

Lantana camara - Verbenaceae

Dracena sp - Liliaceae

Polyscias sp - Araliaceae

585

Dizygotheca sp — Araliaceae

Tabernae montana Coronaria — Apocynaceae

~~Juan~~

Punica nana ornamental pomegranate. — Punicaceae

Lawsonia alba — (maradhoni) — Lythraceae

~~Jasteria~~ sp

Artabortris odoratissimus — Annonaceae

Tamarix gallica — Tamaricaceae

Ixora Coccinea
I. singaporensis } Rubiaceae

Allamanda grandiflora
A. violaceae } Apocynaceae

Pentas carnea
P. alba } Rubiaceae

597

Acalypha macrophylla - Euphorbiaceae

Bauhinia tomentosa - Leguminosae

Datura sp - Solanaceae

Nyctanthes arbortristis - Oleaceae

(Scrophulariaceae) Russellia juncea - Jointed pl.

Tecoma stans - Bignoniaceae

Mussaenda sp - Rubiaceae

Trees

Albizzia lebbek - Leguminaceae

Meliaceae } Azadirachta indica neem

Melia azaderach -

Aegle marmelos - Rutaceae

Ardesia crenata - Myrsinaceae

Peltoforum ferrugineum

Acacia leucophloea } Leguminaceae

Samania saman Rain tree.

Delonix regia } Leguminaceae
Butea frondosa }

~~Ene~~ Cupressus macrocarpa
— Pinaceae

Legume { Parkia biglandulosa — Badminton ball.
Ficus ~~laurata~~ — ~~Fiddlestas~~
Acacia aneura

Oncoba spinosa — Flacourtiaceae

Jacaranda mimosaefolia — Bignoniaceae

Harpullia cuplinoides.

Mimusops elengi — ~~Rutaceae~~ Sapotaceae

Millingtonia hortensis Bignoniaceae

Feronia elephantum Rutaceae.

Prosopis spicigera } Leguminaceae
Cassia spectabilis }

626

Annuals

Cosmos bipinnatus + C. Sulphureus

Zinnia elegans + Z. linearis

marigold - Tagetes patula + T. erecta.

Verbena sp

Impatiens balsamina
I. holsteri } Balsaminaceae

Coreopsis tinctoria + C. drummondii

Salvia splendens (Red) Labiatae
S. farinacea (Blue) / Farinacea

Dianthus - Caryophyllaceae

Gomphrena globosa - Amaranthaceae

Helichrysum sp - Compositae

Snap dragon - Antirrhinum majus

Celosia cristata + C. plumosus

Petunia sp - Solanaceae

Gaillardia pulchella - compositae

Chrysanthemum annum "
C. moriflora

Aster Callistephus chinensis "

Cynoglossum - Boraginaceae
Delphinium - Ranunculaceae
Phlox - Polymoniaceae
Statice - Limonium - Plumbaginaceae
Pansy - violaceae
Portulaca grandiflora - Portulacaceae
Tithonia sp (mexican sunflower)

Tuberose - Polianthes tuberosa - Amaryllidaceae
Rose - Rosa bourboniana Edward
R. centifolia - Red.

Dividivi - Caesalpinia coriaria
Adhatoda
~~Adathoda~~ vasica - Acanthaceae

686

Rhinacanthus communis Acanthaceae (Red fls)

Meyrea / Thunbergia erecta " (Blue + White)

Alternanthera sp (Red leaves) Amaranthaceae

Aerva tomentosa (Red)
A. sanguinea } Amaranthaceae

Red Iresine

Pilia mucosa Urticaceae
P. microphylla (Gunpowder)

Santolina – compositae

Amaryllis – Amaryllidaceae

Gerbera – compositae

Zephyranthus – Amaryllidaceae

Eupatorium cannabinum – compositae

Solidago aurea
compositae S. canadensis Golden Rod

Aster amellus (michel mas daisy)

Verbena erinoides — verbenaceae

Setcreasea purpurea — Commelinaceae

Begonia rex — Begoniaceae (variegated leaves)

Geranium — Pelargonium sp Geraniaceae

Spathiphyllum grandiflorum (perennial)

Mirabilis jalapa — Nyctaginaceae

Pedilanthus sp (foliage) Euphorbiaceae

70°

Abelmoschus moschatus

Mentha piperata — Labiatae

Origanum majoranum — Labiatae

(compositae) Artemisia pallens } Scented foliage.

Rheo discolor (Boat pl) Commelinaceae

Caladium candidum — Araceae

Chlorophytum — Liliaceae

75

Cordyline terminalis (lilly)

Dieffenbachia sp. — Araceae

Rudbeckia hirta - Black-eyed Susan.

Cotyledon - Crassulaceae

Carnegia gigantea - Mexican Cactus

Senecio cassiissimus - Compositae (Succulent)

Gazania splendens - Compositae.

Araucaria excelsa - Pinaceae

Alocasia - Araceae

Filicium decipiens Sapindaceae
fern leaf tree.

Loranthus - Loranthaceae

Cryptocoryne - Araceae

Swetenia mahagoni - Meliacea

Terminalia Catappa - Combretaceae
Indian Almond

Hymenanthera - Violaceae (yw fl.)

(Ivy) Hedera helix Araliaceae

Bryophyllum - Crassulaceae

Bogainvillea - Nyctanginaceae.

Pimpinella sp - Umbelliferae.

Pterocarpus - Leguminosae

Catalpa bignonoides - Bignoniaceae

Cinchona - Rubiaceae

Blackwood / Rosewood - Dalbergia
Leguminosae

Codiaeum variegatum - Euphorbiaceae

Cineraria - compositae.

740

Rose apple - Eugenia jambos
Myrtaceae

Wood apple - Feronia elephantum
Rutaceae

Durian - Durio zebethinus
Bombacaceae

Carambola - Averhoa carambola
Oxalidaceae

Blimbi kai - A. bilimbi "

Tree lettuce - Pisonia alba -

Ptelea sp - Rutaceae

Dennis dalbergioides - Leguminosae

Hibiscus tiliaceus - Malvaceae

Sapindus emarginata - Sapindaceae
Soapnut tree

Silva oak - Grevillea robusta
Proteaceae

Guazuma tomentosa - Sterculiaceae

Guaiacum officinalis (Lignum vitae)
- Zygophyllaceae.

Gynerra - Compositae (colonnedleans)

Haworthia sp Liliaceae (Succulent)

Thuja orientalis (Conifer) Pinaceae

Sauropus androgynus Euphorbiaceae

White Sapote - Casimiroa edulis
Rutaceae

~~Cyper~~

Eichhornia crassipes / speciosa
Pontederiaceae

Cabomba - Nymphaceae

760

Sanchezia nobilis Acanthaceae

Salvinia sp - Salviniaceae.

Tribulus terrestris - Zygophyllaceae.

Trianthema portulacastrum Aizoaceae

Vernonia cinerea - Compositae

Tridax procumbens — "

Eclipta sp — "

Flaveria australasica "

Stuga lutea Scrophulariaceae

Justicia sp - Acanthaceae

Avicennia officinalis - Verbenaceae

Boerhavia diffusa Nyctaginaceae

Achyranthes aspera Amaranthaceae.

Alternanthera
~~Dicanthema~~ echinata — Amaranthaceae
A. triandra "
Phyllanthus maderaspatensis — Euphorbiaceae
P. niruri "
Croton sparciflorus — "
Jatropha gossypifolia — "
Dactyloctenium aegyptium Graminae
Trichodesma indicum — Boraginaceae
Physalis minima — ~~Convolvulaceae~~ Solanaceae
Solanum torvum — Solanaceae
Asteracantha longifolia — Acanthaceae (Nerimul)
Stachytarpheta jamaicensis — Verbenaceae

Lippia nodiflora — Verbenaceae
Ruellia tuberosa — Acanthaceae

787

Widelia calendulacea - Compositae

Corchorus sp - Tiliaceae

Ammania baccifera - Lythraceae

Stemodia viscosa - Scrophulariaceae

Sida acuta - Malvaceae.

Monocharia vaginalis - Pontederiaceae

Cyperus difformis -
Fimbristylis miliacea } Cyperaceae

Cyperus iria "

Rungia repens - Acanthaceae

(Pink) Cleome chelidonii - Capparidaceae

Martynia annua - Martyniaceae
(clawed fruit)

Priva leptostachya - Verbenaceae (white)

Bacopa monieri
Linderia crustacea } Scrophulariaceae.

Alysicarpus sp - Leguminosae.

Turnera ulmifolia var angustifolia
- Turneraceae

Passiflora foetida - Passifloraceae. (visto)

Cassia auriculata - Caesalpiniaceae.

Mullugo sp - Mulluginaceae.

Eupatorium glandulosum - Compositae

Sonchus sp - Compositae.

Heliotropium indicum - Boraginaceae.
H. scabrum "

Evolvulus alsi alsinoides (Bl fls) - Convolvulaceae

Merremia emarginata - " (yw fls)

8/03

Anesomeles malabarica - Labiatae.

Withania somnifera – Solanaceae

Cryptostegia grandiflora – Asclepiadiaceae

Chrozophora rottleri – Euphorbiaceae

Paronia zeylanica – Malvaceae

Hibiscus micranthus "

Digera alternifolia Amaranthaceae

Mullugo nudicaulis – Mulluginaceae

Adanthera paronia – (Leguminosae)

Tulipiae Spathodea campanulata (Bignoniaceae)

statice – Limonium (plumbaginaceae)

Dombeya – (Sterculiaceae)

Mathiola – Cruciferae

Aponogeton – Aponogetonaceae.

Pterospermum acerifolium Sterculiacea.

Lagerstroemia speciosa Lythraceae

Cassia - alata - yr large pods

Cassia grandis - pink.

Bassia / Madhuca longifolia -

'Feral' - Ochlandra sp.

Ceylon Spinach / 'English kerrai' -

Talinum triangulare

Portulacaceae

Ceropegia juncea Asclepiadaceae 

Hyptis suaveolens Labiatae 

Leucas urticaefolia - 

Polygonum glabrum - Polygonaceae

Xanthium strumarium Compositae

Flaveria australasica

940

Sphaeranthus indicus Compositae

Notonia grandiflora "

Crotalaria verrucosa Papilionaceae

Harpullia cupanioides Sapindaceae

Filicium decipiens "

Tragia involucrata Euphorbiaceae

T. cannabina (crepe) "

Plumbago (capensis) Plumbaginaceae

Musanga cecropoides Moraceae Umbellatae

Ardisia crenata Myrsinaceae

Cucurbitaceae

Cucumis sativus cucumber

C. melo melon

Lagenaria spp bottle gourd

Luffa acutangula ribbed gourd

Cucurbita pepo Pumpkin.

Ficus lyrata - fiddle leaf tree.

Ferns Nephrolepis sp
Adiantum sp maiden hair
Polypodium sp
Asplenium sp.

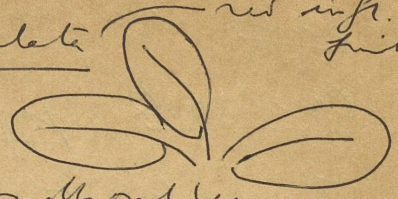
860

[fossil vine - Gnetum ula (Gymnosperm)
epiphytic tree - Fragraia (waxy broad leaves like Terminalia)]

Gnetum ula - fossil tree (Vine, Gymnosperms)
Fragria sp - ~~epi~~ epiphytic
Naravelia zeylonica (~~Apocynaceae~~) climber
Ichnocarpus frutaceans (Apocynaceae) ~~[illegible]~~ climber
Blepharis asperiora (Acanthaceae)
Mullava spicata (Leguminosae) Pigeon-tail.
Neolitsea sp (Lauraceae)
Terminalia tomentosa (Crocodile bark)

Terminalia paniculata red wingst. blue fruit

T. bellerica



broadly ovate leaves

(pentagyna) Dillenia sp - broad large leaves

Psychotria sp. Rubiaceae

Trees

Careya arborea

Zanthoxylon sp

Stereospermum sp

Pterocarpus marsupium (Leguminosae)

Acacia concina (woody climber)

Calycopteryx floribunda (woody climber)

Lea sp

Holarrhena antidysenterica

Holigarna sp

Sapindus laurifolius (soapnut)

Semecarpus anacardium (marking nut)

Dalbergia latifolia (Rose wood)

Lagerstroemia microcarpa (Nandi)

Buchanania lanzen

Alseodaphne sp.

Xylia xylocarpa

Adina cordifolia

Macaranga sp

Albizzia odoratissima

Calycarpa sp

Grewia sp

Ixora sp

Flacourtia montana

Randia spinosa

Diospyros montana

Alstonia scholaris

Wrightia sp

Sapium sp (poisonous)

Gymnosporia montana (shrub)

Holigarna beddomi

H. ornatiana

Combretum sp (Combretaceae - woody climber)

Psychotria flavida (Rubiaceae)

Gardenia sp (Rubiaceae)

Ervetamia heyeneana (Apocynaceae)

Derris platyptera (Papilionaceae)

Acacia catechu

Hydnocarpus laurifolia - Tree & woody fruit.

~~Metrol~~

Melastoma sp - shrub

Hopia sp.

Boucagia dalzeli (Tree - like Hopia)

Pterosperonum sp

Laginandra sp (Araceae - aquatic herb)

Euphorbia acolis - Xerophytic herb

Carelia interiora (Rhizophoraceae)

Dalbergia sympathetica (woody climber)

Heterophragma roxburgii (Bignoniaceae)

Ochrocarpus longifolius (Surugi)

Mimusops hexandra (=Manilkhara)

921 Mimucyclon sp.

Tree sp	Family
Vitex altisima	Verbenaceae
V. negundo	"
Callicarpa tomentosa	"
Diospyros microphylla	Ebenaceae
Erretamia heyneana	Apocynaceae
Alstonia scholaris	"
Carissa carandus	"
Lagenandra sp	Araceae

Zanthoxylon rhetsa	Meliaceae
Semecarpus anacardium	Anacardiaceae
Holigarna grahamii	"
H. ornatiana	"
Buchnania lanzan	"
Careya arborea	Lecythidaceae
Pterospermum sp	Sterculiaceae
Grewia tilifolia	Tiliaceae
Macaranga peltata	Euphorbiaceae
Aporosa lindleyana	"
Bridelia sp	"
Memecylon sp	Melastomataceae
Melastoma sp	"
Desmodium sp	Fabaceae
Atylosia "	"
Erythrina "	"

Hopea wightiana	Dipterocarpaceae
Dipterocarpus indicus	"
Dillenia pentagyna	Dilleniaceae
Calophyllum sp	Clusiaceae
Leeae sp	Leeaceae
Knema/Myristica attenuata	Myristicaceae
M. malabarica	"
Olea dioca	Oleaceae
Heterophragma sp	Bignoniaceae
Stereospermum sp	"
Schleichera trijuga/oleosa	Sapindaceae
Gnetum ula	Gnetaceae
Calycopteris floribunda	Combretaceae
Mussaenda sp	Rubiaceae
Strobilanthes/Nilgirianthus	Acanthaceae

Alseodaphne	semecarpifolia	Lauraceae
Neolitsia	sp	"
Hydnocarpus	laurifolia	Flacourtiaceae
Flucourtia	montana	"
Capparis	sp	Capparaceae
Salmalia / Bombax	malabarica(um)	Bombacaceae
Carallia	bracteata (integerrima)	Rhizophoraceae
Minusops / manilkhara	hexandra	Sapotaceae
Ochrocarpus	longifolius	Clusiaceae
Holarrhena	sp	Apocynaceae
Sapindus	laurifolius	Sapindaceae
Terminalia	pannimlata	Combretaceae
T.	tomentosa / alata	"
T.	bellerica	"
Combretum	sp	"

Lagaerstromia sp — Lythraceae

Adena cordifolia — Rubiaceae

Michelia champaca — Magnoliaceae

Garcinia sp — Clusiaceae

Gymnosporia/Maytenus sp — Celastraceae

Blepharis asperima — Acanthaceae

Artocarpus gomezianus (lockoocha) — Moraceae.

Dalbergia sympathetica — Fabaceae.

Diospyros candolleana — Ebenaceae

Dysoxylum (white ceddar) — Meliaceae

Erythrina stricta (with spines - deciduous)

E. subumbrans (cont spines ->/< evergreen)

Garcinia cambogia — Clusiaceae

G. morella

Curculigo orchioides — Liliaceae

Madhuca neriifolia Sapotaceae

Melastoma malabathricum Melastomataceae

Vateria indica Dipterocarpaceae

Sarcostigma kleinii Icacinaceae

Nothapodytes foetida "

Homonoia riparia Euphorbiaceae

Mallotus sp "

Polyalthia fragrans Annonaceae

Actinodaphne malabarica Lauraceae

Ancistrocladus heyneanus Ancistrocladaceae

Bauhinia racemosa Fabaceae

Bombax = Salmalia Bombacaceae.

S. malabaricum deeper fls.

S. insignis paler "

Bischofia javanica Euphorbiaceae

Cocculus sp Menispermaceae

Dimocarpus longan / Nephelium longana Sapindaceae

Murraya exotica Rutaceae

Ochlandra sp Poaceae

Pandanus fascicularis / odoratissimus Pandanaceae

Monochoria vaginalis Pontederiaceae

Saraca asoca / indica Fabaceae

Symplocos sp Symplocaceae

Pterolobium hexapetalum Fabaceae

Calophyllum tomentosum Clusiaceae

Semecarpus anacardium Anacardiaceae

Terminalia Chebula Combretaceae

Ziziphus oenoplia Rhamnaceae

Arenga wightii Palmae / Arecaceae

Ardisia sp Myrsinaceae.

Sterculia alata Sterculiaceae

Entada pursaetha (Papilionaceae) "Thellu kottai"

ENTOMOLOGY.

INSECTS

Apterygota

1. Thysanura
2. Diplura
3. Protura
4. Collembola

Pterygota.

Exopterygota

5. Ephemeroptera
6. Odonata
7. Plecoptera
8. Grylloblattodea
9. Orthoptera
10. Phasmida
11. Dictyoptera
12. Embioptera
13. Dermoptera
14. Zoraptera
15. Isoptera
16. Psocoptera
17. Siphunculata
18. Mallophaga
19. Thysanoptera
20. Hemiptera.

Endopterygota

21. Neuroptera
22. Mecoptera
23. Lepidoptera
24. Trichoptera
25. Diptera
26. Siphonaptera
27. Hymenoptera
28. Coleoptera
29. Strepsiptera.

IMMS'- classification.

Order: Thysanura. – Bristle tails or silver fish.

Families –

Machilidae – Petrobius sp.
Lepismatidae – Lepisma sp.

Order: Diplura

Campodidae – Campodea sp.
Projapygidae – Projapyx sp.
Japygidae – Japyx.

Order: PROTURA: – 'Telson tails'

Or. COLLEMBOLA – Spring tails (or) Snow flakes.

Lucerne flea – Sminthurus viridis

Sugarcane – Saliua wolcotti

PTERYGOTA:

EXOPTERYGOTA:

ord. EPHEMEROPTERA – May or Day flies.

ord: ODONATA –

Anisoptera – Dragon flies

Zygoptera – Damsel or Demoiselle flies
(Snake doctors
Devil's Darning needles
Mosquito hawks.)

ord: ORTHOPTERA:

Suborder: Ensifera

sup. fmy: Tettigonoidea

fy: Tettigoniidea

Long horned grass hoppers, katydids or Green grass hoppers, meadow grass-hoppers, or Angular winged grasshoppers.

(eg) Northern Katydid:
Pterophylla camelliifolia

fy: Gryllidae – Crickets

fy. Gryllotalpidae – Mole cricket.

common mole cricket - Gryllotalpa gryllotalpa
African " " - G. africana

fy. Acrididae Locusts & Grasshoppers.

Migratory locust – Locusta migratoria
(Australia, Pakistan, Europe & Africa)
Desert locust - Schistocerca gregaria
(Sahara, Iraq & Egypt)
Bombay locust - Patanga succincta
(India & Ceylon)
Red Locust - Nomadacris septem-
fasciata

Rice grass hopper - Hieroglyphus banian
Oxya velox.
Wingless grass hopper - Orthacris simulens
Cotton grass hopper - Cyrtacanthacris
ranacea
Coffee " " - Aularches miliaris

Order: Phasmida

fy Phasmidae - Stick insect

fy. Phyllidae - Leaf insect.

Order: Dermoptera.

Earwig - Euborellia annulipes

Ord. EMBIOPTERA.

Embid - Anisembia spa.

ord: DICTYOPTERA.

S.order Blattaddea

Fy. Blattidae.

Black or Oriental Cockroach
— Blatta orientalis

German Cockroach - Blatella germanica

American " - Periplaneta americana

Australian " - P. australasiae

Brown winged " - Cryptocercus punctatus

S. order Mantodea. fy. Mantidae
(Praying mantids).

Ord: ISOPTERA
(Termites).
fy: Termitidae - Reticulitermes sp.

Odontotermes obesus.

Ord. PSOCOPTERA - (Psocids)

Ord. Mallophaga - (Bird louse)
Pigeon louse - Columbicola columbae
Chick " - Menopon pallidum

Ord. SIPHUNCULATA. (Anaplura)
(Sucking lice)
Pediculus humanis capitis - head louse
P. humanis corporis - body louse

Ord: HEMIPTERA (Rhynchota)
(Bugs)

Virus transmitting insects.

Bemisia tabaci - Bhendi vein clearing
- Cassava mosaic

Pentalonia nigronervosa - Bunchy top of Banana
(aphid) cardamom mosaic
marble or kalte "

Aphis fabae - Cauliflower mosaic

Myzus persicae - " "

Toxoptera aurantii } - Tristeza on citrus.
T. citricida }

Myzus persicae - Cowpea mosaic.
Potato leaf roll
Potato spindle tuber
Potato virus A, Y.

Aphis craccivora - ground nut mosaic.

Inazuma dorsalis } Rice dwarf.
Nephotettix sp }

Sogata oryzicola - Rice White leaf.
or Hoja flane disease

Nilaparvata lugens - Rice grassy stunt
Rice ragged disease

Rhophalosiphum maides (Aphid) -
Sugarcane mosaic.
(Mycoplasma)

Nephotettix impicticeps - Rice yellow dwarf
→ (cicadellidae) (Tungro disease)

Suborder: HOMOPTERA.

× Series 1. Coleorrhyncha

S. 2. Auchenorrhyncha

Superfamily - Cicadoidea

fy. cicadidae (Periodical cicada)
(17 year locust)

Magicicada sp.

Cercopidae (Cuckoospits)

Membracidae (Tree hoppers)

Tricentrus bicolor - Tomato, Pulses & lucerne

Cicadellidae (leaf hoppers)

Rice green leaf hopper - Nephoteltix apicallis

N. impicticeps

N. virescens

Blue leaf hopper - Typhalocyba maculifrons

Mango hoppers - Amritodes akkinsoni

(Idioscopus oldname) A. niveosparsus

A. clypealis

Amrasca splendens - Mango hav

A. biguttula biguttula.

Sesamum - Orosius albicinctus

Brinjal - Cestius phycitis.

Castor - Amrasca flavescens

Superfamily: FULGOROIDEA.

fy. Delphacidae

Sorghum - Peregrinus maidis

Nilaparvata lugens

fy. Eurybrachidae

Eurybrachis lomentosus - Sandal wood.

Series 3 Sternorrhyncha

Superfamily Psylloidea

fy. Psyllidae (Psyllids)

Diaphorina citri on Curryleaves

Sp.fy. Aleurodoidea

fy. Aleurodidae (White flies)

Citrus white fly - Dialeurodes citri

Castor " - Trialeurodes ricini

Bhendi " - Bemesia tabaci

Sugarcane whiteflies - Aleurolobus barodensis

Tobacco - Neomaskellia bergii.

Sp. fy - Aphidoidea

fy. Aphididae - (plant lice)

Cowpea Aphid - Aphis craccivora

Cotton " - A. gossypii

Sorghum " - Rhopalosiphum maidis

Ragi root " - Tetraneura nigriabdominalis

Banana " - Pentalonia nigronervosa

Sp. fy. Coccoidea coi

fy. Margarodidae - (Giant coccids)

Cotton cushion scales. Icerya purchasi on wattle (Acacia decurrens) Nilgris.

fy. Lacciferidae - Lac insect.

Laccifer lacca.

fy. Pseudococcidae - Mealy bugs

Rice mealy bug - Heterococcus refri

Brinjal mealy bug - Centrococcus insolitus

Cocoa " - Pseudococcus njalensis

(Swollen shoot).

fy. Dactylopidae (Cochineal insects)

Dactylopius tomentosus - for control of Opuntia dillenii

fy. Coccidae (Soft scales)

Soft brown scale of Coconut - Coccus hesperidum

Nigra scale (Cotton) - Saiselta nigra

" (Coffee) - S. coffeae.

Scale of Guava - Fulvinaria psidii

fy. Diaspididae (Armoured scales)

Red scale (citrus) - Aonidiella aurantii

Coconut palm scale - Aspidiotus destructor

Turmeric " - A. hartii

San Jose scale (plum + peach)

- Quadraspidiotus perniciosus

Sub-orde HETEROPTERA.

Series: GYMNOCERATA

fy. Reduviidae (Assassin bugs)

Rhinocoris fuscipes - feeds on Heliothis larvae

Rhodnius prolixus.

fy. Miridae (Plant bugs, Capsids or Mirids)

Tea mosquito bug - Helopeltis antonii

Cyrara - H. theivora

fy. Cimicidae (Bed bugs)

Cimex lectularius, C. protunctatus.

fy. Lygaeidae - [Chinch bugs or Lygaeid bugs)

Oxycareenus hyalipennis - on bolls & cotton

fy. Pyrrhocoreidae - (Red bugs)

Cotton stainer bug - Dysdercus cingulatus

fy. Coreidae - (Rice earhead bugs)

Leptocorisa acuta

Chilam earhead bug - Calocoris angustatus

fy. Tingidae (lace wing bugs)

Banana L.W. Bug - Stephanitis typicus

Chrysanthemum " - Cadmilos retiarius

fy. Pentomidae (Shield or stink bugs)

Sorghum - Nezara viridula

Black bug (Rice) - Scotinophara lurida

Cruciferous veg. bug - Bigreda cruciferarum

Series CRYPTOCERATA.

fy. Belastomatidae - Giant water bugs.

Belastoma sp

Giant Ash eater - Lethocerus indicus.

ord. THYSANOPTERA

1. Sub order: Tubulifera
2. Sub order: Terebrantia

fy. Thripidae

Rice thrips - Baliothrips biformis
Rice flower " - Haplothrips gangalbauri
Chilly " - Scirtothrips dorsalis (grapes).
Cardamom " - Sciothrips cardamomi
Onion thrips - Thrips tabaci
Jasmine flower thrips - T. orientalis
Banana Rust " - Banchaetothrips indicus
Citrus thrips - T. nilgriensis.

Ord. NEUROPTERA.

Sub order: Megaloptera (alder flies)
Sub order - Planipennia (lace wings)
fy. Mantispidae - Mantis fly
fy. Chrysopidae - Green lace wings or golden eyes or Aphid lions

fy. Myrmeleontidae - Ant lions or doodle bugs.

Ord: MECOPTERA

scorpion flies.

Ord: LEPIDOPTERA

(Butterflies & Moths)

Suborder 1: Zeugloptera

fy - Micropterygidae

S. Order 2. Monotrysia (eg) Sabatinca sp

fy. Incurvariidae

Yucca moth - Tegeticula yucasella

S. Order 3. Ditrysia

Sup. family. TINAEOIDEA.

fy. Gelechiidae - Gelechids

Pink boll worm of cotton - Pectinophora gossypiella

Potato tuber moth - Gnorimoschema / Operculella
Phthorimoea

fy. Gracillariidae - leaf miners.

citrus leaf miner - Phyllocnistis citrella.

Sup. fam: Cossoidea
fy. Zeuzeridae
coffee borer - Zeuzera coffeae

Sup. fy. Psychoidea
Psychidae - 'Bagworms'
Banana bagworm - Kophene cuprea

fy Cochlididae - (Slug caterpillars)
castor slug - Latoia / Parasa lepida

fy Galleriidae - (wax moths)
honeycomb w. moth - Galleria mellonella

fy. Crambidae - (Grass or Snout moths)
early shoot borer of Sugarcane -
Chilo infuscatellus
fy. Phycitidae - (Phycitidids)
Indian meal moth - Plodia interpunctella
Mediterranean flour moth - Ephestia kuhniella
fy. Pyralidae - (Pyralids)
Rice case worm - Nymphula depunctalis
fy. Pyraustidae - European corn borer
- Pyrausta nubilalis
Moringa - Noorda moringae
Sup. fy. Bombycoidea - Hairy caterpillar
fy. Lasiocampidae
In Moringa - Metanastria hyrtaca
fy. Saturnidae - Wild silk worm.
Eri silk worm - Philosamia ricini

Sup. famy. PAPILIONOIDEA

Fy Nymphalidae (four footed butterflies)

Rice horned caterpillar.
- Melanitis ismene

Monarch butterfly - Danais plexipus

fy. Pieridae - (White, yellows)
cabbage butterfly - Pieris rapae

fy. Papilionidae - (Swallowtails)

citrus butterfly - Papilio demoleus

fy. Lycaenidae - (Blue butterflies)

Red gram - Lampides boeticus
catechu pops cnejus.

Sup. fmy HESPERIDEA

fy Hesperiidae .(Skippers)

Rice skippers - Parnara mathias

Turneri " - Udaspes folus

fy. Sphingidae -(Humming bird & Hawk moths)

(eg) Herse Convolvuli (sweet potato leaf feeder)

Acherontia styx - Death head moth. (gingelly)

fy. Noctuidae Prodenia litura on [Tobacco
(Pulse & cotton) → Heliothis zea

citrus fruit sucking moth - Othreis fullonica &

fy. Arctiidae .(Tiger moths)[O. materna

Amsacta albistriga

A. moorei

Castor hairy caterpillar - Pericallia Ricini

Sunhemp " - Utetheisa pulchella

Common butterflies.

Paddy leaf roller - Cnephalocrosis medinalis

Paddy stem borer - Tryporyza incertulus

fy - Pyralidae

fy. Nymphalidae

Castor butterfly - Ergolis merione

~~Horned~~ Hairy caterpillar of paddy - Psalis pennatula - Lymantridae

fy. Papilionidae

Aristolochia butterfly - Tros aristolochiae

fy. Bombycidae

Silk moth - Bombyx mori meridionalis

Moringa hairy caterpillar - Eupterote mellifora

fy. Saturnidae

Tassar silk worm - Antheraea paphia

Muga silk worm - A. assamia.

Eri SW - Philosamia ricini

Ord: TRICHOPTERA
(caddis flies)

Setodes argentatus - Rice root.

Triaenodes bicolor - Rice leaves.

Ord: DIPTERA
(True flies)

Sub ord: NEMATOCERA:

fy - Psychodidae - [Sand and Moth flies]

Phlebotomons papatasii - (kala azar)

fy. Culicidae - (Mosquitoes)

Malarial - Anopheles fluviatilis } India
A. philippinensis
A. stephensi ; A. varuna

Culex fatigans - (Filariasis)
Aedes aegypti - (Yellow fever)

fy. Cecidomyidae - (Gall midges)

Rice gall fly - Pachydiplosis oryzae.

Sesamum " - Aspondylia sesami

Mango inflorescence midge
- Erasomyia indica.

Sub order: Brachycera

fy. Asilidae - [Robber flies]
Alloeolōrsia aurata.

Tabanidae - (Horse flies)

Tabanus stigalis - Underside abdomen
T. speciōsus - hindleg region
T. macerri - Neck.

Suborder Cyclorrhapa:

fy. Trypetidae - (fruit flies)

Cucurbit fruit fly - Dacus cucurbitae

Oriental " - D. dorsalis

fy. Agromyzidae - (Leaf miner flies)

Red grampod fly -
Melanagromyza
obtusa

fy. Drosophilidae (fruit flies)

Drosophila melanogaster.

fy. Ephydridae (Leaf whorl maggots)

Hydrellia griseola
H. philippina } Rice leaves

Psilopa petrolei

fy. Muscidae - (House fly)

fy. Hippoboscidae - (Cattle flies)
Hippobosca maculata.

Order Siphanaptera (fleas)

Rat flea - Xenopsylla cheopsis
(plague)
Human flea - Pulex irritans
Dog " - Ctenocephalids canis
Poultry " - Echidnophaga gallinacea

ord: HYMENOPTERA
(Bees, wasps & ants).

sub-ord. SYMPHYTA
fy - Tenthredinidae
mustard saw fly - Athalia proxima Lugens

suborder APOCRITA.

Fy. Ichneumonidae (Ichneumon wasp)

Isotima javensis - Larval parasite
on
Scirpophaga nivella (Sugarcane borer)

Fy. Brachonidae - (Brachonids)

Bracon brevicornis - on larvae of
Nephantis serinopa

Fy. Cynipidae (gall wasps)

Fy. Agaontidae (fig insects)

Blastophaga psenes

Fy. Eulophidae - (Pupal parasite)

Trichospilus pupivora. on
Nephantis serinopa.

Fy. Bethylidae - Perisierola nephantidis
on larva of N. serinopa.

Fy. Vespidae - Yellow banded wasp - Vespa cincta.

Fy. Apidae - (Honey bees.)

Indian bee - Apis indica

Rock bee - A. dorsata

Little or mosquito bee - A. florea

Dammer bee - Melipona iridipennis

Italian bee - A. millifera.

Fy. Megachilidae - (Rose leaf-cutter bee)

Megachile anthracina

Fy. Formicidae - (ants) × Black ant - Camponotus compressus

Ord: COLEOPTERA

(Beetles)

[sub order - Adephaga]

sub order-2: POLYPHAGA

Fy. Melolonthidae - [Blister beetles]

[Rock chafers & June beetles]

× Fire ant - Solenopsis geminata.

Groundnut White grub - Holotrichia consanguinea

fy. Dynastidae - Rhinoceros beetle
Oryctes rhinoceros
fy - Dermestidae - ~~Drugstore~~ Khapra beetle
Trogoderma granarium (wheat)
fy. Anobidae (Drug store beetle)
Stegobium peniceum - (Turmeric & Coriandrum)
fy. Coccinellidae - (Ladybird beetle)
Epilachna vigintioctopunctata
- on brinjal (spotted leaf beetle)
Vedalia beetle - Rhodolia cardinalis
(control of Icerya purchasi - Reston walli)
fy. Tenebrionidae - Red flour beetle
- Tribolium castaneum

fy - Meloidae - (Blister beetles)

Mylabris pustulata - on pulses.

fy. Cerambycidae - Long horn beetles.

Mango stem borer - Batocera rufomaculata

fy Bruchidae - Callosobruchus chinensis

fy. Hispidae - (Rice hispa)

Dicladispa armigera

fy. Galerucidae - (Pumpkin beetles)

Aulacophora cincta

Singhara beetle - Galerucella birmanica

Fy. Apionidae - (sweet potato weevil)
Cylas formicarius.

Fy - Curculionidae - (weevils)
Red palm weevil - Rhynchophorus ferrugineus

Mylloceus maculosus
M. subfasciatus } Blendit cotton.

fy. Scolytidae - (Ambrosia beetle)
(Cultivate fungus gardens)
Xyleborus parvulus

Fy. Buprestidae - (Jewel beetles).

Ord. STREPSIPTERA - (stylopids)
(parasites)
Pyriloxenos compactus - endoparasite on mangohopper - Amritodes atkinsoni.

Common Butterflies

Peacock Pansy - Junonia almana

Tawny Coster - Telchinia violae

Lemon Butterfly - Papilio demoleus

Common mormon - P. polytes (♀ mimic)

Danaid egg fly - Hypolimnas misippus (— send dimorphism)

Indian fritillary - Argynnis hyperbius

Blue Pansy - Precis orithya

yellow - P. hierta

The forget-me-not - Catochrysops strabo

Plain tiger - Danais chrysippus

Common " - D. plexippus (Monarch)

Great egg fly - Hypolimnas bolina

Painted Lady - Cynthia cardui / Vanessa

Lemon Pansy - Junonia lemonia

Danais hamata (blue)

Tros aristolochia (Papilio)

~~Papilio demoleus~~

"Raja Pakki"

Catospsilia pyranthae (pieridae)

Delias hierta (")

Papilio hector - Aristolochia.

~~Syngenia latimaginalis Crossantha~~

Terias hecabe - (yw)
Eurema

Poecilocerus pictus - Calotropis grasshoppe

PLANT PATHOLOGY.

Plant Pathology

I Rots: FUNGAL DISEASES.

Red Rot of sugarcane — (Glomerella turcumanensis) Colletotrichum falcatum

Sett rot of sugarcane - (Pineapple disease) — Ceratocystis paradoxa

Rhizome Rot of Ginger - Pythium aphanidermatum

Root Rot of Gingelly — Macrophomina phaseolina (Rhizoctonia bataticola)

II Damping off.

Pythium aphanidermatum

III Wilts

1. Fusarial wilt

of Cotton: Fusarium oxysporum f. sp. vasinfectum

of Tomato - F. oxysporum f. sp. Lycopersici

Panama wilt of banana

- Fusarium oxysporum f. sp. Cubense

Fusarial wilt of red gram

- fusarium udum.

Ganoderma wilt

wilt of Coconut and citrus

- Ganoderma lucidum

(Bracket fungi)

IV Blights

Late blight of potato - Phytophthora infestans

Early blight of Tomato - Alternaria Solani

Leaf blight of Paddy - Helminthosporium Oryzae

Brown leaf spot

Leaf " " Sorghum - H. turcicum

Die backs and Anthracnose

Chilly die back – Colletotrichum capsici

Lab lab " – C. lindemuthianum

V LEAF SPOTS

Paddy blast – Pyriculania oryzae

Cercospora leafspots

Tikka leafspot on Groundnut –
Cercospora personata
C. arachidicola

Rectangular leafspot of Sorghum
– Cercospora sorghi

Frog eye leaf spot of Tobacco.
– C. nicotianae

Sigatoka leafspot of Banana
– C. musae (Mycosphaerella musicola)

Red leaf spot of sorghum
– Colletotrichum graminicolum

Alternaria leafspots
Alternaria leafspot of Cotton –
Alternaria gossypii

Alternaria Leafspot of Sesamum
– A. Sesami

VI Rusts (Basidiomycetes)
(Uredinales)

Stem or black Rust of wheat –
Puccinia graminis
(Berberis vulgaris)

Leaf or Brown Rust of wheat
– P. recondita (Thalictrum sp.)

Yellow or Stripe rust of wheat –
P. striiformis

Rust of cholam - P. purpurea
(Oxalis)

Rust of cumbu - P. penniseti
(Solanum melongena)

Rust of Sunflower - P. helianthi
(autoecious Rust)

Coffee Rust - Hemileia vastatrix
Cotton Rust - Phakopsora desmium
Pseudo Rusts

White rust of amaranthus -
Albugo bliti.

VII Smuts (ustilaginales)
cholam

Short or grain Smut - Sphacelotheca sorghi
Head smut - S. reiliana
Long smut - Tolyposporium ehrenbergii
Loose Smut - S. cruenta

Smut of Cumbu – Tolyposporium penicillariae

Tenai Smut – U. Crameri

Smut of Sugarcane – Ustilago Sitaminea

Smut of Corn – U. maydis

Loose Smut of wheat – U. tritici

VIII Mildews.

Downy mildews – (Phycomycetes) fy. Peranosporaceae

D. mildew of cumbu – green earhead of cumbu – Sclerospora graminicola

D. Mildew of Sorghum – S. Sorghi (Leaf shedding)

D. mildew of grapes – Plasmopara Viticola

Powdery mildew
(Ascomycetes)
fy - Erysiphaceae

Powdery mildew of Bajra - (oidium)
Erysiphe communis

P. mildew of chilly - (Oidiopsis)
Leveillula taurica (or)
(Redgram) Oidiopsis taurica

Powdery mildew of Mulberry -
(Ovulariopsis)
- Phyllactinia corylea

P. M. of Bhendi - Erysiphe communis
P. M. of Grapes - Uncinula necator
(oidium)

IX Ergots (Ascomycetes)
(or. Clavicipitales fy. clavicipitaceae)
Sugary disease of cholam - Sphacelia sorghi

Ergot of cumbu - Claviceps microcephala

Ergot of Rye - Claviceps purpurea

X Bacterial diseases

Black arm or angular leaf spot of cotton - Xanthomonas malvacearum

Bacterial leaf blight of paddy - X. oryzae

Citrus canker - X. citri

Ring Rot of potato - Pseudomonas solanacearum

XI Virus diseases

Tobacco mosaic virus - TMV

Sugar cane mosaic virus.

Cassava mosaic virus - Insect Vector (Bamesia tabaci)

Chilly mosaic virus - [I.V.] Aphis gossypii

Cowpea mosaic - Aphis craccivora (vector)

Bean yellow mosaic - Bemisia tabaci (vector)

Vein clearing & Bhendi - Bemisia tabaci (vector)

Tomato leaf curl - "

Ring spot disease & Groundnut Groundnut Rosette - Aphis craccivora (vector)

Bunchy top & Banana - Pentalonia nigronervosa (vector)

XII Mycoplasma diseases

Little leaf & Brinjal - Cestius phycitis

Sesamum phyllody - Orosius albicinctus

* Citrus tristeza - Toxoptera citricidus
Aphis sp.

Phanerogamic parasites

Stem:

Total stem-parasite - Cuscuta sp (Dodder)

Partial " " - Loranthus sp.

Root.

Total Root parasite - Orobanche sp (Broom Rape)

Partial " " - Striga sp. (Striga euphrasioides)

Rhizome or soft Rot -

Pythium vexans

P. graminicolum

Stem rot of paddy - Sclerotium oryzae

Stem bleeding - Ceratocystis paradoxa

Leaf spot of turmeric - Colletotrichum capsici

Leaf spot or anthracnose of cotton - C. gossypii

Leaf spot or anthracnose on mango & citrus - C. gloeosporioides

Castor Rust - Melampsora ricini

Groundnut Rust - Puccinia arachidis

1981/182 Miscellaneous notes

Extending life of cut flowers

1. Removing stamens in some Lilies.
2. Snapdragon, Aster + Marigold, — extended 2 ds c̄ a bit of Cu wire / coin in side vase.
3. Ld pH-3 by dissolving 1 gm citric acid / lit
4. Sugar / NaCl in vase. Sugar + $AlSO_4$ 15:1 gms / lit, roses — sugar + vinegar.
5. Carnation — immerse cut end of stalk in 0.1 % boric acid soln — 5-7 ds extended.
6. Dahlia — $AgNO_3$ in vase-water.
7. Roses, Chrysanthemum, dahlias, Carnation 4 % sucrose solution.
8. Aspirin — for gladioli & carnations

Plantation crops

Pepper: after 1st soaky rain 50gm N, 40 gms P, 70 gm K / vine of 3 yrs & above. In addition 9kg FYM / vine. In alternate yrs applyg lime 500gm / vine.

Pl 2/3 vines 30 cm away from std - avoid southern side, spray 1% BM for preventg quick wilt, before SW monsoon. Painting ē BM - 1 collar region & stem upto 1m before monsoon.

Areca: pits 90×90×90 cm³. spacing 2.7m × 2.7m May-June plg - RF als 50g N, 40g P_2O_5, 70g K_2O / palm ē showers (April May).

pests attack nursery - kethane 186 ml / 100 lit water. Sprays repeated after 15 / 20 ds if necessary. Coloured mites - Rogor 1ml / lit water sprayed. Spindle bug - placing 10gm phorate 10 G on innermost axils of leaves / By spraying BHC 50% WP, 250 gm in 100 l H_2O - Fruit rot (Mahali / koleroga) BM 1% spray.

nest caterpillar (Teratheba mundella)

Malathion 0.125%.

Bard cabbage-like leaves - drain water-break hardpan - CuSO4 + lime 1:1 @ 225 gm/palm once in 6m improves it.

Left die-back Colletotrichum gleosporoides

Dithane Z-78 4 gm/lit.

Bud rot - phytophthora BM 1%.

spindle bug (Carvalhoia arecae)

bearg 6th yr full - 10th yr >.

Cardamom borer. Rogor 1000 ml / Nuvacron 750 ml / Lebaycid 375 ml / 300 lit H_2O / Ekalux 600 ml / Thiodan 900 ml / Zolone 900 ml.

Clove 6m spacing shade loving 4-5 yrs yld - 10th yr max - upto 40-50 yrs life span. 6-8 kg/pl - on dry 30-32% recovered. 1/2 - 1 kg dry cloves/tree. Mulching upto 2/3 yrs

Bordeaux mixture – pre monsoon – sooty mould
BHC 50% / Dieldrex – Pests + white ants.

Coconut: (Kerala) 25 kg compost / Tree July.
50 " GLM

Increasing yd – 1/2 kg each of $MgSO_4$ – lime –
NaCl / tree – separately.

Coconut mixt – (10:5:20) 4 1/2 kg / tree.

2 1/2 kg $AmSO_4$, 2 kg Super + 1 1/2 kg K (muriate
of potash / tree / yr.

Storage: for a month – c̄, husk

2 – 2 1/2 " – in sand – stalk end up
8 mth – de husk – paraffin treatment
10 gms of paraffin for 2 dips of each
coconut

Mango: malformation.
Symptoms infl abnormal — (1)
witches-brown like leaves – (2)
Causes – physiologic, Acarologic, fungal +
viral.

mites - Aceria mangiferae, Typhlodromus
fungus - Fusarium moniliforme.

Control removing affected twigs, > use
of N + K reds (Pruning in March/april)
Spray urea 0.25% - 2% in Nov.
Diazinon, Phosphamidon, parathion or
thiomation at 15 d interval -
Bavistin, Fytolan 0.02,%. 0.05%. 0.1%.
GA - 50 ppm.

18/8/82.

Tapioca vars for industry's use — K.G. Shanmuga velu, Thamburaj, TNAU, Mdu

CO-1 36 T/ha, 15-40% starch - 8-½ - 9 m duration
tolerance to mosaic virus.

H-97 35 T/ha 30% starch 10 m duration
< incidence of virus

H-226 38 T/ha 24.5% Starch 10 m

H-2304, /Sri Sahya - 45 T/ha - 11 m

S-2371 25 T/ha 10 m

25 T/ha

local vars Burma, Malabar, Kali Kalan, Rose Cass, Malavella

spp

Mango malformation

S - vars - Langra, Dashahari, + Chausa - N India
hybrids Mallika + Amrapali - IARI - S
Southern region of India - TN - free from this d!

malformation - (i) veg - malformation (ii) floral malformation

— former - seedlgs have bunchy top - Compact leaves bunched at 1 apex of 1 shoot / leaf axil. Small leaf rudiments + crowded together in short shootlets. Growth of shoots is arrested

floral malformation - infl hypertrophied, Crowded - Cauliflr like appearance. veg - malformation > common - affected infl tumbl - witches broom appearance.

— Hormone NAA 100 - 200 ppm

present remedies +

(i) destroy pls where 1 incidence is < 5 - 10%
(ii) Certification of nursery pls.
(iii) use of broad spectrum pesticides.
(iv) pruning diseased tissues +
(v) spray q. NAA (200 ppm) during oct.

'de blossoming' affected shoots in, earlier flush of fl. produce in Feb.-Mar. fresh crop of fl in April - appears.

— Prof Dr. V.N. Madhava Rao
TNAU, CBE. Sept 1, 1982

Rice case worm

IR 20 — >40% incidence

1 spray monocrotophos — @ 200 ml / ac in 200 lit

alternatives

Chlorpyriphos — 400 ml / ac
Endosulfan 400 ml / ac
Carbaryl 50 WP 400 g / ac
/ 200 lit water

Dr. Uthamasamy
Dr. M Gopalan
Sept 1. 1982 Adutturai

How green turmeric is cured?

after 3-4 ds of harvest. green rhizomes sorted out into mother & fingers — mother for seed purpose & fingers for curing.

mothers - when cured - boils separately as they take more time than fingers.

Green rhizomes are boiled till frothing takes place - white colour & characteristic odour. Material is removed from water & sun dried.

Drying: on a clean floor 12-15 ds. mothers & fingers dried separately.

Rubbing & cleaning: dried material rubbed against a hard floor surface / trodden upon & feet.

Storage: 4.5 M x 3 M x 2 M pits dug in an elevated place, pits dry for 2/3 ds. bottom & sides thickly lined & paddy straw & one kaid & country date mats & pit is covered & earth. about 200 bags & stored in a pit.

K. Satyanarayana Reddy
& P.V.S. Narayana Rao
Regional Fruit Res. Station
Cuddapah Dist AP

Hindu Sept. 15 1982

Coriander:

short duration 100-120 ds — Organic sls
sandy loams c̄ FYM / Compost — best
pure / mixed crop c̄ cotton / Bl gm. Gm every
year.

Sown in Oct as RP crop — harvest during
Jan-Feb.

mid-May — July - Aug.
weed-free conditions ✓.

Vars: T-NP(D) 92, NP(D) 95.
IC 3622, CS-2, CS-4, CS-6, CO-1 &
CO-2. CO-2 recent from TNAU. gives
900 kg seeds / ha c̄ in 115-120 ds
22.6% > CO-1.
Greens harvested 25-30 ds

Seed rate 10 kg / ha pure crop
mixed 4-5 kg.
seeds split into half by mech
means. pretreatment - soak in H_2O
for 48 hrs before sowing.

seeds broadcast / drilled in lines 25 cm apart.
15 cm bet seeds. One wk for germinatn
life irrigatn – 3 ds aftn sowg. once in 8–10 ds wrtg
FYM 10-15 T/ha along c̄ 40 kg N, 30 kg P_2O_5
30 kg K_2O
wilt-affected pls – droopg – pl dies
– seed treatmt c̄ Agrosan.
Powdery Mildew – Broadspectrum fungicide
105 – 115 d harvest.

[Wed. 29.'82 September

Pl hormones to promote crop gnth.

rtg of cuttgs IAA (Indol Acetic Acid)
Seradix-B – cuttgs & seedlgs.

settg frts – a factor induce ovary to initiate frt gnth
– inhibit abscission layer formatn in 1 fl stalk.

NAA – Naphthalene Acetic acid – prevents fl drop
boll sheddg, induce flg, ⇒g frt size,
delayg maturity in pineapple – prevents frt/
nut drop in cashew – prevents frt drop in

mango, citrus, grapes, apple, papaya, guava litchi etc. > fit set in trps — tomato cucurbits snake gourd, bottle gourd, bitter gourd & chilli. fit set in g'nut too — coconut, Cardamom & X grain shed in silk.

dose cotton, paddy chilli, tomato, green pea apple orange, grapes & coconut — 10 ppm (1 ml of chemical in 4.5 l H_2O)

cashew & Arabica coffee 20 ppm (2 ml in 4.5 lt H_2O)

10 ppm solution just before flg in pine-apple (1 ml / 9 lit) in 5 ppm if too dry climate — for flower inducing.

100 ppm NAA (10 ml / 4.5 lt) smeared on 1 fit >3 / size ["cotton wool"]

for delayg maturity — hormone smeared 2 ~~wks before~~ wks before / scheduled harvest time.

NAA — 20 ppm on Cardamom from first flg

3/> rounds every 45 ds effective.

hormones can be mixed c̄ all I'cides/fungicides except alkaline mixtures like Bordeaux mixt */dime sulphur.

— G. Mathai
Sl Res station, Monocombu ~~Monocombu~~
Kerala Agl Univ

BPH – a big prob to rice

dense cup canopy, HYV, High N applns
close spacg + lack of R – micro environ for multiplns.

damage vascular feeder. physiologl disruption of active translocatn in phloem + finally 'hopper burn' damage.

at heady stage 100% damage due to H.B.

control. Furadan 3G @ 10-12 kg/ac
water 2.5 cm to 5 cm standg – effective for 25 ds.
water allowed to be standg for 3-4 ds which helps translocatn of chemls into pls.
granules can be applied till flg If water management not possible furadan not effective

spray - chlorpyriphos 20 EC @ 600-750 ml
monocrotophos 36 WSC @ 400 ml / ac.

to check overlapping stages in BPH
another spray 7-10 ds later necessary
- dusting carbaryl 5% @ 10 kg / ac can
be done at 1 last stage of 1 crop.

Resurgence: - sub lethal dose of chemls
- Decamethrin, Methyl parathion, & dia-
zinon ~~not~~ cause resurgence
- Cartap & Phorate granules cause
Resurgence
- spraying Quinalphos, methyl parathion
malathion, carbaryl, dimethoate, fenva-
lerate, cypermethrin + dusting BHC, follidol
& Quinalphos 3 cc at fortnightly intervals
could not control BPH.

Dusting BHC & use of M. Parathion -
due to biotic imbalance cause
BPH predominence.

Dr Rao, Prasad; Dr Rao, Madhusudana & Reddy

Agrl Res station,
Maruteru, 534122
WG Dt. AP

Wilt ds, a curse to betel vine:

Wilt / ff rot disease

Phytophthora palmivora, P. parasitica

f. piperina.

affects crop 6 months aged / above.

cold long. atm moisture level >

rapid multiplm, veins show yng & dropping

leaves from tip downwards.

sudden wiltg of vine row after row

clear indicatn. In 3 ds, entire pl

dries off. Fleshy leaves lose lustre

& turn dull - stem dehydrated.

lower portn of stem close to ground shows

water soaked irregular lesions. bl discolored

rotted nodes if pulled out.

Yng pls leaf rot, water soaked ⊙ spots

yng - downy fungal growth on lower surface

of leaves.

sl. borne d., irrigation water alternate hosts - bound weeds.

Control sl drench ē 1% BM. once a month from 1 early stages of crop.

Yd also >d sl treatment ē BM only during Colo month Sept - feb.

BM 0.5% & CuOxychl. Tytolan 0.25% (1250 gm in 500 lit water/ha) ie 2.5 gm/lit water

1500 kg Sup. phosphate/ha along ē good amts, g'nut oil cake <s 1 incidence ⁑ FYM may > 1 ds.

An economic oilseed crop.

Sesamum:

- short-duration annual.

vars: (HYV) JT-7, JT-62-34 (for MP) early maturing.

TC-25, + TC-66 (Punjab) T-13 + T-12 UP
BM 1-2 + Sel-12 (Orissa) SP-1162 (TN)

cultivation country plough, weedfree, levelling
Xwater logging.
Ferti - 75 kg N 75 kg P/ha good
N split as 3 doses.
½ recommended dose - basally.
½ - split into 2 + applied 45 dap
+ at grain filling stage.

sowing - June - July, Oct - Nov.
seed rate - 5-6 kg/ha.
spacing 6-7 cm x 30 cm.
irrigation on 35 + 50 dag.

d's Cercospora leaf spot.
Macrophomina blight
phyllody + Pondery mildew.
Pests leaf rollers, + Capsule borer.

PP seed treatment c̄ Thiram 0.3%.
Dithane M-45 (0.3%) spray
Endosulfan (0.07%) WS 0.3% on
55 % dap.

harvested when 1 pods & ripe. entire
pl cut & bundled.
seed purpose material is separately
treated c̄ Thiram 0.3%.

Yw leaf d'a threat to Areca plantation
(YLD)

symptoms yng of leaves, appears on 1
seedlings. starts from tips of leaves
& towards midrib. later yngr leaves
also show symptoms.
advanced stages - leaves dry. Crown
stunted. Crown falls off leaving barren
trunk. rt also affected (rot).

Betelnuts fall prematurely + 1 endosperm becomes blackish.

Etiology: Bacteria - virus + Mycoplasma as agents.

control - Judicial use of fertilizers + manures - mixed cropping / mixed farming. integrated pp measures + maintaining vigour of crop.

Dr. N. Srinivasan
Central Plantation Crops Res Institute
Regional station
Vittal, Karnataka

Oct 28 Thursday 1982

a golden-yellow fleshy rich oil:

small - an avg yield ca., 160 kg oil
drought tolerant - oil rich in A, B & K vitamins

varieties - K-1, (85-90 d) 38-40% oil
EC 68415 (90-95 d) 40% "
K2 75 d
Mordan 70-75 d

SVF-2 dur., from TNAU - 70 cm tall 65 d

manure : 25 cart loads FYM ē ploughg

irrigated crop - 87.5 kg urea, 375 kg Super
67.5, kg K_2O /ha. (dry crops - ½ as much)

seed treatmt : 2 gm/kg seed Captan / Thiram

spacg 30 cm bet plts (Tall) & 22.5 cm bet plts (for dwf). 2 seeds/hole.

seed rate - 12.5 kg/ha - irrigated
25 " " - dry

season
irrigated - July Sept & January
dry July & Oct.

dry sowg - soak g in water 10-12 hr bef sowg & shade dryg

Endosulfan @ 2 ml/lit H_2O & Dithane M 45 2 gm/lit on 30th & 45th d PP.

Save chillies from white Aphids

— N Murugesan & IR Sutharthiraa Pandian

M. persicae — affects cabbage, Cauliflr, Tomato & tobacco — Mosaic virus.

On lower side of leaves. sucking symptoms — shiny leaves, yerg & stunted pls.

Control monitor - 0.05% (1ml) Nuvacron 0.1% (2.5ml); Nuvacron 0.05% (1.25ml) + Nuvacron 0.05% (0.5ml) / lit H_2O

water 500-750 l/ha.

Pernicious pl hoppers on Rice crop

N. lugens & Sogatella furcifera WBPH BPH

Natal check: Lycosa sp, Oedothorax sp

Mirid bugs Cyrtorrhinus lividipennis, Coccinella arcuata

R. vars: ET5715, 6310, 6311, 6314, 6717, 6187 6315, CR67-MR.1523, CR94-MR1550

Fertiliser management. – entire dose / maj
qty in splits 40-45 ds aft T. in, rabi season
< close spacing 1/2 pls / hill
clean cultural practices, water regulation
stubble burning crop rotation i-cides etc.

N Venugopal Rao
C Subba Rao & SA Rao
Agrl Res station, Warangal
506007

24. 11. 82.

Management of Pulse ds

Rt-rot Macrophomina phaseolina

– seedlg mortality – brown spots at rt zone
seed treatment ē quintazone (Brassicol) /
Carbendazim (Bavistin) / TMTD (Thiram) at
2 gms/kg of seeds

spot drenchg ē quintazone / Carbendazim
1g/l in mature crop

Fusarium spp - seed treatment ē quintozone +
Carbendazim at 2 g/kg seed each.

Virus: 2 sprays ē Monocrotophos 0.1%
Metasystox 0.5%
Rogor 0.06%

Res. vars CO-4 grn gm - mod R to rt rot.
CO4 - red gm →
LM.220 grn gm tolerant to yw mosaic & rt rot.
MS.9804 compea R to mosaic
Warangal no 1792, PHM7 & PHM8
bl gm modly R to Powdery mildew
KP-4782 red gm modly R to steri lif mosaic

P.M. Sulphur WP 2%
dust 25 kg/ha
Tridemorph 0.1%
Carbendazim 0.1%

5.1.'83

K. Gangadharam &
G. Krishna Mohan
Pl. path dept
TNAU, CBE.

Effective ways to combat grape downy Mildew

DM - Plasmopara viticola.

Prophylactic spray - Systemic fungicides -

Aliette (0.2%) + Mancozeb (0.2%) +

metalaxyl MZ 72 WP (0.1%). during rainy

/moist season.

K. Chandrashekhar Rao
Grape Res. Station.
AP. Agri. Univ. Hyderabad
19.1.83

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control of fruit fly infestation in Mango

fruit fly - Gitona sp. in TN. 1.5 mm long

active flier.

eggs - in fruit + maggots hatch in 2 ds.

feed on pulp + seeds. gummy ooze in affected

fruits.

infestation when fruits very young damaged

fruits start drying up from tip / in severe

cases entire fruit dries up. some fruits crack

+ split decay fruits & attract saprophytic flies seen hovering around fruits

Control: fenthion (Lebayicid) 0.1% (1 ml / 1 lit water) before spraying mature fruits & harvested. Infested fruits collected & buried deep in sl.

100% Lebayicid

10-d waiting period after Icide applns before fruits / leaves used for consumption.

P. V. Subba Rao
Dr. S. Chelliah & Dr. T. Kumaraswami Dept of Agl Ent CBE-3

Feb 23 1983.

Yw mosaic on French beans

Vector control – white fly (B. tabaci)

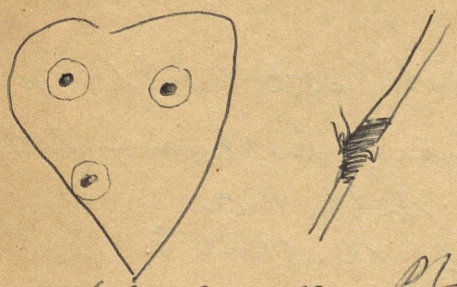
Carbofuran, Thimet, Disyston (g)

1.5 kg / ha at 1 time g sowing

Icides metasystox (0.2%) Dimethoate (0.5%) Monocrotophos (0.5%)

Feb 23/1983.

Protection of betel vine from serious bacterial disease



'Karunthaal'

control sprayg Plantomycin (anti biotic + $CuSO_4$) 250 ppm each.

150 g $CuSO_4$ + 150 g Plantomycin in 600 l H_2O for 1 acre. Thorough coverage of stem & leaves.

Dr. T. Marimuthu
& R. Rabindran
AICRP on Betel vine Diseases
(TNAU, Vetrov 638182, Salem Dt)

March 9, 1983

Dr. Seemathini Ramadas
Dr. Muthuswami &
Dr. JBM. Md. Abdul Khadar,
TNAU, CBE - 16.3.83.

Fenugreek : great scope for cultivation

- all types of sl
- beds 2-5 m l 1-3 m b, seeds dibbled 30 cm x 10 cm. seed rate 12-35 kg/ha
- OM - 35 T/ha together c̄ 250 kg bone meal / 200 kg super (basal dressg).

for leaf-crop - 100 kg Amm SO_4 /ha after first cutting / 2-3 top dressgs @ 45 kg/ha after every cutting

fertilisers - 20-40 kg each of N + P & 20 kg K will be sufficient. Thinning at 15 DAS.

leaves clipped 1st after 20-25 ds.

top dressg c̄ 10-15 kg N after each cutting is good.

seed harvest in 10-11 wks - pods yw.

PP root rot / wilt / P.M. - Sulphur 15 kg/ha / spray sulfase 0.3% or Karathene 0.03%.

Leaf eaty cutter pillars - Malathion 0.075% 1 ml/lit / Ekarthrix / Nuvacron

Red rot R S. cane ...

HYV – CO 312, CO 313, CO 453, CO 658, CO 997, BO 17 & COS 510 – Highly S.

COC 671, CO 62175 & CO 419 & also S.

seed borne d's.

fungus survives in stubbles & debris

R. vars CO 8139 – CO 8152 14 vars. in 1981 & 12 CO vars CO 8216 – CO 8227 in 1982

Hindu March 30 1983.

RJKD

ESSENTIAL OILS.

Common name.	Botanical name.	Family.	Plant part used.	Uses.
1. Khus khus	Vetiveria Zizanioides	Graminae	Roots	Soap making, hair oil medicinal.
2. Vettivaer or Karuvaer	Coleus vetiveroides	Labiatae	"	Used in temples.
3. Nannari	Hemidesmus indicus	Asclepiadaceae	"	Medicinal, Syrup making.
4. Sandal wood	Santalum album	Santalaceae	Stem	Medicinal and cosmetics
5. Camphor	Cinnamomum camphora	Lauraceae	Bark	Medicinal
6. Cinnamon (Lavangam Pattai)	Cinnamomum Zeylanicum	Lauraceae	Bark	Flavering in food and liquor.
7. Briani leaves (Cassia)	Cinnamomum Cassia	Lauraceae	Bark	Flavouring in food.
8. Ginger	Zingiber Officinale	Zingiberaceae	Rhizome	Flavour food, medicinal.
9. Sweet flag (Vasambu)	Acorus calamus	Araceae	"	Medicinal, Cosmetics.
10. Eucalyptus	Eucalyptus globulus	Myrtaceae	Leaves	Medicinal
11. Citriodora	Eucalyptus Citriodora	Myrtaceae	"	in Hair oil Preparation.
12. Geramium	Pelargonium sp.	Geraniaceae	"	Soap making and scent.
13. Lemon grass	Cymbopogon citratus	Graminae	"	Cosmetics.
14. Marikolundu	Artemesia vulgaris	Compositae	"	Scent.
15. Lavender	Lavandula vera	Labiatae	"	Scent.
16. Rosemary.	Rosemarinus Officinalis	Rosaceae	"	Scent.
17. Peppermint.	Mentha Piperita	Labiatae	"	Flavouring confectionary and drugs.
18. Mint (Sodium)	Mentha viridis	Labiatae	"	Perfumery and medicinal.
19. Camphor Thulasi	Ocimum camphora	Labiatae	"	Camphor oil.
20. Patchovli	Pogostemon Patchouli	Labiatae	"	Cosmetics and medicinal.

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