

CONTENTS

Preface	xiii
ALLSPICE (PIMENTO) (<i>Pimenta officinalis</i>)	1
Canker and Wilt (Fireblight, Dieback); Rust	
(EDIBLE) AROIDS: SURAN, PONGAPONG, ELEPHANT FOOT YAM (<i>Amorphophallus campanulatus</i>); TA'AMU, APE, KAPE, MAN KACHU (<i>Al ocase macrorrhiza</i>); BABAI, GALLAN (<i>Cyrtosperma chamissonis</i>); ARVI, KELADI, GABI, KALO, TARO, TALO, DALO, DASHEEN, EDDOE, COCOYAM, CULCAS (<i>Colocasia esculenta</i>); YAUTIA, TANNIA, TANIER, COCOYAM, MACABO, MAFAFFA, MALANGA (<i>Xanthosoma sagittifolium</i>)	3
Bacterial leaf spot; <i>Pythium</i> rot (Currutaca); Leaf blight (<i>Phytophthora</i> spot); <i>Sclerotium</i> rot; <i>Cladosporium</i> leaf spot (Brown spot); <i>Phyllosticta</i> leaf spot (Shot hole); Alomae-Bo- bone; Dasheen mosaic; Hard rot (Dry rot); Mineral deficiency symptoms; Other diseases— <i>Phytophthora</i> corm and root rot; <i>Endoconidiophora</i> (<i>Ceratocystis</i>) black rot of corms; <i>Rhizoctonia</i> leaf rot; <i>Choanephora cucurbitarum</i> , <i>C.</i> <i>trisporea</i> ; <i>Johnstonia colocasiae</i> ; Loliloli; <i>Pleosphaerulina</i> <i>colocasiae</i> ; <i>Leptosphaeria colocasiae</i> ; Veinbanding	
ARRACACHA (<i>Arracacia xanthorrhiza</i>)	13
<i>Gloeosporium</i> sp.	
ARROWROOT (<i>Maranta arundinacea</i>)	13
Bacterial wilt; Banded leaf blight; Mosaic; "Burning" disease; "Cigar" or "Long root"	
BAMBARRA GROUNDNUT (<i>Voandzeia subterranea</i>)	15
<i>Fusarium</i> wilt	
BEAN (<i>Phaseolus vulgaris</i>)	16
Bacterial blight diseases; <i>Pythium</i> blight (Wilt, Stem rot); Powdery mildew; Rust; Web blight; Root rots; Southern blight (Crown rot); <i>Sclerotinia</i> wilt; Angular leaf spot; Anthracnose; Charcoal rot (Ashy stem blight); <i>Fusarium</i>	

- yellows; Leaf spot and blotch diseases—*Alternaria* leaf spot (Mancha foliar), *Cercospora* leaf blotch, *Cercospora* leaf spot (Mancha gris); Bean common mosaic; Rugose mosaic; Southern bean mosaic; Bean yellow mosaic; Other diseases—Bacterial brown spot; Pod twist; *Ascochyta* disease; Crumpling (*Euphorbia* mosaic); Brown spot; Cucumber mosaic; Floury leaf spot; Golden mosaic; Line pattern mosaic; Mottled dwarf (*Abutilon* mosaic); Summer death; Swelling mosaic; Yellow stipple
- BETEL VINE (PAN) (*Piper betle*)** 49
 Bacterial leaf spot; *Phytophthora* wilt (Foot rot) and Leaf spot; Anthracnose; Other diseases—Powdery mildew; *Rhizoctonia* root rot; *Synchytrium* leaf galls; Tip-burn
- BLACK GRAM (URD BEAN) (*Phaseolus mungo*)** 53
 Downy mildew; Rust; *Cercospora* leaf spot; *Macrophomina phaseolina*; Bean common mosaic; Leaf crinkle; Yellow mosaic
- BLACK PEPPER (*Piper nigrum*)** 54
 Foot rot (Sudden death); Anthracnose; Other diseases—Lampong disease; Leaf galls; Pink disease and Thread blight; Pollu disease; *Rhizoctonia* blight; Stunt (virus) disease; White root rot
- BROAD BEAN (*Vicia faba*)** 58
 Chocolate spot; Rust; *Ascochyta* spot; Bean yellow mosaic; Broad bean leaf roll; Broad bean true mosaic; Broad bean mottle; Broad bean stain (Evesham stain); Broad bean (virus) wilt; Broad bean necrosis; Pea early browning; Other diseases—Downy mildew; *Pythium* blight; *Pythium* root rot; *Rhizoctonia* damping-off; *Fusarium* disease; *Stemphylium* leaf spot; Alfalfa mosaic; Mild mosaic (Rosette); Mosaic virus A/B; Pea enation mosaic; Pea mosaic; Spotted wilt
- CACAO (*Theobroma cacao*)** 75
 Black pod; Green point cushion gall; Mal del machete (Canker, Necrosis del tronco, La polilla, Llaga macana); Watery pod rot (Quevedo disease); Witches' broom (Escoba de bruja); Swollen shoot; Mottle leaf; Cocoa necrosis (virus) disease; Yellow mosaic; Cherelle wilt; Mineral deficiency symptoms; Other diseases—Mealy pod; *Ceratocystis* pod rot; Thread blight (Mal de hilachas); Pink disease; Root rots; Charcoal rot; Anthracnose; Mata-cacau (Cacao-killer); Vascular-streak dieback; Dieback (Seca de ramas); *Verticillium* wilt; Hoja estrecha abollada (Narrow, rugose leaf); *Corynespora cassiicola*; Lysigenous canals

CAMPHOR (<i>Cinnamomum camphora</i>)	108
White rot; Virus	
SMALL CARDAMOM (<i>Elettaria cardamomum</i>); LARGE CARDAMOM (<i>Ammonium subulatum</i>)	109
Chirke; Fourkey; Mosaic (Katte, Marble); Other diseases—Fruit and leaf rot; Leaf spots; Rust	
CASSAVA (<i>Manihot esculenta</i>)	112
Bacterial blight; <i>Cercospora</i> leaf spots; Ash disease; <i>Phyllosticta</i> leaf spot; Superbrotamento (Euvassouramento); African cassava mosaic (Kräuselkrankheit); Brown streak; South American (common) cassava mosaic; Vein mosaic; Other diseases—Bacterial wilt; Anthracnose; Latent virus; Root rots; Rust; Stem rots; Superelongation	
CASSIA (<i>Cassia tora</i>)	134
Bacterial leaf spot; <i>Fusarium</i> wilt; <i>Leptosphaerulina</i> leaf spot; Mosaic; "Negro coffee" mosaic; Other diseases— <i>Cercospora</i> leaf spot; Ringspot; Tobacco etch; Tobacco mosaic	
CHICKPEA (GRAM, CARBONZO BEAN) (<i>Cicer arletinum</i>)	137
Rust; <i>Ascochyta</i> blight (Anthracnose); <i>Fusarium</i> wilt; <i>Stemphylium</i> leaf spot; Other diseases—Crown blight; Floral blight; Foot blight; Foot rot; <i>Ozonium</i> wilt; Powdery mildew; Root rots; <i>Verticillium</i> wilt; Virus diseases	
CINCHONA (<i>Cinchona officinalis</i>)	143
Mopog (Mopo); Leaf spot diseases; Thread blight; Scab; Stem blights; Pink disease; <i>Dasyscypha</i> canker; Stripe canker (Stem rust); <i>Armillaria</i> root rot; Gray root rot; Red root rot; Other root rots	
CINNAMON (<i>Cinnamomum zeylanicum</i>)	150
<i>Exosporium</i> leaf spot; Rust	
CLOVE (<i>Eugenia aromatica</i>)	151
Dieback; Sudden death; Other diseases— <i>Gloeosporium</i> leaf spot; Matibudjang, Apoplexy, Slow decline; Sumatra disease	
COFFEE (<i>Coffea arabica</i>)	154
Halo blight (<i>Mancha aureolada</i>); Canker (<i>Llaga macana</i>); American leaf spot (<i>Ojo de gallo</i>); Leaf rust; <i>Ascochyta</i> leaf blight; Brown eye spot (<i>Berry blotch</i> , <i>Chasparria</i>); Coffee berry disease (<i>Anthracnose</i> , <i>Brown blight</i>); <i>Fusarium</i> bark diseases (<i>Leaf spot</i> , <i>Berry disease</i>); <i>Tracheomyces</i> ; <i>Myrothecium</i> stem necrosis and leaf spot (<i>Mancha circular</i>);	

Crinkle-leaf; Dieback (Elgon dieback, Solai dieback); Thread blights and Pink disease; *Mancha mantecosa* (Blister spot, Wellman's fruit and leaf spot); Ringspot (virus) disease (*Mancha anular*); Mineral deficiency symptoms; Other diseases—Bacterial leaf blight; Canker; Collar canker; Damping-off; Diffuse yellow leaf spot; *Envassouramento* (Witches' broom); Fruit rot; Phloem necrosis and Wilt; Phthiriose; *Phyllosticta* leaf spot (Derrite); Root rots; *Sclerotium* disease; Stalk rot of cherries and leaves (New malady dieback); Stem pitting; Stem-wasting ("Kondlie") disease; Sudden death (*Morte subita*); Zonal leaf spot

CORIANDER (*Coriandrum sativum*) 187

Bacterial blight; Stem gall; *Alternaria* blight; *Fusarium* wilt; Other diseases—Anthracnose; Foot rot; Leaf rot; Powdery mildew

**COWPEA (*Vigna sinensis*); CATJANG (*V. catjang*);
ASPARAGUS BEAN (*V. sesquipedalis*)** 190

Bacterial canker; Bacterial spot; Red stem canker and (*Phytophthora*) Stem rot; *Cercospora* leaf spot; *Choanephora* pod rot; *Fusarium* wilt; Target spot; Cowpea virus diseases; Aphid-borne cowpea mosaic; Beetle-borne cowpea mosaic; Chlorotic mottle; Cucumber mosaic; Mild mottle; Southern bean mosaic; Tobacco mosaic; Other diseases—Bacterial pustule; Bacterial wilt; Powdery mildew; *Pythium* stem rot; Smut; Anthracnose; *Corynespora* leaf spot; Zonate leaf spot; *Cladosporium* spot; *Macrophomina* stem canker, Ashy stem blight, Charcoal rot; *Septoria* leaf spot; *Verticillium* wilt; Rust; Southern blight; Stem canker and Web blight; (*Diaporthe*) Stem rot; Tip-burn; Alfalfa mosaic; Bean common mosaic; Bean yellow mosaic; Coconut wilt disease; Cowpea mottle; Tobacco ringspot

CUMIN (*Cuminum cyminum*) 219

Powdery mildew; *Alternaria* blight; *Fusarium* wilt

FENNEL (FINNOCCHIO) (*Foeniculum vulgare*) 222

Cercospora spot; Powdery mildew; *Phytophthora* leaf disease

FENUGREEK (*Trigonella foenum-graecum*) 224

Leaf spot; Mildews; Rust; Bean yellow mosaic; Pea mosaic; Cucumber mosaic; Pea enation mosaic; Red clover vein mosaic; Wisconsin pea streak; Subterranean clover vein mosaic

GINGER (<i>Zingiber officinale</i>)	227
Bacterial wilt; <i>Fusarium</i> wilt; Other diseases—Soft rots; Rhizome, root and basal stem rots; Big bud (Tomato big bud mycoplasma); <i>Phyllosticta</i> leaf spot; Root rot	
GUAR (<i>Cyamopsis tetragonoloba</i>)	233
Bacterial blight; Bacterial leaf spot; <i>Alternaria</i> blight; Anthracnose; Tobacco ringspot; Other diseases— <i>Fusarium</i> blight; <i>Myrothecium</i> leaf spot; Potato S (virus) disease; Powdery mildew; <i>Rhizoctonia</i> (leaf) blight; Root rots	
GUARANA (<i>Paullinia cupana</i>)	240
Anthracnose	
KAVA (AWA, YANGGONA, HOI) (<i>Piper methysticum</i>)	241
Wilt	
KOLA (<i>Cola nitida</i>)	242
Nut mold; Boron deficiency	
LENTIL (<i>Lens esculenta</i>)	242
Downy mildew; <i>Fusarium</i> wilt; Other diseases— <i>Alternaria</i> leaf blight; <i>Botrytis</i> seedling blight; Root rot; Rust; <i>Sclerotinia</i> blight; Virus diseases	
MUNG BEAN (<i>Phaseolus aureus</i>)	245
Bacterial leaf spot and Halo blight; <i>Thanatephorus cucumeris</i> ; <i>Cercospora</i> leaf spot; Bean common mosaic; Leaf crinkle; Yellow mosaic	
NUTMEG (<i>Myristica fragrans</i>)	246
Fruit rot	
OPIUM POPPY (<i>Papaver somniferum</i>)	247
Bacterial blight; Downy mildew; Poppy fire; Powdery mildew; Leaf smut; <i>Alternaria</i> leaf spot; Bean yellow mosaic; Cabbage black ring spot; (Beet) Mosaic; Sugar beet yellows; Yellowing (virus) disease	
PIGEON PEA (<i>Cajanus cajan</i>)	250
Bacterial leaf spot and stem canker; <i>Fusarium</i> wilt; Brown leaf spot; <i>Cercoseptoria</i> leaf spot; <i>Cercospora</i> leaf spots; Collar rot; <i>Phoma</i> canker; <i>Phyllosticta</i> leaf spot; Powdery mildew; <i>Pyrenochaeta</i> leaf spot; Stem cankers; Stem blight; Sterility mosaic; Proliferation diseases; Yellow mosaic; Mineral deficiency symptoms	
POTATO (<i>Solanum tuberosum</i>)	255
Bacterial wilt (Brown rot); Blackleg (Pierna negra); Ring rot; Common scab; Powdery scab (Roña); Wart; Late blight	

(Tizon tardio, Rancho); Pink rot; Powdery mildew(s); *Sclerotinia* disease (Sclerotiniose); Rusts; Smut (Gangrena, Buba); *Rhizoctonia* disease (Black scurf); Southern blight; Black dot (Anthracnose, Dartrose, Punteado negro); Charcoal rot; Early blight; Kasahui; *Leptosphaerulina* leaf spot; *Septoria* leaf spot (Mancha anular); Silver scurf; Skin spot; *Verticillium* wilt (Early maturity disease); Virus diseases of potatoes; Corky ring spot (Internal brown spot, Kringrigheid, Pfropfenbildung, Stem mottle, Tobacco rattle); Latent mosaic (Potato X virus disease); Leaf roll; Mild mosaic (Crinkle, Potato A virus disease); Mop-top (Corcho); Rugose mosaic (Potato Y virus disease); Spindle tuber; Spotted wilt (Marchitamiento, Necrose do topo); Yellow vein

SAGE (*Salvia officinalis*) 315
Verticillium wilt

SWEET POTATO (*Ipomoea batata*) 316

Soil rot; Mottle necrosis and rootlet rot; White rust; Black rot; Scab; Rust; Sclerotial blight and Circular spot; Stem rot and Wilt; Scurf; Foot rot; (Texas) Root rot; Java black rot; Dry rot; *Stemphylium* foliage blight and root rot; *Alternaria* leaf spot; *Alternaria* foot rot; *Cercospora* leaf spot; *Phyllosticta* leaf blight; *Septoria* leaf spot; Mineral deficiency symptoms; Brazilian sweet potato mosaic; Feathery mottle complex; Little leaf, Witches' broom, Ishuku-byo, Weed variant; Mild mottle; Mosaic; Vein mosaic; Yellow dwarf

TEA (*Camellia sinensis*) 338

Scab diseases; Blister blight; Collar and branch canker; Red root; Phloem necrosis; Oil spot; Mineral deficiency symptoms; Other diseases—Anthracnose; *Armillaria* root rot; "Bitten-off" root disease; Black rot; Branch canker; Brown leaf spot; *Cercospora* leaf spot; *Cercospora* disease; *Cylindrocladium* root rot; Decline; Defoliation; "Edagare" disease; Horse hair blight; Leaf tumors; *Phyllosticta* leaf spot; Pruning-cut infection; Purple root rot; Red rust; Root rot; Stem canker; Thorny stem blight; White root rot

TEJPAT (*Cinnamomum tamala*) 355
 Rust

TURMERIC (*Curcuma longa*) 356
Taphrina leaf spot; *Colletotrichum* leaf spot; *Phyllosticta* leaf spot; *Pythium* root rot; *Sphaceloma* leaf spot

	Contents xi
ULLUCU (<i>Ullucus tuberosus</i>)	358
Rust	
VANILLA (<i>Vanilla planifolia</i>)	358
Root rot; Mildew; "Powdery mildew"; Anthracnose;	
Apoplexie (Blast disease); (Madagascar) Root rot	
YAMS: LESSER YAM (<i>Dioscorea esculenta</i>); WEST AFRICAN	
YAM (<i>D. rotundata</i>); ASIAN GREATER YAM (<i>D. alata</i>)	360
Rust; Smut; <i>Cercospora</i> leaf spots; Anthracnose;	
Sobrefoliación; Green-banding disease; Internal brown	
spot; Mosaic; Other diseases—Leaf spots; Leaf blight;	
Witches' broom; Crown gall; Tuber rots; Root rots	
YAM BEAN (SINCAMAS) (<i>Pachyrrhizus erosus</i>)	367
<i>Cercospora</i> leaf spot; Mosaic	
Index	369