

Subject Index

Aeglopsis chevalieri, 28
Africa, 205
African lemon, 138
Agar gel double diffusion plate test, 234; precipitin test, 235
Albedo fluorescence test, 41
Alemow, 116, 170
Alfalfa mosaic virus, 191
Algeria, 178
Algerian tangerine, 160–61. *See also* Clementine tangerine
Aphid, 136, 142, 228
Aphis gossypii Glover, 127, 136, 159, 170
 spiraecola Patch, 181
Approach graft technique, 80–82
Argentina, 1, 53, 156, 204
Argentina sweet orange, 116
Argentina trifoliolate orange, 125
Arizona, 1, 167–71
Arizona 861 Etrog citon, 102
Asia, 205
Australia, 127, 142, 165
Avana mandarin, 186–87

Baiarinha orange, 204
Barão sweet orange, 121
Bark fluorescence test, 41–43, 155–56
Bark scaling, 156, 262–63, 279
Bark splitting, 280
Barley, 246
Batangas mandarin, 115
Batangas Province, 38–40, 56
Beets, 227
Beet-yellows virus, 227
Beledy lime, 121, 123
Bergamot sweet orange, 99, 179
Biondo Comune sweet orange, 285

Bittersweet orange, 114–16
Blackeye No. 5 cowpea, 213
Black mustard (*Brassica nigra* [L.] Koch.), 170, 236
Blind pocket virus, 85, 279
Blood orange, 277
Blood Red sweet orange, 229–32
Blue albedo, 7–9
Botryodiplodia, 206. *See also* Fungus
Brazil, 1, 127; tristeza tolerance of citrus rootstock in, 121–24; xyloporosis of citrus in, 192–94; new type of decline of citrus in, 204–9
Brazilian sour orange, 6–7
Bronzing, 167, 170
Bud inoculation, 162
Bud-union crease: qualitative biochemical changes in healthy and decline sweet orange trees associated with, 229–33

CPB 4475 citrumelo, 6
CRC No. 2866 citrange, 117
CRC No. 1449 Citremon, 115
Cachexia, 182–83, 272–75, 280
Cachexia-xyloporosis, 32, 198
Caipira sweet orange, 123, 125, 172, 174
Calamondin, 6–7, 25, 30, 32, 109, 145, 192–94
Calamondin seedlings rootstocks, 102
Calderon sweet orange, 154–56
California, 1, 104, 127, 136, 142, 146, 152–53; reactions of citrus to tristeza in, 112–20; Tristeza Suppression Program in, 157–61; citrus improvement in, 271–78
California Administrative Code, 159
California Department of Agriculture, 158, 272

- California field tristeza, 127–28, 133
 Campbell Valencia sweet orange, 113, 167–68, 203
 Capão Bonito virus, 207
Capsicum anuum L., 189
 Carrizo citrange, 125, 147, 150, 152, 266
 Cecily grapefruit, 109
 Central California Pest Control Agency
 (now Central California Tristeza Control Agency), 160
 Changsha mandarin, 6, 9
Chenopodium album L., 198
Chenopodium amaranticolor Coste et Reyn., 189, 198, 219
Chenopodium quinoa Willd., 189, 191, 198, 217
 Chile: citrus virus diseases of, 279–81
 Chinese box orange, 119
 Chinois, 179
 Chinotto, 6–7
 Chlorosis, 167–68, 202, 204–5, 210, 216, 230, 286
 Christian trifoliate orange, 6–7, 125
 Chromatic cells: ultrastructural studies of in tristeza-diseased lime, 222–28
 Chromatographic albedo test, 3, 33
 Chromatographic procedures, 14, 15, 16–17, 18, 207–8, 245–47
 Citrange stunt virus, 191, 251–52, 273, 278, 280–281; symptoms, 259
 Citremon, 153
 Citron, 104–6, 108–9, 275–76; localization and detection of coumarins in exocortis-virus-infected, 239–44
Citropsis sp., 192
 Citrumelo, 7, 153; Sacaton, 6
 Citrumelo 4475, 121
 Citrumelo CPB 4475, 109
Citrus, 119
 aurantifolia (Christm.) Swing. See West Indian lime; Mexican lime
 aurantifolia x (*Fortunella* sp. x *Microcitrus australasica*). See Faustrime
 aurantium L. See Bittersweet orange;
 Sour orange
bergamia Risso. See Bergamot sweet orange
depressa Hayata. See Shekwasha trifoliate orange hybrids
excelsa West, 260
funadoko Hort. ex Y. Tanaka. See Funadoko-mikan
glaberrima Hort. ex Tanaka. See Kinukawa-mikan
grandis (L.) Osb. See Shaddock
hanaju, 120
hanaju Hort. ex Shirai. See Hanaju
hassaku Tanaka. See Hassaku
hystric DC. See Combava
intermedia Tanaka, 119. See also Yamamikan
iwaikan, 192
iwaikan Hort. ex Y. Tanaka. See Tangerine
jambhiri Lush. See Rough lemon
junos Sieb. ex Tanaka. See Yuzu
karna Raf. See Karna
keraji Hort. ex Tanaka. See Keraji
latifolia Tanaka. See Tahiti lime
limettoides Tan. See Sweet lime
limon (L.) Burm. See Lemon
limon (L.) Burm. x *C. sinensis*. See India lemon
limon x *C. medica*. See Ponderosa lemon
limonia Osb. See Kusaie lime; Rangpur lime
longispina, 192–93
longispina Wester. See Tangerine
macrophylla West. See Alemow
macroptera, 119–20
madurensis Lour. See Calamondin
madurensis x *Microcitrus australasica*.
 See Faustrimedina
medica L. See Citron
myrtifolia Raf. See Chinois; Chinotto
natsudaidai Hay. See Natsudaidai
neo-aurantium, 119
nobilis, 70
nobilis Lour. See King mandarin;
 Kunembo
obovoidea Hort. ex Takahashi. See Kinkoje; Marumera
paradisi Macf. See Grapefruit
ponensis Hort. See Ponkan
pseudoparadisi, 192
reshni (Engl.) Hort. ex Tanaka. See Cleopatra mandarin
reticulata var. *austera* Swing. See Sunki
reticulata Blanco. See Dancy tangerine;
 Mandarin
reticulata Blanco var. *austera* hybrid. See Rangpur lime
reticulata x *C. paradisi*. See Tangelo
shunkokan Hort. ex Tanaka. See Shunkokan
sinensis (L.) Osb. See Sweet orange
sudachi Hort. ex Shirai. See Sudachi
sunki, 118, 120
sunki Hort. ex Tanaka. See Sunki
tachibana, 119
takuma-sudachi Tanaka. See Takuma-sudachi
tangerina Hort. ex Tanaka. See Tangerine
tankan Hay. See Tankan
tengu, 70

- tengu* (Hort.) Tanaka. See Tengumikan
ujukitsu, 70
ujukitsu Hort. ex Tanaka. See Ujukitsu
unshiu Marcov. See Satsuma
volkameriana Pasq. See Volkameriana
lemon
webberi West. See Webber's Philippine
hybrid
wilsonii Tanaka. See Shangyuan
yatsushiro, 70
yatsushiro (Hort.) Tanaka. See Yatsushiro-
mikan
Citrus Branch Station at Tempe, 167
Citrus budwood: heat tolerance for virus
inactivation, 256, 281
Citrus crinkly-leaf virus, 30, 79, 147, 191;
relationship to other citrus viruses, 71-76;
relationship to psoriasis virus complex,
85-88; failure to transmit by nematodes,
285-86
Citrus cultivars: susceptibility to impietratura,
185-87
Citrus extracts: mode of action and properties
of plant virus inhibitor in, 251-56
Citrus infectious variegation virus:
electrophoretic forms of, 233-38. See
also Citrus variegation virus
Citrus mosaic virus, 65, 99; symptoms of,
71-72
Citrus multiple sprouting virus, 188-92
Citrus Nursery Stock Registration and
Certification Program, 159
Citrus Research Center, 112, 196, 272-75.
See also California; University of California
Citrus shoot apex culture, 267
Citrus variegation virus, 19, 30, 79, 88,
251-53; relationship to other viruses,
71-76. See also Citrus infectious
variegation virus
Citrus Variety Improvement Program, 113;
in California after twelve years, 271-78
Clementine mandarin, 6, 123, 174, 186-87,
280
Clementine tangerine, 160, 167-70
Cleopatra mandarin, 28, 99, 123, 154-56,
172, 267
Cleopatra tangerine, 123, 167
Coachella eremocitrus, 193-94
eremolemon, 192
Coachella Valley Citrus Nurserymen's
Association, 161
Codiaeum spp., 284
Colletotrichum gloeosporioides, 37
Combava, 119, 120, 179
Comuna orange, 195
Concave gum virus, 85-86, 179-80, 182-
83, 212, 216, 257, 261, 279
Concordia Experiment Station, 155-56
Concordia Province, 1
Constriction trifoliate orange, 125
Corsica, 178-79, 183
Coumarin fluorescence test, 245
Coumarins: localization and detection of,
239-44
Cowpea, 66, 72-75, 191, 217, 234-37,
251-52
Cowpea mosaic virus, 219, 233-38
Cravo tangerine, 192-93
Criconema, 285
Criconemoïdes, 285-86
Cringling, 83-84, 87
Cristacortis virus, 185, 212, 216, 273; effect
on Tarocco sweet orange, 176-77;
relationship to other citrus viruses, 178-
84
Crotalaria, 80-81
Crotalaria spectabilis Roth, 80, 189
Croton, 284
Cuban shaddock, 12
Cucumber mosaic virus, 191; necrotic
strain, 251
Cucumber seedlings, 32
Cucumis melo Naud., 189
Cucumis sativus L., 189, 198
Cunningham citrange, 115, 125
Curvularia tuberculata, 37
Cuscuta subinclusa Dur. and Hilg., 95
Cutter nucellar Valencia sweet orange, 113
Cynara scolymus L., 189

Dahlia mosaic virus, 220
Dancy mandarin, 6, 9
Dancy tangerine, 121, 123, 167
Davis trifoliate orange, 125
Deficiency symptoms, 154-55
Defoliation, 167, 170, 205
Density gradient electrophoresis, 237
Descending paper chromatographic
technique, 35
Diaphorina citri Kuw., 16, 19, 21-22, 32,
35-36, 51-52, 56
Diaphorina sp., 207
Dieback, 35, 155, 243
Diplodia natalensis, 37
Dracaena spp., 284
Duncan grapefruit, 108, 121, 123, 199, 201
Dwarfing, 127; possible value of, 262-67
Dweet tangor, 70

EEL-154 citremon, 125-26
EEL-203 citremon, 125-26
Early Ramshorn, 234. See also Cowpea
Eastern Lubber grasshopper, 106

- Ehime Prefecture, 143–45
 Electron microscope preparations, 205
 Electron microscopy, 28, 206, 213, 223–24; of satsuma dwarf virus, 217–22
 Electrophoresis: electrophoretic forms of citrus-infectious-variegation virus, 233–38
 English large trifoliate orange, 125
 English small trifoliate orange, 125–26
Eremocitrus glauca, 119
Eremolemon, 119
 Etrog citron, 30, 72, 104, 109, 179, 198, 213; indexing for exocortis in Japan, 99, 100; clones, 239–44
 Etrog citron test, 179, 270, 273
 Eureka lemon, 6–7, 28–29, 30, 72, 73–74, 75, 86, 88, 99–100, 102–3, 109, 130–31, 136–37, 139, 145, 162–63, 165–66, 179, 203, 212–13, 216
Eustis limequat, 192
 Everblooming lemon, 99–100
 Exocortis virus, 6, 24, 32, 80, 86–87, 114, 147–48, 167–69, 179–80, 182–83, 185, 198, 256–59 *passim*, 261–63, 266, 270, 273, 275, 279–80, 284, 285; gynura as host, 95–98; symptoms of, 97, 99; damage from in Japan, 99–104; in Taiwan, 102–4; factors affecting mechanical spread of, 105–11; absence of, 156; localization and detection of coumarins in infected citron, 239–44; changes in gibberellin and inhibitor in citrus affected with, 244–50; failure to transmit by nematodes, 285–86
- Fairhope trifoliate orange, 116–20
Faustreme, 119
Faustrimedin lime, 192–93
Femminello Comune lemon, 210
Femminello Continella lemon, 210
Femminello di Siracusa lemon, 210
Femminello lemon, 210
Femminello S. Teresa lemon, 187
 Fisher navel orange, 203
 Florida, 208, 210
 Florida rough lemon, 25, 123
 Florida sweet orange, 121, 123
 Fluorescence test, 1–3
 Foliar symptoms, 156
Fortunella, 119
 Foster grapefruit, 121, 123
 French bean, 215
 Frost tetraploid trifoliate orange, 125
 Frost Valencia orange, 147
 Fruit wrinkling, 210
 Fukuhara orange, 192
 Funadoko-mikan limequat, 192
 Fungus, 37, 206
Fusarium spp., 37
 Galego lime: preimmunization with tristeza, 171–75
 Genoa lemon, 155
Gentisoyl glucose, 208–9, 239, 243
Gentisoyl glucoside marker, 2–4, 14–18 *passim*, 155
 Gibberellin: changes in levels in citrus infected with exocortis, 244–50
 Ginger lily, 284
Gomphrena globosa L., 198
 Graft-transmissible stunting factor in citrus, 199–204
 Grapefruit, 3, 30, 39, 69–70, 108–9, 127–28, 131, 137, 142, 154–55, 163, 165, 171–72, 175, 185–86, 202–3, 210–11, 279, 283
 Grapefruit dieback, 3
 Greening, 7, 9, 155–56, 188, 205–8, 229, 232, 239, 243; review of, 1–5; in Indian Punjab, 14–18; strains of, 40–44; heat requirements for suppression of, 44–51
 Gumming-peg symptoms, 192–93
 Gynura, 95–98, 109
Gynura aurantiaca DC., 95–96, 106
sarmentosa DC., 95–96, 106
- Hamlin sweet orange, 123–26, 197, 204, 244–45, 247
 Hanaju, 119
 Harvard sweet orange, 86–88
 Hassaku, 99, 144–45, 162, 164, 166, 223
 Hassaku dwarf virus, 121, 144–46, 223; comparison with seedling-yellows, 162–66
 Heat tolerance: of preconditioned budwood for virus inactivation, 256–61
 Heat treatment, 277; test, 164
Hedychium spp. See Ginger lily
Helianthus annuus L., 189
Hesperethusa orange, 192
 Hinckley sweet orange seedlings, 11–12
 Hiroshima Prefecture, 145, 162
Homosassa sweet orange, 123
 Honeycombing, 155, 204–5
Hordeum distichum L. See Barley
 Horticultural Research Station (Okitsu, Shizuoka), 65
- Impietratura, 9, 210–11, 273; susceptibility of citrus cultivars to, 184–87
 Indexing, 3, 9, 202–3, 211, 272–75, 280, 285; rapid for tristeza, 157–63
 India, 1, 35–37, 56, 127, 129, 232
 India lemon, 116

- Indian Punjab: citrus greening in, 14-18
 Indolebutyric acid rooting powder, 157
 Inhibitor: changes in levels in citrus infected with exocortis, 244-50
 Insect vectors, 19, 206, 209
 International Citrus Symposium (1968), 233
 Inverse pitting, 204-5
 Iodine-potassium iodide test, 170
 Iodine test, 205
 Iron Clay cowpea, 189
 Ishidama-mikan, 143, 145-46
 Israel, 277
 Italy, 176, 277
- Jacobsen trifoliate orange, 125
 Japan, 65, 165, 227, 279; damage from exocortis in, 99-104
 Jaraqua do Sul lemon hybrid, 192
 Joppa sweet orange, 188
- Kabusu, 72, 74
 Karna, 6-7
 Katydids, 106
 Kaula tangerine, 192
 Kawano natsukan (natsudaidai), 144-46, 162-66
 Kawano natsukan seedling-yellows virus, 162
 Keraji limequat, 192
 Kidney bean, 217. See also Satisfaction kidney bean
 King mandarin, 6-7
 King tangor, 115
 Kinkoje, 119
 Kinukawa-mikan, 119
 Koethen sweet orange, 118, 197
 Kryder trifoliate orange, 125
 Kunembo, 67
 Kusae lime, 167, 169
- LKC. See Likubin complex
 Ladu mandarin, 22, 25, 38
 Lady finger round cowpea, 189, 251
 Lakeland limequat, 192
 Lamb Summer orange, 123
 Laranjo cravo mandarin, 116
 Latent Meyer lemon virus, 188-92
 Leaf epinasty, 242
 Leaf insert graft: for virus transmission in citrus, 282-84
 Leaf mottle, 3, 6, 9, 12
 Leaf mottling disease, 3, 38-40
 Leaf variegation with ring spots, 195-96
 Leaf vein banding, 204
 Lee tangerine, 192
- Lemon, 39, 52, 104, 127-28, 130-34, 136-37, 142, 144, 186, 201, 210, 216, 234, 279-80; investigations of rumple, 210-11; leaves, 251
 Lemonquat, 6-7
 Leng Valencia sweet orange, 85-87
 Leuchen sweet orange, 32, 33, 104
 Light microscope studies, 222-23
 Likubin, 3, 9; complex in Taiwan, 28-34
 Lily curl stripe virus, 282
 Lime, 52, 133, 163, 165-66, 169, 279; ultrastructural studies of chromatic cells in tristeza-diseased plants, 222-28
 Limeira Citrus Experiment Station, 121, 124-25, 192
 Limeira trifoliate orange, 125; seed of, 125-26
 Lipa Experiment Station, 19, 21-22, 38
 Lisbon lemon, 103, 130-31, 203, 213
 Little leaf, 9, 25
Longidorus elongatus, 285
 Loose jacket tangerine, 192
 Lumie, 99-100
- Madam Vinous sweet orange, 2, 6, 11-12, 19, 22, 198-99, 258-59
 Malvasio tangerine, 1, 192
 Mandarin, 3, 7, 15, 39, 121, 123, 127, 178, 185, 202, 257, 279-80
 Mandarin hybrids, 39
 Mangiato d'agro. See Rumple
 Marsh seedless grapefruit, 72, 74, 99-100, 103, 154-55, 167, 186, 262-63
 Marumera, 99, 145
 Masumbi sweet orange, 229-32
 Meiwa kumquat, 192
 Meristem tip micrograft, 278
 Mexican lime, 7, 12, 28, 30, 133, 162-65; prebudded cuttings for rapid indexing of tristeza, 157-58
 Meyer lemon, 119, 127, 137, 159-60, 167, 169, 188-89, 216, 258-59, 260-61, 280-81, 283-84
Microcitrus, 119
 Microelement deficiency symptoms, 193
 Mild mottling, 202
 Mild stubborn disease, 113
 Mild yellows, 165-66
 Minneola tangelo, 6, 86
 Misiones Province, 154
 Monachello lemon, 210
 Moro, 6
 Morocco, 178-79
 Morton citrange, 117, 121-23, 125
 Multiple sprouting, 188-89
 Muscio mandarin seedlings, 86-89 *passim*

- Nagami kumquat, 179, 192
 Narrow leaf, 197–98
 Natal sweet orange, 204
 National Pickling Cucumber, 213
Natsudaidai, 74, 99, 155, 192; cause of stem pitting and small fruit, 143–46; reaction to Mexican lime, 162–66
Natsudaidai dwarf, 65, 72, 99, 146
 Navelate sweet orange, 179
 Navelina sweet orange, 179
 Navel-infectious-mottling, 99; evidence of relationship to other viruses, 71–76
 Navel orange, 52, 109, 148, 202–3, 258 277
 Nematodes, 113, 206; failure to transmit exocortis and crinkly-leaf viruses by means of, 285–86
 New South Wales, 85, 88, 262
 New South Wales Department of Agriculture, 267
Nicotiana clevelandii Gray, 217
glutinosa L., 189, 191, 198, 251
tabacum L., 189, 198
 Nucellar clones, 204
 Nucellar lemon trees, 210–11
 Nucellar lime trees, 210
 Nucellar Navel orange, 262–63, 266
 Nucellar orange seedlings, 277
 Nucellar Shamouti, 277
 Nucellar Tarocco orange, 167–68
 Nutritional deficiency symptoms, 22
- Ocimum basilicum* L., 189
 Okitsu Branch, Horticultural Research Station, 99
 Olinda Nucellar Valencia, 113
 Olinda Valencia sweet orange, 43, 47, 147
 Oita Prefecture, 144–46
 Orange, 108, 147, 153, 159–61, 178, 280; possible value of dwarf trees, 262–67
 Orlando tangelo, 86, 108, 178, 181–83, 193, 198, 212–13, 216; EEL-46, 193–94
 Ortho Dark Red Latosol, 121
 Osceola tangerine, 192
 Oucherlon agar diffusion test, 191, 215
 Ovale Calabraise sweet orange, 179
 Ovale sweet orange, 185
 Owari satsuma, 6
- Palestine sweet lime, 6–7, 198
 Palms, 284
 Pera sweet orange, 123, 171–72, 175, 204, 207
 Petunia, 95, 105–6, 109, 198
Phaseolus vulgaris L., 189. See also Kidney bean
- Phenolic marker substance, 155. See also Gentisoyl glucoside
 Philippine Bureau of Plant Industry, 19
 Philippine hybrid 86496, 192
 Philippines, 27, 56, 127; epidemiology of severe leaf-mottling in, 19–22; leaf-mottling in Batangas Province, 38–40
 Phloroglucinol-HCL color test, 245
 Phytophthora root rot, 126
Phytophthora spp., 113
 Pineapple, 6
 Pineapple orange, 43, 47, 256–57
 Pitting type hosts, 223
Pittosporum spp., 284
 Plant virus inhibitor: mode of action, 251–56
Poncirus, 124
Poncirus: stubborn disease symptoms in, 6–10
 Ponderosa lemon, 102, 109
 Ponkan, 6, 9, 22, 25, 28, 30, 33, 104, 258
 Pook Ling Ming (Rangpur lime type), 123
 Portugal, 275
 Potato mottle virus, 215
Pratylenchus brachyurus, 206. See also Nematodes
 Psorosis, 147–48, 156, 169–70, 182, 185, 198, 212–13, 216, 245, 256–57, 263, 265, 275, 277, 279, 280, 285; effect on yield and mineral content, 90–94
 Psorosis bark lesions, 90–94 *passim*
 Psorosis virus complex: relationships of viruses, 85–89
Psyllaephagus sp., 56
 Puerto Rico, 154
 Pummelo, 39
- Quick decline, 158
- Raggrinzimento della buccia. See Rumble Rangpur lime, 7, 12, 29–30, 100, 102, 104, 113, 121, 123, 172–73, 186, 192–93, 204–6, 260, 267, 269
 Redblush grapefruit, 7, 203
 Red rough lemon, 147
 Red shaddock, 6–7
 Rich trifoliate orange, 125
 Ring interface test, 234
 Ring spots: leaf variegation with, 195–96
 Robertson Navel, 269–70
 Robinson tangerine, 192
Romalea microptera Beauv. See Eastern Lubber grasshopper
 Ronnse trifoliate orange, 125
 Root rot, 204–5
Rotylenchus (nematode), 285–86

- Rough lemon, 6-7, 19, 43, 47-48, 70, 72, 86, 102, 118, 145, 154-55, 167, 170, 229-30, 257, 267, 283
Rough lemon A, 116
Rough lemon B (Estes), 116
Rubidoux trifoliate orange, 6-7, 116, 125, 147
Ruby Blood sweet orange, 87
Rumple, 210-11
Rumpled fruit, 210
Rusk citrange, 125
- Safargali disease, 4
Salustiana orange, 194
San Gabriel Valley, California, 158
Sanguine Grosse Ronde, 115-16
Sanguinelli orange, 194
San Jacinto trifoliate orange, 125-26
Sardinia, 178-79
Satisfaction kidney bean, 72-73, 80-82, 145
Satsuma, 70-77 *passim*, 99-101, 160, 162, 280; reactions to satsuma dwarf virus, 67; in transmission of satsuma dwarf virus, 80-81
Satsuma dwarf virus, 32, 80-84 *passim*, 99, 145-46; reaction of some citrus and herbaceous plants to, 65-71; relationship to other citrus viruses, 71-76; influence of temperature on development of, 76-79; electron microscopy in host cells, 217-22
Satsuma orange, 119, 143, 162, 165, 217, 220
Satsuma seedlings, 82-83
Saunders citrange, 125
Savage citrange, 117, 125
Scarlet tangerine, 192-93
Scotia bean, 213
Seed abortion, 7-9
Seedling-yellows-tristeza, 147, 166
Seedling-yellows virus, 25-27; accentuation of satsuma dwarf symptoms, 82-84; study of, 137-43; -like symptoms, 155-56; comparison with hassaku dwarf, 162-66
Seminole, 6
Sesame, 217
Sesamum indicum L. See Sesame
Severe leaf mottling: epidemiology in the Philippines, 19-22
Sexton tangelo, 19, 199
Shaddock, 102
Shangyuan clone, 119-20
Shekwaswa trifoliate orange hybrids, 117-18, 145
Shuehkan, 104
Shunkokan, 119
Sicily, 178-79, 185, 196, 210
Smooth Seville seedlings, 86
Sour orange, 7 116, 119, 127-28, 130-31, 137-43 *passim*, 145, 148, 159, 162-63, 165-70, 176, 178-80, 182-84, 196, 210, 212-14, 216, 279-81, 283, 285-86
South Africa, 1, 127, 138, 188, 207; survey of greening symptoms in, 44-51
Spain, 178-79, 277
Spectrophotometer, 207
Spoon-shaped leaf symptom, 76-79 *passim*, 80, 84
Starch depletion, 170
Stem pitting, 114-16, 118-19, 128, 155, 169, 181, 183, 192, 204-5, 223-24; causes of in Mexican lime, 162-66; isolates of, 172-75
Straight-growth test, 245
Stubborn complex, 203
Stubborn-greening complex, 1-5
Stubborn virus disease, 48, 167, 198, 199, 203, 205-7, 239, 257, 258-60, 271, 273, 275, 278, 280; review of, 1-4; symptoms of, 6-10; transmission of, 11-14; stubbornlike, 155
Stunting, 2, 19, 25, 116-18, 138, 145, 150-52, 162-64, 199, 201-4, 244, 286
Stunting factor in citrus: graft transmission of, 199-204
Stylar-end greening, 7-9
Sudachi, 119
Sun Chu Sha Kat, 123
Sunki, 29-30, 104, 123
Swanee tangelo, 123
Sweet lime, 39, 86, 198
Sweet orange, 2-4, 28-30, 33, 37, 39, 52, 86-89, 102, 104, 123, 127, 137, 142-43, 154, 163, 165, 178, 186, 189, 195-96, 199, 204, 209, 216, 223, 257, 258-60, 266, 267, 279, 281, 283, 285, 286; hybrids, 39; effect of psorosis bark lesions on, 90-94; quantitative biochemical changes in healthy and decline associated with bud-union crease, 229-33
Swingle trifoliate orange, 113; hybrid, 117, 120
Sylhat tangerine, 192
Szinkom mandarin, 22, 25, 30, 32, 38
- Tahiti lime, 192
Taiwan, 56; studies on complex causing likubin in, 28-34; report on exocortis virus in, 102-4
Takuma sudachi, 99-100
Tangelo, 202, 216
Tangerine, 123, 204

- Tankan, 28, 29, 30, 33, 104
 Tankan tangerine, 192
 Tarocco sweet orange, 179-80, 182-83,
 186, 197-98, 212; effect of cristacortis on,
 176-77
 Tatterleaf-citrangle-stunt virus, 147, 159-61
 Tatterleaf virus, 273, 278, 280-81
 Temple orange, 99, 100
 Temple tangor, 123, 269
 Tengu mikan, 69
 Tetraploid-2, 125; -3, 125
Tetrastichus radiatus, 54, 56
 Thermotherapy: of citrus budwood for virus
 inactivation, 256-61
 Thin layer chromatography, 47, 48, 49,
 239-44
 Thompson citremon, 125-26
 Thompson grapefruit, 99, 103
 Thornless sweet lime, 192, 193
 Thornton tangelo, 6, 7
 Tip dieback, 170
 Tissue culture: investigations with, 267-71
 Tobacco, 252
 Tobacco mosaic virus, 227, 251-53
 Tobacco necrosis, 191; citrus as host of,
 212-16
 Towne trifoliate orange, 125
Toxoptera aurantii B. de F., 181
Toxoptera citricidus Kirk., 28, 52, 127, 156,
 162, 164-65, 207
 Trifoliate orange, 65, 70, 72-73, 74, 116,
 118, 125, 133, 144, 150, 152-53, 286;
 pollen, 268, 283
 Trifoliate orange hybrids, 39, 113-15, 119,
 152-53; as rootstock, 124-27
 Trifoliate orange rootstock, 99-102, 104,
 113-15, 163-65, 245, 247, 262-63, 266,
 272-73, 279, 285; for citrus in presence
 of tristeza, 124-27; decline of citrus on,
 154-56
Trioza erytreae (Del Guercio), 21, 23, 51-
 52, 54-56, 58-64
 Tristeza, 19, 28-30, 33, 38, 72-73, 86-87,
 102, 136, 138, 141-42, 145-46, 165-66,
 181, 188, 198, 204-7, 209, 245, 256-59,
 261, 270, 275, 277, 280-82; reactions of
 some new citrus hybrids to, 112-20;
 tolerance of citrus varieties, 121-24;
 orange hybrids as rootstock in presence
 of, 124-27; lime reaction to, 142; decline
 of citrus on rootstock associated with,
 154-56; rapid indexing for, 157-58;
 Suppression and Eradication Program in
 California, 158-61; effects of infection on
 growth and yield, 167-71; preimmunization
 of Galego lime with, 171-75;
 ultrastructural studies of chromatic cells
 in diseased lime, 222-28
- Tristeza-psoriasis inoculum, 170
 Tristeza-seedling-yellows complex, 169-70
Triticum aestivum. See Wheat
Trophurus, 286
 Tropical citrus aphid, 28
 Trovita sweet orange, 72-74
 Troyer citrange, 86, 121, 124, 125, 133,
 137, 170, 179, 266, 283; rootstock, 28,
 146-53, 154-55, 159; tristeza
 susceptibility of sweet orange on
 rootstock of, 146-53
 Tucuman trifoliate orange, 125
Tylenchulus lv., 285-86
- Ujukitsu, 69, 192
 United States, 275-77
 United States Department of Agriculture,
 158, 275
 University Citrus Farm at Yuma, 169
 University of California, 233; at Riverside,
 272; Experiment Station and Agricultural
 Extension Service, 158; South Coast
 Station, 112-13
 Uvalde citrange, 115-16
- Valencia sweet orange, 6, 30, 32, 40-41,
 45, 47, 49, 50, 52, 109, 113-14, 116,
 121, 137-40, 141-42, 145, 148, 150,
 152, 154-55, 162, 163, 166, 168, 188,
 202-4, 234, 258, 263, 266, 275
 Vaniglia Sanguino sweet orange, 6
 Vectors, 148, 156
 Vein clearing, 145, 163-64, 181, 223
 Vein corking, 145, 163
 Vein-enation virus, 84, 112-14, 147-48,
 257-59, 270, 275-76, 280
Vigna sinensis L. See Cowpea
 Villafranca lemon, 103
 Virus: leaf insert graft used for trans-
 mission of, 282-84
 Virus-dwarfed orange trees: possible value
 of, 262-67
 Virus inactivation: heat tolerance of
 preconditioned citrus budwood for,
 256-61
 Volkamer lemon, 116, 184, 186
- Washington Navel, 43, 47, 85-87, 154, 162,
 262-63, 266; effect of psoriasis virus
 on, 90-94
 Webber's Philippine hybrid, 116
 Westin, 204
 West Indian lime, 28, 65, 72-73, 86, 88,
 95, 113, 168, 170, 196, 213, 282-83
 West Pakistan, 56
 Wheat, 245

- White sesame, 66, 72-73, 74, 76, 79, 80, 145
Wood discoloration, 205
Wood pitting, 192-93
Woody gall, 280. *See also* Vein-enation virus

Xanthi n.c. tobacco, 213, 251
Xiphinema, 285
Xyloporosis, 192-94, 245, 263, 265

Yalaka tangelo, 192
Yamaguchi Prefecture, 145
Yamaguchi trifoliate orange, 125

Yamamikan, 100
Yatsushiro, 69
Yatsushiro-mikan, 192
Yellows, 162-64
Yellow shoot, 256
Yellow shoot pathogen, 48
Yellow-vein virus, 25, 42, 84
Yuzu, 100, 116, 119, 144, 192-93

Zamboa shaddock, 193-94
Zea mays, 284
Zinc deficiency, 19, 42, 154, 168
Zinnia, 219
Zinnia elegans Jacq., 189, 198