

INDEX

- Abies balsamea*, 373
Abies holophylla, 382
Acer negundo, 122
Acervuli, 38
Acetic acid, 8, 20, 235
Acheta domesticus, 367
Acholeplasmataceae, 43
Acholeplasmatales, 43
Acibenzolar-S-methyl, 218, 220
Acidic soils, 228
Acidovorax avenae subsp. citrulli,
191, 193–196, 198, 200
Acidovorax, 191, 193–196, 200
Acids, 381
Acremonium coenophialum, 377
Acremonium, 121, 367, 377, 382
Acremonium zeae, 373, 386
Actin, 47
Actinidia chinensis, 122
Actinomycetes, 106, 152, 230
Adaptation, 274
Aecia, 37
Aeciospores, 37
Aedes, 378
Aegiceras corniculatum, 375
Aerial tissues, 367
Africa, 139, 169, 323
Agaricales, 371
Agaricus melleus, 89
Agrobacterium, 153
Agrobacterium tumefaciens, 4
Agrobacterium-mediated
transformation, 232
Agroclavine, 376
Agroecological zones, 286
Air temperatures, 30
Airborne inoculum, 335
Airborne spores, 304
Al ethylphosphite, 77
Albania, 88, 96
Alcohols, 381
Alfalfa, 139, 229
Aliphatic compound, 374
Alkaloid, 365, 376, 378
Allegheny mountains, 87
Almond, 138, 139, 141, 142, 149
Alnus cordata, 88, 92
Alternaria, 4, 18, 20, 163, 179,
181–183, 187, 275, 309, 376
Alternaria alternata, 258, 275,
277, 285
Alternaria leaf spot, 271, 277, 279
Alternaria macrospora, 275, 277
Alternaria padwickii, 297
Alternaria solani, 179, 181
Alternaria tenuis, 370
Amaranthus gracilis, 139
Amendments, 153
America, 86–88, 90, 102, 103
American chestnut trees, 86, 87, 99,
102–104, 109
Amino acid transport, 45
2-Amino ethanol, 193
Aminopyrrolizidine, 376
Ammonium sulfate, 282, 284
Ammonium, 75, 230, 232
Amoebas, 106
Amplification, 335–340, 343,
345–352, 354, 357, 360
Analytical modeling, 162
Anamorph, 137, 138
Anastomosis, 282
Andes, 166, 168, 169
Anilino-pyrimidine, 10
Anilopyrimidine, 31
Antagonist, 230, 235, 293, 303, 305,
307, 309–316
Antagonistic fungi, 305
Antagonistic microorganisms, 8, 152,
202
Antheridium, 65
Anthesis, 197

- Anthracnose, 279
 Antibacterial chemicals, 192, 199
 Antibiosis, 308
 Antibiotic, 56, 107, 148, 151, 204, 217, 312, 378
 Antibodies, 202
 Anticancer, 375
 Antifungal, 378, 380
 Antifungal activity, 235, 310
 Antifungal compounds, 258
 Antifungal mycotoxin, 373
 Antifungal proteins, 253
 Antimicrobial activity, 154, 365
 Antimicrobial agent, 204
 Antimicrobial chemicals, 202
 Antimicrobial compounds, 310
 Antimicrobial, 378
 Antimycotic, 375, 376, 384
 Antiviral, 375
Aphanocladium album, 311
 Aphids, 367, 377
 Apical dominance, 44
Apiosporina morbosa, 4
 Apocynaceae, 375
 Apoplexy, 119, 126, 127, 140
 Apothecia, 245–248, 250–252, 254, 256, 257, 262, 263
 Apple diseases, 27
 Apple management, 27
 Apple proliferation, 46, 52, 53
 Apple scab, 27–32, 37
 Apple spring diseases, 27
 Apple, 48, 53, 138, 139, 144, 149, 151
 Apricot, 3, 4, 6, 9, 16, 18, 20, 48, 54
 Areolae, 277
 Argentina, 63, 64
 Argentine stem weevil, 376
Armillaria mellea, 137, 138, 140
Armillaria, 4
 Aromatic hydrocarbon, 10
Artemisia annua, 378
Artemisia mongolica, 380
Arthrinium, 371
 Arthropods, 281
 Artificial inoculations, 88, 109
Artimisia annua, 372, 373
 Asci, 142
 Ascocarps, 145
Ascochyta gossypii, 285
 Ascomycete, 277, 279
 Ascomycota, 138, 366
 Ascospore, 5, 28, 29, 32, 39, 245–248, 251, 255–257, 262, 295
 ASM, 220
Aspergillus clavatus strain H-037, 375
Aspergillus fumigatus, 340
Aspergillus fumigatus CY018, 373
Aspergillus niger IFB-E003, 375
Aspergillus, 275, 297, 336, 347, 358, 361
 Assays, 193, 200–202, 333, 335, 336, 338, 341, 343, 345, 357
 Aster yellows, 49
 Asymptomatic plants, 129
 Atmosphere, 87
 Aurantioideae, 61
Aureobasidium, 370
 Australia, 48, 49, 119, 121, 123, 126, 127, 130, 193, 195, 227, 192
 Australian grapevine yellows, 49
 Austria, 88, 96
 Autoecious rusts, 304, 317, 319
 Automated fragment scoring, 341
 Avellino, 87
 Avirulence genes, 215
 Avocado, 138, 139, 146, 148, 149, 152
 Avocado root rot, 139
 Avoidance, 199, 252, 253
AvrXv3, 215
AvrXv4, 215
 Azoxystrobin, 10, 235

Bacillus amyloliquefaciens, 236
Bacillus cereus, 235
Bacillus subtilis, 285, 288, 380
Bacillus, 203, 230

- Bacteria, 90, 106, 110, 148, 152, 191, 197, 200, 202, 205, 211, 217, 220, 286, 290, 293, 305, 336, 337, 340, 348, 349, 351, 354, 358, 361, 362
- Bacterial antagonist, 20
- Bacterial artificial chromosome (BAC), 345
- Bacterial blight, 271, 272, 276, 278, 290, 291
- Bacterial canker, 3–5, 12–15, 21
- Bacterial cells, 197
- Bacterial diseases, 211, 213, 217–219
- Bacterial exudates, 290, 291
- Bacterial fruit blotch, 191–194
- Bacterial genotype analysis, 352
- Bacterial leaf blight, 271, 286, 290, 291
- Bacterial species, 347, 352
- Bacterial spot control, 217
- Bacterial spot management, 217
- Bacterial spot, 211–214, 217
- Bacterial streaming, 212
- Bactericidal, 219
- Bacteriocin, 217
- Bacteriophage strains, 219
- Bacterium exitiosa*, 214
- Bacterium malvacearum*, 276
- Bacterium vesicatorium*, 214
- Bacterium, 213, 214, 216, 218, 311
- Bakanae, 271, 294
- Balansia cyperi*, 367
- Balansia*, 367
- Balsam fir, 380
- Bark, 67, 69, 74–77, 79, 80, 90–95, 109, 141, 142
- Barley, 229
- Barriers, 7
- Basidiomycetes, 120
- Basidiomycota, 304
- Basidiospores, 122, 128
- Bavaria, 318
- Bean, 139, 245, 253, 254, 256
- Beaveria bassiana*, 371, 385
- Beech forests, 106
- Beet, 250, 283
- Bemisia tabaci*, 281
- Benodanil, 321
- Benomyl, 9, 10, 20, 29, 30, 38, 151, 234, 235, 255, 260, 295
- Benzimidazole, 3, 10, 151, 234, 235, 255, 260, 283, 295
- Benzothiadiazole, 278
- Betula pendula*, 375
- Betula pubescens*, 375
- Betulaceae, 375
- Binomial distribution, 70
- Bioactive metabolites, 383
- Bioactive molecules, 383
- Bioassay, 15, 333, 342
- Biochemical tests, 347
- Biocontrol agents, 153, 154, 203, 204, 211, 220
- Biocontrol strategy, 315
- Biocontrol, 150, 153, 172, 177, 254, 259, 261, 263
- Biodiversity, 383
- Biofumigation, 250, 263
- Bioinformatic alignment, 349, 350
- Biological activity, 385
- Biological additives, 110
- Biological control, 36, 85–87, 96, 100, 106, 112, 202, 204, 249, 303–306, 311, 313–316, 366, 382
- Biological control agents, 218, 219
- Biological control strategies, 85
- Biomastics, 109
- Biosynthesis, 336
- Bipolaris*, 361
- Birds, 91
- Bitter rot, 27, 28, 31, 38, 39
- Blepharospora cambivora*, 90
- Blight, 85–88, 92, 93, 96–100, 102–104, 107
- Blight forecaster, 181
- Blight pressure, 88
- Blight resistant genes, 276
- Blight symptoms, 88
- Blister rust, 307, 317

- BLITECAST, 163
 Bloom stages, 7
 Blossom blight, 3, 5, 6, 7, 8, 11, 34, 35, 36
 Blossoms, 191, 196, 204
 Blowfly, 378
 Blueberries, 20
Blumeria graminis f. sp. hordei, 348, 382
Blumeriella jaapi, 4
 Bois noir, 49–52
 Boll lesions, 276, 279
 Boll rots, 271
 Bolls, 276–280, 285, 286
Bontia daphnoides, 374
 Borax, 320
 Bordeaux mixture, 13, 29, 36
 Boscalid, 10, 11
Botryosphaera, 4
Botrytis cinerea, 3, 4, 6, 18, 334, 363
Brachiaria mutica, 288, 289
Bradyzia, 254
 Branches, 124, 125
 Brasil, 63, 64
Brassica napus, 245
Brassica oleracea, 250
 Brassicaceae, 231
 Brassicol, 282
 Brazil, 195, 206, 216
 Breeding, 31, 33, 102, 321
 Brefeldin A, 375, 383
 Brinjal, 283
 Broccoli, 229, 231, 250
 Bronx Zoological Park, 87
 Brown fruit rot, 61
 Brown necrosis, 123
 Brown rot, 3, 5–9, 11, 12, 20, 61–63, 65–69, 74, 76, 79, 80
 Brown spot, 271, 272, 279, 280, 286, 289, 290, 294, 296
 Bt transgenic cotton, 275
 Buckland valley grapevine yellows, 49
 Cacao, 367
Cacopsylla pruni, 55
Cacopsylla pyri, 55
Cacopsylla pyricola, 55
Calcarisporium, 369, 384
 Calcium cyanamide, 250
 Calcium nitrate, 252
 Calcium, 228, 230, 233, 280, 284, 290
 California, 5, 8–11, 13–15, 19, 121, 124, 127, 130, 139, 195, 196, 198, 251, 255, 309
 Calixarenes, 154
 Callus, 93, 109
 Cambial layers, 90
 Cambium, 90, 91, 93, 94, 125
Camellia sinensis, 72
 Campania, 97, 98, 101
 Canada, 3, 4, 7, 165, 195, 216
Candida albicans, 344, 350, 357–359, 363
Candidatus Phytoplasma mali, 53
Candidatus Phytoplasma prunorum, 53, 54
Candidatus Phytoplasma pyri, 53, 55
Candidatus Phytoplasma vitis, 51
 Canker development, 77
 Cankers, 65, 67, 76, 78, 87, 90, 109
 Canola, 245
 Canopy clipping, 251
 Canopy, 34, 40, 62, 63, 67, 68, 70, 74, 80, 243, 246, 248, 251–257, 262
 Cantaloupe, 194, 195
 Capillary electrophoresis, 343, 348, 352, 356, 357, 359–361, 364
 Capillary-array electrophoresis (CAE), 353
 Captan, 10, 29, 31, 38, 40, 279, 282
 Carbamate, 10
 Carbendazim, 151, 234, 235, 276, 278–280, 282, 284, 289, 294, 295
 Carbohydrate, 252
 Carboxyanilide, 10
 Carcinogen Risk Assessment, 31
 Carotene, 252

- Carpogenic germination, 250, 255
 Carrot, 243–260, 262
Castanea crenata, 86–88, 103
Castanea dentata, 86, 87, 104, 318
Castanea mollissima, 86, 102, 318
Castanea pumila, 88
Castanea sativa, 85, 88, 96, 102, 103, 109, 318
 Castilla-Leon, 97
 Castor, 283
 Cauliflower, 229, 231, 233
 CE separation, 354
 CE sequencer, 344
 Cedar, 37, 38
 Cedar-apple rust, 32
 Cell wall, 43
 Cellobiohydrolase-C, 338, 358
 Cells, 196, 197, 201–203
 Cellulase, 99
 Central America, 216
Cephus cinctus, 382
Cercospora gossypina, 275, 279
Cercospora, 271, 279, 309
Cercospora gossypii, 277
 cereals, 272, 278, 286, 304, 308, 320–322
 Certification, 72, 130, 191, 198
Chaetomium globosum, 371
Chaetomium, 275
 Chemical control, 3, 13, 16, 18, 61, 110, 119, 164, 249, 304, 321
 Chemical coverage, 255
 Chemical management, 27, 31
 Chemical prevention, 119
 Chemical products, 366
 Chemical residues, 260
 Chemical sanitation, 258
 Chemical treatments, 225, 303
 Chemicals, 179, 181, 182, 187, 274, 286, 291
 Cherry rootstocks, 13
 Cherry, 3–8, 11–15, 17, 18, 138, 139, 140, 145
 Chestnut blight pandemic, 86
 Chestnut blight, 85
 Chestnut forests, 87
 Chestnut stands, 85–87, 90, 104, 106, 110
 Chestnut, 85–90, 92–100, 102
 Chile, 198
 Chilean gymnosperm, 386
 Chili, 283
 China, 63, 64, 86, 87, 195, 198
 Chitinases, 311, 312
 Chlamydospores, 65, 67, 144
 Chlorocholinechloride, 235
 Chlorophyll, 11
 Chloropicrin, 234
 Chlorosis, 33, 284
 Chlorothalonil, 10, 164, 168, 170, 218, 297
 Chokols, 379
Chondrostereum purpureum, 4
 Chromosomal assignment, 344
 Chromosomal karyotypes, 345
 Chromosome, 232
 Chromosome number, 344
 Chromosome translocation, 344
 Chrysanthemum, 283
Chrysomyxa arctostaphylyi, 319
 Chytridiomycetes, 305
Cirsium arvense, 52
Cistus albidus, 231
 Citochalsin E, 146
 Citrus rootstocks, 139
 Citrus Tristeza Virus, 80
Citrus, 122
 Citrus, 61–72, 74, 75, 77, 79, 122, 139, 149
Cladosporium aecidiicola, 309
Cladosporium fulvum, 32
Cladosporium gallicola, 309
Cladosporium hemileiae, 309
Cladosporium herbanum, 328, 369
Cladosporium phlei, 379
Cladosporium sphaerospermum, 309
Cladosporium tenuissimum, 309, 310, 361

- Cladosporium uredinicola*, 309
Cladosporium uredinophilum, 309
Cladosporium, 308, 309, 361
 Cladosporols, 310
 Classification, 334, 340, 359
Clavibacter michiganensis subsp. *michiganensis*, 213
Claviceps oryzae-sativae, 296
 CLCV, 275, 281
 Cleistothecia, 16
 Clementine, 80
 Climate, 233
 Climatic conditions, 277, 287, 298
 Clipping, 252, 253, 262, 263
Clonostachys, 153
 Clover, 229
Cochliobolus sativus, 344, 364
 Coffee, 138, 139, 304, 308, 317, 318, 382
 Coffee rust, 317, 320
 Cold storage, 244
 Coleoptera, 311
 Collar, 94
 Colletotric acid, 380
Colletotrichum acutatum, 38
Colletotrichum capsici, 285
Colletotrichum coccodes, 371
Colletotrichum crassipes, 370
Colletotrichum gloeosporioides, 285, 380
Colletotrichum gossypii, 275, 276, 285
Colletotrichum musae, 370
Colletotrichum, 276, 367, 376, 378
 Colonization, 162
 Colony Forming Units, 69
 Combretaceae, 375, 386
 Comparative epidemiology, 161, 169, 171, 173
 Competition, 311
 Complexity, 106, 314, 315
 Compost, 254
 Computer-controlled glasshouses, 213
 Computing power, 161
 Conidia, 5–7, 15, 16, 29, 30, 32, 33, 38, 39, 40, 90, 100, 225, 226, 229, 236, 283, 287, 288, 295
 Conidial concentration, 7
 Conidial morphology, 138
 Conidiogenesis, 348
 Conidiophore, 146, 225, 226
Coniothyrium minitans, 253, 254
 Connecticut, 96
Conocarpus erecta, 375
 Contact fungicides, 186, 187
 Control measures, 271, 273, 274, 280, 298, 303, 333
 Control practices, 217
Convolvulus arvensis, 52
Conyza bonariensis, 139
 Cooling time, 259
 Copper oxychloride, 276, 279, 289, 297
 Copper, 29, 31, 34, 36, 74, 79, 80, 168, 191, 204, 211, 217–220
 Coppices, 97–99, 104, 108, 110
Cordana musae, 370
 Coremia, 146
 Corn, 250
Cornus mas, 122
 Cortex, 66–68, 226
 Cortical parenchyma, 94
Corycium sasaki, 382
Corylus avellana, 122
Corynenum perniciosum, 90
Corynenum kunzei var. *castaneae*, 90
 Costa Rica, 195, 214
 Cotoneaster, 28
 Cotton Leaf Curl Virus, 271, 275, 281
 Cotton, 139, 228, 229, 231–235, 271–282, 298
 Cotyledons, 192, 194, 196
 Cowpea, 283
 Crabapples, 28
Craetagus, 28
 Crete, 230
 Croatia, 49
Cronartium asclepiadeum, 308

- Cronartium coleosporioides*, 319
Cronartium comandrae, 309, 319
Cronartium comptoniae, 319
Cronartium flaccidum, 308, 309, 317, 319
Cronartium fusiforme, 310, 319
Cronartium himalayense, 319
Cronartium quercuum f. sp.
fusiforme, 309, 310, 318, 321
Cronartium quercuum, 309, 310, 318, 319
Cronartium ribicola, 307, 318, 323
Cronartium strobilinum, 310
Crop damage, 225
Crop development, 243, 248, 263
Crop emergence, 185
Crop health, 250, 263
Crop protection, 303
Crop records, 181
Crop residues, 276, 278, 279, 293, 298
Crop rotation, 225, 228, 229, 231, 271, 273, 279, 282, 289, 295, 297, 319
Cropping systems, 217
Crotolaria juncea, 293
Crucifers, 229
Cryphonectria parasitica, 85–88, 90, 92, 93, 97, 99
Cryphonectric acid, 99
Cryptocandin, 382
Cryptocin, 376
Cryptococcus, 369
Cryptograms, 89
Cryptosporiopsis cf. *quercina*, 376
Cucurbit, 191–195, 197–201, 203
Cultivar, 3, 11, 13, 49, 53, 55, 191, 192, 199, 203, 205, 227, 228, 232, 234, 236, 243, 249, 252, 253, 262
Cultivation technologies, 213
Cultural methods, 249, 252
Cultural practices, 39, 40, 137, 144, 250
Cupressaceae, 37
Currant, 318
Curvularia lunata, 285
Curvularia, 285, 297, 382
Cuticular fractures, 18
Cutinase, 99
Cutting, 121, 123, 128, 131
Cylindrocarpon destructans, 135, 371
Cylindrocarpon theobromicola, 371
Cynodon dactylon, 369, 373, 375, 384
Cyperus esculentus, 139, 151
Cyperus rotundus, 143
Cyperus, 367
Cypress, 37
Cyprodinil, 10, 132
Cysts, 65, 66
Cytochalasin E, 378
Cytochalasin, 378
Cytoplasm, 153, 307, 308, 309, 311
Cytoplasmic transfers, 100
Cytospora CR 200, 375
Cytosporone B, 375
Damage, 61, 63, 76, 87, 88, 92, 98, 103–105, 108–111
Dark wood, 120, 124
Darluca philum, 310
Databank, 179, 181
Daucus carota, 243
Dazomet, 150, 156, 234
Decay, 62, 68, 119, 125, 130
Dechlorogriseofulvin, 382
Decline, 4, 12, 44, 52, 54, 55, 62, 67, 74, 94, 105, 119–122, 124, 128, 140
Defense proteins, 45
Defoliation, 62, 68
Deightoniella torulosa, 370
Delaware, 195
Dematophora necatrix, 137
Demethylation, 3, 10
Democratic Republic of Congo, 309
Denaturant capillary electrophoresis (CDCE), 353
Denaturing gradient gel electrophoresis (DGGE), 342
Denmark, 318

- Desiccation, 15, 219
 Detection assays, 339
 Detection, 46, 49, 53, 335, 336, 338, 342, 346, 347, 351–359, 361–364
 DGGE, 342
 Diagnosis, 46, 61, 67, 272, 273
 Diagnostic applications, 348
 Diagnostic approaches, 333
 Diagnostic specificity, 334
 Diagnostic tools, 49
Diaporthe CR 146, 370, 375
 Diaporthin, 99
 1-2-Dibromo-3-chloropropane, 283
Dicanelium lanuginosum, 382
 Dicarboximide, 9, 10, 255, 260
 Dichloran, 10
Didymella bryoniae, 203
 Dieback, 61, 62, 67, 95, 98, 103
 Differential display, 348
 Differentiation techniques, 334
 Difolatan, 277
Digitaria marginata, 297
 3 β , 5 α -Dihydroxy-6 β -acetoxyergosta-7, 22-diene, 378
 3 β , 5 α -Dihydroxy-6 β -phenyl-acetoxyergosta-7, 22-diene, 378
 6,7-Dihydroxy-2-propyl-2,4-octadien-4-olide, 376
 Diketopiperazines, 146
 Dimethyl disulfide, 234
 Dinitroaniline, 235
Diplodia castaneae var. *radicicola*, 89
Diplodia gossypina, 285
Diplotaxis virgata, 231
 Discoloration, 49, 67, 260, 285, 294, 297
 Disease control, 9, 10, 17, 18, 150, 163, 172, 211, 217, 218, 220, 234, 260, 321
 Disease development, 161, 162, 164, 168, 169, 276, 278, 284, 289, 293, 297
 Disease diagnosis, 340
 Disease epidemic, 316
 Disease forecasting, 3, 18
 Disease incidence, 248, 249, 262
 Disease management, 3, 85, 162, 169, 211–213, 217–220, 333, 346, 353, 354, 360
 Disease models, 179, 187
 Disease prediction, 6, 11
 Disease resistance, 27, 303
 Disease risk, 251
 Disease severity, 18
 Disease, 3, 6, 11, 18, 27, 43, 46, 47, 49, 85, 87–91, 94, 95, 103–105, 107–111, 119, 120, 122–124, 127, 128, 130, 132–140, 146, 147, 149–153, 161–169, 171–177, 179, 181, 191–193, 195–200, 205, 225, 227, 228, 230, 232–235, 244, 246–254, 256–272, 274–304, 308, 313–315, 317–319, 321, 333, 365, 366
 Disease-resistance genes, 43, 56
 Disinfection, 147, 151
 Disinfestation, 258, 261
 Distributed genomic loci, 342
 Dithiocarbamates, 321
 DMI-Piperazine, 10
 DMI-Pyrimidine, 10
 DMI-Triazole, 10
 DNA, 7, 11, 43, 44, 46, 193, 201, 202, 215, 291, 296, 322, 333–341, 343–347, 349–364
 DNA fingerprinting, 333, 335, 362, 363
 DNA fragments, 336, 353
 DNA profiling techniques, 333
 DNA purification, 336
 DNA variants, 353
 Dodine, 29, 30, 38
 Dormant buds, 13, 14
Dothiorella strain HTF3, 375
 Double guyot, 132
Drechslera, 289, 297
 Drenching, 151

- Drip irrigation, 250
 Drought, 13
 Drug resistance, 344
 dsRNA, 85, 96, 100–102, 153, 156
 Duplex renaturation, 342

 Early blight, 163, 179, 181
Echinochloa, 289
Echinochloa colona, 294
 Ecological fitness, 109
 Ecology, 216
 Ectomycorrhizal fungi, 107
 Ecuador, 161, 166
 Ediphenphos, 289, 294
 Eggplant, 228, 230, 235, 236
 Egypt, 63, 64, 187
 Electrophoretic karyotypes, 345
Eleusine indica, 294
 Elicitins, 56
 ELISA, 46, 68, 69
 Elm yellows, 47, 49, 51
 Elm, 367
 Elymoclavine, 376
 Embryo, 6
Endocronartium harknessii, 309, 319
 Endonuclease enzymes, 336
 Endophyte, 56, 334, 356, 361,
 365–367, 376, 378, 380, 382
 Endophytic fungi, 366, 367, 371, 373,
 376, 382, 383
 Energy consumption, 151
 Enfumafungin, 385
 England, 318
 Environment, 16, 43, 56, 303–306, 314,
 315, 320, 322, 339, 345, 351, 359
 Environmental changes, 274, 293
 Environmental conditions, 165, 192,
 197, 200, 314
 Environmental impact, 146
 Environmental microbiology, 335
 Environmental parameters, 314, 321
 Environmental samples, 338, 339,
 340, 351
 Enzymatic processes, 310

 Enzyme-linked immunosorbent assay,
 46, 68
 Enzymes, 99, 226, 309–312
Epichloe festucae, 376
Epichloe typhina, 376, 377, 379, 380
Epicoccum nigrum, 369
Epicoccum purpurescens, 369
 Epicormic shoots, 91–93
 Epidemic development, 204
 Epidemics, 17, 163, 165–167,
 169–172, 183, 191, 196, 197, 244,
 245, 247–249, 251, 263
 Epidemiological components, 173
 Epidemiological concepts, 161, 174
 Epidemiological data, 29
 Epidemiological factors, 225, 228
 Epidemiological studies, 11, 244
 Epidemiology, 146, 161, 169, 191,
 192, 195, 196, 206, 216, 243, 246,
 247, 249, 261, 263, 304, 305, 310
 Epiphytic bacteria, 36
 EPPO, 147, 319
Epuraea obliquus, 311
 Eradication, 147, 150, 192, 199, 202,
 303, 304, 317, 318
Eremocitrus, 61
 Ergocryptine, 376
 Ergonovine, 376
 Ergotamine, 376
 Ergovaline, 377
 ERIC sequence, 352
 Erosion, 106
Erwinia amylovora, 34
 Esca, 119–121, 123–129, 130
Escherichia coli, 44, 354
 Ethyl alcohol, 205
 Ethylene biosynthetic precursor, 232
Eudarlucua caricis, 310
 Eukaryotes, 341, 343, 351, 352
 Europe, 4, 5, 7, 32, 48–53, 55,
 86–90, 100, 102–104, 107, 123,
 130, 138, 147, 165, 216, 309,
 310, 319, 323
 European plum, 3

- Evolution, 274
 Exclusion, 3, 273
 Exoenzymes, 367
 Exotic pathogens, 355
 Exotic rusts, 323
 Experiments, 162, 166, 168, 171, 172, 174
 Expressed tag sequencing, 348
 Extraction protocols, 148

 Fagaceae, 318
 False smut, 271, 286, 296
 Fatty acid methyl ester, 193
 FD, 46, 47, 48, 50, 51
 Feeding deterrents, 372, 376
 Fenarimol, 10
 Fenbuconazole, 10
 Fenhexamid, 10, 20
 Fermentation, 202, 203, 383
 Fertilization, 8, 13, 35, 61, 105, 225, 245, 252, 289
 Fertilizer, 218, 272, 284, 286–290, 293, 297, 298
Festuca arundinacea, 376
Festuca pratensis, 373
Festuca, 367, 377
Festucae, 376
 Fibrous root rot, 61
 Field infestation, 250
 Field sanitation, 275, 279, 289
 Fingerprinting, 333, 339, 340, 341, 349, 358–360, 363
 Fire blight, 27, 28, 32, 34–36
 Fitness, 164
 Flavescence dorée, 46, 49
 Florida, 63, 65, 192, 195, 211, 213, 214, 216, 217, 220
 Flowers, 320, 321
 Fluazinam, 151
 Fludioxonil, 10, 20, 132
 Fluorescence, 344, 347, 353, 354, 357, 359, 362
 Fluorescent probe product, 346
 Fluorescent pseudomonads, 236

 Flyspeck, 27, 31, 39, 40
 Foliar applications, 254, 255
 Foliar fungicides, 255
 Foliar growth, 251
 Foliar spray, 77, 78, 79
 Foliar wetness, 33
Fomes fomentarius, 119
Fomitiporella vitis, 130
Fomitiporia australiensis, 130
Fomitiporia mediterranea, 120–122, 126, 130
Fomitiporia polymorpha, 130
 Fonsecinone A, 375
 Food chain, 303
 Food matrices, 345
 Foot rot, 61, 62, 71, 72, 79, 81
 Forecast, 179, 181, 185, 186, 187
 Forecasting models, 161, 162, 173
 Forecasting, 161–163, 173
 Forest ecosystems, 315
 Forest tree, 304, 321, 323
 Formaldehyde, 255
 Formulation, 313
Forsteronia spicata, 375
Fortunella, 61
 Fosetyl-Al, 77, 79, 80
 Fragment cloning, 349
Fragraea bodenii, 376
 France, 49–51, 54, 55, 87, 89, 96–98, 103, 111, 123, 127, 132, 139, 227
 Freeze damage, 12
 Frequency mutations, 353
 Fruit clustering, 8
 Fruit crops, 43, 45, 48, 56
 Fruit rot, 3, 5–7, 20
 Fruit russetting, 29
 Fruit storability, 11
 Fruiting bodies, 312
 Full-blown esca, 119
 Fumigaclavine C, 373
 Fumigant, 150, 234
 Fumigation, 14, 150
 Fumitremorgin C, 373
 Functional metabolite, 386

- Fungal antagonists, 303, 315
 Fungal extract, 369
 Fungal genotyping, 340
 Fungal metabolites, 365
 Fungal pathogens, 339, 345
 Fungal propagules, 298
 Fungal strains, 336, 337, 341, 344
 Fungicidal treatments, 346
 Fungicidal, 380
 Fungicide, 3, 7–11, 16–18, 20, 27, 29, 30, 31, 34, 38–40, 71, 72, 74, 77, 79, 80, 131, 132, 146, 151, 163, 164, 166, 168–170, 172–177, 181, 185, 249, 254, 255, 260, 262, 263, 273, 274, 278, 279, 282, 289, 297, 298
 Fungicide application, 7, 8
 Fungicide resistance, 27, 29, 30, 39
 Fungus, 5, 7, 8, 13, 15, 16, 37–39, 87–92, 94, 95, 100, 101, 103, 106, 109, 138, 139, 141, 143, 147–149, 153, 179, 181, 182, 187, 243, 245, 246, 249, 254, 260, 279, 285, 286, 293, 295, 304–311, 313, 315, 316, 318, 322, 334, 336–338, 340–348, 351–353, 366, 367, 369, 376
 Fusaria, 338
Fusarium, 271, 274, 275, 283, 284, 285, 294, 297, 309, 334, 336, 345, 367, 382
Fusarium compactum, 285
Fusarium equiseti, 369
Fusarium graminearum, 334
Fusarium moniliforme, 285, 294
Fusarium oxysporum f. sp. *vasinfectum*, 275, 284
Fusarium oxysporum, 284, 361, 382
Fusarium verticillioides, 334
 Fusarium wilt, 197, 206, 227, 236, 271, 274, 275
 Fusiform rust, 321
Gaeumannomyces graminis var. *tritici*, 376, 378
Gaeumannomyces graminis, 376, 378
 Galls, 37, 38
 Gametangium, 65
 Gene, 44, 45, 53, 335, 338, 341–349, 351, 352, 354, 356, 358–361, 363, 364
 Gene expression analysis, 339, 354, 360
 Gene expression microarrays, 348
 Gene fragments, 341, 345, 353
 Gene mutations, 29
 Gene products, 345
 Gene sequences, 338
 Gene targets, 348
 Genetic basis, 322
 Genetic diversity, 335, 338, 344
 Genetic linkage maps, 340, 343
 Genetic manipulation, 313
 Genetic mapping, 339, 342–344
 Genetic marker loci, 342
 Genetic screenings, 353
 Genetic tests, 214
 Genetically engineered plants, 43, 56
 Genoa, 87
 Genome, 4, 334–336, 338, 342–346, 348–352
 Genome assemblies, 351
 Genome sequencing, 345, 349, 350, 361
 Genomic DNA, 46
 Genomic DNA methylation, 341
 Genomic fragments, 341, 342
 Genomic sequence data, 334, 346
 Genotype-based classification, 46
 Genotypes, 304, 315, 320–323
 Genotyping, 335, 336, 338, 340–343, 346, 352
 Gentianaceae, 376
 Georgia, 6, 9, 11, 191, 195, 196
 Germ tube, 65, 66, 75
 Germany, 49, 88, 89, 96, 308, 318
 Germination, 90, 181, 183, 233, 275, 278, 279, 284, 285
 Germplasm, 149, 252

- Gibberalla fujikuroi*, 294
 Gibberellic acid, 235
 Gibberellin, 35
 GIS, 173
Gliocladium virens, 282
Gliocladium, 106
 Gliovictin acetate, 374
 Gliovictin, 374
Gloeosporium musae, 370
Glomerella cingulata, 38
Glomerella gossypii, 285
Glomus etunicatum, 259
Glomus intraradices, 259
Glomus, 153
Glomus mosseae, 345, 356
 Glucanase, 312
 Glumes, 287, 289, 291, 296, 297
Glycine max, 245
Gossypium arboreum, 274
Gossypium barbadense, 274, 277
Gossypium herbaceum, 274, 277
Gossypium hirsutum, 274, 281
 Grafts, 109
 Graft junction, 123, 128
 Graft union, 126
 Gram-negative, 290, 292
 Gram-positive, 44
 Grape rootstocks, 139
 Grape, 149
 Grapevine yellows, 49
 Grapevine, 43, 45, 46, 48–52, 56, 119, 121–123, 125, 126, 129, 130
 Grass, 229, 367, 376, 378, 383
 Grasshopper, 367
 Gray mildew, 271, 272, 274, 277
 Gray mold decay, 20
 Great Britain, 88
 Greece, 64, 88, 96, 227
 Green manuring, 282
 Greenhouse bioassays, 218
 Greenhouse conditions, 196, 199, 200, 203–206
 Greenhouse technologies, 213
 Greenhouse, 63, 81
 Griseofulvin, 382
 Groundnut, 281, 283
 Growing season, 244
 Guam, 192, 195
 Guanidine, 365
Guignardia, 369
 Gum exudation, 67
 Gumming, 12, 14
 Gummosis, 61–63, 65, 67, 68, 72, 74–77, 79, 80
 Gummy canker, 74
 Gummy liquid, 124
 Gummy stem blight, 203
 Gymnosperm, 386
Gymnosporangium, 307
Gymnosporangium clavipes, 37, 319
Gymnosporangium globosum, 37, 319
Gymnosporangium juniperi-virginianae, 37, 319
Gymnosporangium yamadae, 319
 gyrB, 342
 Hami melon, 195
 Hardwood, 102, 104
Harmonema dematoides, 380
 Harvest, 6, 8, 16–21, 197–199, 203, 252, 316
 Harvest maturity, 196, 197, 198
 Harvested roots, 249, 258
 Harvesting, 128, 132, 244, 249, 262, 263
 Hawthorn, 28, 37
 Hazard areas, 303, 304, 317, 318
 Hazard maps, 318, 319
 Hazardous chemicals, 348
HcrVf2 gene, 32
 Healed canker, 91, 92
 Healing canker, 91
 Health status, 148, 149
Helminthosporium gossypii, 279
Helminthosporium oryzae, 289
Helminthosporium sativum, 378, 380
Helminthosporium sigmaideum, 295
Helminthosporium spiciferum, 279

- Helminthosporium, 271, 279,
 285, 378
Hemileia vastatrix, 308, 309, 317
 Herbaceous plants, 226
 Herbicidal, 380
 Herbicides, 231, 235
Heterobasidion annosum, 315
Heteroconium chaetospora, 376
 Heteroduplex analysis, 342, 363
 Heteroduplex molecules, 352
 Heteroduplex polymorphism assay
 (HPA), 342
 Heteroecious rusts, 304, 318
 Hexaconazole, 293, 294
 2-Hexyl 5-propyl resorcinol, 155
 High throughput capillary
 electrophoresis (PCR-CE), 353
 Honduras, 195
 Honeydew, 193, 195
 Horizontal gene transfer, 44
 Hormonal balance, 44
Hormonema dematioides, 374
Hormonema, 375, 385
 Horticultural practices, 3, 15
 Host plant, 339, 343, 348, 376
 Host range, 215
 Host resistance, 27, 164, 249
 Host susceptibility, 66, 80
 Host tissues, 334, 345
 Host, 137, 138, 143, 145, 146,
 148, 149
 Host-pathogen interactions, 215
 Hot water treatment, 131, 152
 HPA, 342, 353
 HSP60, 342
 Human health, 306, 316
 Human pathogen, 344
 Humidity, 7, 16, 17, 20, 33, 105, 127,
 187, 212, 213, 216, 217, 278, 285,
 287, 293, 295, 297
Hyalesthes obsoletus, 52
 Hybridization conditions, 339
 Hybridization probes, 339, 354
 Hybrids, 102, 103, 274, 275
 Hydrocoolers, 258
 Hydrolytic enzymes, 308
 Hydroxylanilide, 10
 3 β -Hydroxyergosta-5-ene;
 3-oxoergosta-4, 6, 8(14),
 22-tetraene, 378
 4-(Hydroxyethyl) phenyl, 348
 4-Hydroxyl-phenyl pyruvate
 dioxygenase, 348
 3-Hydroxypropionic acid, 375,
 376, 386
Hymenachne assamica, 294
Hymenula cerealis, 369
 Hyperparasite, 303, 306–313, 315
 Hyphae, 122, 225, 229, 246, 254, 334
 Hyphomycetes, 106, 225, 279, 283
 Hypocotyls, 194
 Hypovirulence, 85, 88, 96, 99–104,
 107–111
 Hypovirulent blight strains, 102
 Hypovirulent strains, 91, 100, 102,
 104, 107, 109
 Hypovirus, 100, 102, 107, 109, 111
 Hypoxia, 75
 Iberian peninsula, 318
 Identification, 3, 333–338, 340–344,
 347–349, 353, 354, 356, 358–361,
 363, 364
 Ilar Virus, 281
 Illinois, 195
 Image analysis, 18
 Immunofluorescence, 46
 Incubation, 8, 16, 40, 63, 67, 68,
 183, 184
 India, 63, 64, 139, 198, 271, 274–281,
 283, 286, 287, 289–292, 294, 295,
 298, 307
 Indiana, 192
 Indofil, 277
 Indole derivatives, 365
 Indonesia, 64
 Induced resistance, 323
 Infected branches, 320

- Infected tissues, 334, 340
 Infection, 3, 5–8, 13–15, 17–19, 62, 63, 66, 67, 74, 76, 79, 80, 85, 88–95, 98, 99, 102–109, 161, 162, 164, 165, 168, 174, 179, 181, 183–187, 227, 233, 234, 243, 245–250, 252, 254, 255, 258, 276, 277, 279–281, 283–287, 289, 292–297, 304, 307, 310, 312, 313, 316–321
 Infectivity, 346
 Ink disease, 85–87, 89, 90, 94, 95, 104–106, 110, 111
 Inner bark, 376
 Inoculum load, 295
 Inoculum, 7, 8, 11, 13, 17, 19, 28, 32–34, 36, 39, 40, 61, 65, 66, 68–72, 77, 80, 99, 102, 107–109, 111, 145, 152, 153, 164, 166, 191, 192, 195–200, 205, 206, 228–232, 234, 235, 243, 245, 247–249, 251, 254–258, 261, 304, 305, 307, 310–312, 314, 316–320, 323
Inocutis jamaicensis, 130
 Insect models, 180
 Insect pests, 179
 Insect repellent, 381
 Insect vector proteins, 47
 Insect vectors, 43, 47, 49, 52, 53, 55, 56
 Insecticidal activity, 376, 379, 380, 382
 Insecticidal, 378
 Insecticide, 376, 378
 Insects, 15, 17, 43, 46, 47, 91, 281, 285, 290
 Inspection, 191
 Integrated disease management, 191, 271
 Integrated management, 3, 27, 36, 211, 303
 Integrated pest management, 196, 271, 272, 298, 366
 Integrated strategies, 219
 Interbreeding, 165
 Intercropping, 271, 273, 282
 Intergeneric crosses, 322
 Intergenic regions, 342
 International Plant Protection Organisation, 319
 Iowa, 195
 IPM, 272, 273, 275, 297, 298, 366
 IPM strategies, 192, 197
 Iprodione, 9, 10, 20, 255, 260
 Iran, 63, 64, 139
 Ireland, 318
 Irrigation, 5, 13, 16, 56, 61, 63, 65–67, 69–72, 75, 79, 144, 150, 169, 179, 180, 195–197, 205, 225, 233, 234, 245, 250, 262, 272, 276, 283, 285, 289, 291, 292, 295
 Isocoumarin, 365, 379
 Isocoumarin derivative, 365, 379
 Isolates, 88, 99, 100–102, 107, 109, 111
 Isopestacin, 376
 6-Isoprenylindole-3-carboxylic acid, 376
 Israel, 49, 161, 166, 169, 195
 Italy, 3, 43, 48, 49, 51, 54, 55, 63–65, 85, 87–89, 95, 96, 99, 102–107, 110, 112, 119, 121, 123, 128, 129, 137, 139, 140, 148, 149, 225, 227, 230, 231, 236, 303, 308, 318, 319
Janthinobacterium lividum, 154
 Japan, 64, 71, 86, 87, 139, 149, 151, 165, 195
 Japanese plum, 3
 Jersey, 88
 Jesterone, 376, 385
 Juniper, 37
Juniperus, 37, 38
Juniperus communis, 375
Juniperus scopulorum, 37
Juniperus virginiana, 37
 Karyotypic variation, 344
 Kernel, 295

- Ketones, 381
 Korea, 86, 87, 149
 Kresoxim-methyl, 132

 Laccase, 99
 Lactic acid bacteria, 154
Lactobacillus, 338
Lagerstroemia indica, 122
 l-aminocyclopropane-l-carboxylic acid, 232
 Landscape, 85–87
 Late blight, 161–177, 181, 183, 184
 Late blight epidemics, 170
 Late blight simulators, 161
 Late season Phoma blight, 271
 LATEBLIGHT, 163, 167
 Latent infection, 5–7, 11
 Lateral clipping, 251, 255, 262
Laurus nobilis, 122
Lavandula stoechas, 231
 Leaf chlorosis, 62
 Leaf crumple, 271, 281
 Leaf curl virus, 275, 281
 Leaf discoloration, 49
 Leaf distortions, 281
 Leaf lamina, 276, 296
 Leaf scar, 16
 Leaf spot, 271, 275–280
 Leaf streak, 271, 291, 292
 Leaf symptoms, 283
 Leaf veins, 124
 Leaf yellowing, 28
 Leaf, 376, 379
 Leafhoppers, 43, 47, 51, 56
 Leaves, 181, 187
 Lebanon, 49
Lecanicillium lecanii, 308
Leersia hexandra, 288, 294
Legionella, 338, 359
 Legumes, 229
 Lesion, 7, 11, 28, 37, 38, 66, 68, 76, 164, 166, 168, 172, 183, 194, 212, 213, 220, 276, 278–280, 287, 289–292, 295

 Leucostoma canker, 3, 5, 15, 16, 21
Leucostoma cincta, 4, 15, 21
Leucostoma cinctum, 15
Leucostoma persoonii, 4, 15
 Liana, 381
Ligustrum vulgare, 122
 Linkage markers, 345
 Lint diseases, 271
Linum usitatissimum, 322
 Lipids, 381
 Liquid culture, 378
 Lithium salt, 320
 L-leucine, 193
 Locus specific PCR primers, 341
 Loline, 376, 377
 Lombardy, 97
 Lucerne, 283
Lucilia seracata, 378
Lupinus luteus, 139
Lycopersicon chilense, 232
Lycopersicon esculentum, 215, 232
Lycopersicon pimpinellifolium, 227
Lycopersicon pinnellii, 215
Lycopersicon, 215

 MAbs, 215
 Macadamia, 139
 Macedonia, 96
 Machinery, 72
Macrophomina, 271, 280
Macrophomina phaseolina, 280, 282
Magnaporthe grisea, 287, 334, 356, 358, 382
Magnaporthe salvinii, 295
 Magnesium, 230, 289
 Maize, 229, 231, 382
 Major repeat sequence (MRS), 344
 Maleic hydrazide, 320
Malus atrosanguinea, 32
Malus coronaria, 28
Malus floribunda, 31
Malus iowensis, 28
Malus micromalus, 32
Malus, 28, 149, 156

- Mammals, 340
- Management, 3, 8, 9, 11, 13, 15, 18, 20, 27, 29, 32, 34, 36, 40, 43, 46, 48, 49, 56, 61, 69, 71, 74–76, 80, 85, 87, 102, 104, 107–109, 111, 161–164, 167, 169, 171, 179, 187, 191–193, 198–200, 204–206, 225, 243–246, 249–253, 256, 257, 261, 271–275, 277, 279, 282, 286, 289–291, 295, 297
- Management practices, 27, 40
- Management strategy, 191, 200, 204
- Mancozeb, 29, 31, 40, 168, 170, 219, 220, 277, 288, 289, 294, 297
- Maneb, 10
- Manganese, 233, 289
- Mango, 138, 139, 149
- Manilkara bidentata*, 370, 385
- Mapped STS, 349
- Marche, 97
- Marine environments, 351
- Medicago sativa*, 283
- Mefenoxam, 77–80
- Melampsora capraearum*, 310
- Melampsora epitea*, 310
- Melampsora farlowii*, 319
- Melampsora larici-populina*, 328
- Melampsora lini*, 319, 322
- Melampsora medusae*, 309
- Melampsora, 309, 310
- Melanconis modonia*, 90
- Melanconis perniciososa*, 90
- Melanconium*, 376
- Melanconium betulinium*, 375
- Melia azedarach*, 382
- Melida*, 70
- Mellein, 379
- Meloidogyne incognita*, 382
- Melon, 192, 193, 195, 206
- Membrane, 43, 44, 47
- MEMS devices, 354
- Mentha piperita*, 228
- Mesocriconema xenoplax*, 13
- Metabolic genes, 351
- Metabolic toxin, 376
- Metabolites, 146, 154, 156, 310, 311, 365, 367, 376–378
- Metagenomics, 350
- Metalaxyl, 163, 164
- Metamodel, 164
- Meteorological stations, 186
- Metham sodium, 150, 255
- 6-Methoxymellein, 260
- 1-N-Methyl albonoursin, 378
- Methylisothiocyanate, 234
- Methyl bromide, 150, 234, 255
- Methyl iodine, 151
- Methylated-DNA, 341
- Mexico, 63, 64, 163, 165, 166, 195, 198
- Michigan, 96, 99
- Microarray, 47, 336, 343, 344, 346–349, 356–358, 360, 362, 364
- Microarray-based genotyping, 347
- Microbead arrays, 348, 356
- Microbes, 334, 348
- Microbial antagonists, 225, 230, 249
- Microbial communities, 348, 352
- Microbial flora, 315
- Microbial pathogens, 333
- Microchannels, 353
- Microclimate, 243, 251, 252, 256, 257
- Microdochium nivale* var. *majus*, 345
- Microorganism, 45, 47, 56, 106, 251, 253, 259, 307, 311, 313, 315, 334, 335, 338, 345, 350, 351, 365, 366
- Microsclerotia, 141, 144, 225–229, 231, 233, 283
- Microscopy, 148
- Middle East, 123
- Mill's Table, 29, 31
- Missouri, 195
- Mitochondria, 336
- Mitochondrial DNA, 336
- Model, 162–166, 168, 169, 171–174, 177, 179–186, 255, 257, 263

- Moisture, 5, 16, 17, 33, 39, 179, 246, 248, 249, 251, 252, 256, 257, 282, 284, 286, 291, 294
- Moisture sensor, 179
- Molecular beacons, 346
- Molecular detection, 137, 148
- Molecular genetic analysis, 344, 346
- Molecular genetic techniques, 333
- Molecular mapping, 350
- Molecular methods, 69, 333, 361, 362
- Molecular techniques, 3, 11
- Molecular technologies, 333
- Molecular typing, 336
- Mollicutes, 43, 44
- Monilinia*, 3, 5, 7, 9, 12, 19
- Monilinia fructicola*, 4–7, 9, 12, 18, 20
- Monilinia fructigena*, 5, 7
- Monilinia laxa*, 4, 5, 7, 8, 9, 20
- Monitoring, 61, 75, 80, 274, 297
- Monochoria vaginalis*, 294
- Monoclonal antibodies, 46
- Mono-terpene compounds, 107
- Morocco, 64, 227
- Morphological characters, 333, 340
- Morphology, 340, 357
- Mortality, 88, 96–99, 104, 108
- Mosquito larvae, 378
- mRNA, 45, 341, 347, 349
- Mucor* rot, 19
- Mugello, 110
- Mulching, 32, 230, 250, 251, 262
- Mullein, 374
- Multiline cultivars, 315, 323
- Multiple cropping, 272
- Multiple displacement amplification (MDA), 351
- Multiple repeat sequences, 349
- Multiplex amplification, 354
- Mummies, 8
- Musa acuminata*, 383
- Muscodor albus*, 381
- Muscodor vitigenus*, 381
- Muskmelon, 194
- Mutagenic agents, 322
- Mutant spores, 322
- Mutation, 322
- Mycelia, 90–93, 100, 102, 340
- Mycelia sterilia, 371
- Mycelial fans, 90, 91, 142
- Mycelial masses, 142
- Mycelial strands, 144
- Mycelium, 65, 66, 77, 122, 141–146, 149, 153, 225, 226, 245–249, 311, 312
- Mycelophagus castaneae*, 89
- Mychorrhizae, 89
- Myclobutanil, 10, 29
- Mycoflora, 312
- Mycology, 337
- Mycoparasite, 348
- Mycoparasitic microbes, 245
- Mycoparasitism, 305
- Mycophagous animals, 245, 254
- Mycoplasmas, 148
- Mycroevirus, 153
- Mycorrhizal fungi, 56, 107, 153
- Mycosphaerella*, 360
- Mycosphaerella areola*, 277
- Mycosphaerella gossypina*, 279
- Mycosphaerella graminicola*, 343, 358
- Mycotoxins, 336, 360
- Myosin, 47
- Myrobalan, 13
- Myrothecium*, 271, 278, 279, 285, 371
- Myrothecium roridum*, 275, 278, 285
- Myrsinaceae, 375
- Myxosporium*, 370
- Naphthalene, 382
- Natural enemies, 271, 273
- Natural stands, 88
- Neck blast, 287, 288
- Necrophyte, 90
- Necrosis, 33, 44, 49, 54, 119, 123–127, 192, 281, 284, 292
- Necrotic spots, 68, 281

- Necrotrophic soilborne fungus, 245
 Nectarine, 3, 4, 12, 17, 18, 20
Nectria, 367
 Negative binomial pattern, 70
 Nemaguard, 13
 Nematicidal, 382
 Nematode damage, 12
 Nematode, 4, 13, 14, 74, 230, 234, 286, 298
Nematospora nagpuri, 285
Neotyphodium coenophialum, 376, 377
Neotyphodium lolli, 376
Neotyphodium uliginatum, 373
Neotyphodium, 367, 376, 382, 383
Nephotettix nigropictus, 296
Nephotettix virescens, 295, 296
 Netherlands, 179, 182–184, 187
 New York, 87, 165, 166, 172
 New Zealand, 9, 12, 32, 119, 123, 255
 Nicaragua, 195
 Nigeria, 63, 64
 Nightshades, 231
Nigrospora sphaerica, 371
Nigrospora, 371
 Nitrate, 230, 232
 Nitrification, 89
 Nitrogen fertilizer, 291
 Nitrogen, 232, 285, 287–291, 297, 298
 Nitulidae, 311
 Nodulisporic acid, 378
 Nodulisporic acid A, 378
 Nodulisporic acid A1, 378
 Nodulisporic acid A2, 379
Nodulisporium, 378
 Non-hypovirulent strains, 107
 Non-transcribed intergenic spacer, 337
 North America, 4, 5, 7, 48, 51, 53–55, 87, 123, 130, 139, 216, 318
 North Carolina, 195
 North Queensland, 193
Nostoc, 154
 Nucellar clones, 72, 80
 Nucleic acid sequence, 201
 Nursery, 61–63, 65, 71, 72, 80, 119, 124, 128, 130, 131, 133, 137–140, 147, 149, 150, 304
 Nutrient deficiency, 56
 Nymphs, 47, 51
 Oak disease, 173
 Ohio, 227
 Oils, 3, 18
 Oklahoma, 195
 Okra, 283
Olea europaea, 122
 Oligonucleotide, 351, 352, 358, 360–364
 Olive, 65, 138, 139, 140, 149
Oncopeltus fasciatus, 367
 Ontario, 7, 21
 Oogonium, 65
 Oomicota, 64
 Oomycete, 89
 Oospores, 164, 165
 Opium, 370
 Orchard, 3, 5, 8, 9, 13, 28, 33, 36, 38, 63–70, 72, 74, 75, 79, 80, 85–89, 95, 104, 107–111, 137–140, 143, 145–147, 149, 151–153
 Oregon, 195
 Ornamental citrus, 63
 Ornamental plants, 65
 Orthosprin, 99
Oryza rufipogon, 294
Oryza sativa, 296
Ostryia carpinifolia, 88
 Outbreaks, 183–185, 191–193, 195, 196, 198, 200, 202, 204, 206
 Overwintering, 262
 3-Oxoergosta-4, 6, 8(14), 22-tetraene, 378
 Oxychloride, 36
 Oxytetracycline, 217
 Ozone, 255, 260

- Paddy, 272, 273, 283, 297
Paecilomyces H-036, 375
Paecilomyces W-001, 375
Paecilomyces, 386
Paenibacillus alvei, 236
 Painting, 78
 Pakistan, 64, 275
 Pandemic dynamics, 87
 Panicle blast, 287
 Panicle, 287–290, 292, 294, 295
Panicum, 297
Panicum repens, 288, 289
Panicum walense, 294
Papaver somniferum, 371, 385
Paracoccidioides brasiliensis,
 348, 361
 Paracoccidioidomycosis, 348
 Paraguay, 309
 Paramagnetic plastic beads, 202
 Paraphyses, 142
 Paraquat, 6
 Parasite, 87, 88, 90, 95, 99, 106–112,
 130, 305–307, 310, 312, 314,
 318–320
 Parasitoids, 48, 56
 Parawilt, 271, 272, 275, 284
 Parenchyma, 292
Pasania edulis, 384
Passiflora edulis, 149
 Pathogen, 3, 7, 13, 20, 21, 65, 77, 80,
 81, 90, 105, 107, 108, 111, 120,
 127, 133, 137, 139, 140–153,
 191–193, 196–199, 201–203, 205,
 211–213, 216, 217, 219, 244, 246,
 249, 250, 256, 257, 261, 262, 304,
 305, 310–319, 322, 323, 333–335,
 339, 341, 343, 344, 346, 348, 354,
 367, 382
 Pathogen eradication, 273
 Pathogen groups, 216
 Pathogen identification, 333, 364
 Pathogen load, 335
 Pathogen variability, 335
 Pathogenesis, 191, 206
 Pathogenic interaction, 366, 382
 Pathogenic organisms, 352
 Pathogenicity, 133, 193, 206, 344,
 348, 383
 Pathotypes, 342, 343
Paullinia paullinioides, 381
 PCR, 45, 46, 69, 71, 200, 201,
 335–337, 340–343, 345–349,
 351–364
 PCR identification-size analysis, 354
 PCR products, 351
 PCR reaction, 336, 345, 351
 Pea, 229
 Peach leaf curl, 4
 Peach scab, 4
 Peach, 3–9, 11–16, 18, 138, 139,
 141, 149
 Pear, 138, 139, 143, 144, 148, 156
 Pear decline, 55
 Pecan, 149
 Pectin, 11
 Pectolytic enzymes, 258
Pediococcus, 338
Penicillium, 236, 336, 359, 370
Penicillium expansum, 18, 20
Penicillium frequentans, 8
Penicillium janczewskii, 374
Penicillium oxalicum, 236
 Peniprequinolene, 374
 Pentachloronitrobenzene, 255
 Pentaketides, 382
Pentastiridius beierii, 52
 Pepper, 228
 Peramine alkaloid, 376
 Peramine, 376, 377
 Perennial ryegrass, 378, 383
 Periderm, 253, 311
Peridermium peckii, 310
 Peridium, 311
 Perithecia, 28, 29, 91, 92
 Perithecium, 142
 Peroxyacetic acid, 203
 Persimmon, 149
 Peru, 161, 166, 168, 170

- Peruvian Amazon, 381
 Pest, 148, 152, 271, 272, 274, 294,
 298, 365–367, 378, 381, 382
 Pest management, 273, 286
 Pest monitoring, 273
Pestalotiopsis jesteri, 371, 376, 385
Pestalotiopsis microspora, 376, 384
Pestalotiopsis, 384
 Pesticide, 9, 29, 39, 272–274, 282,
 283, 286, 296–298, 303, 305, 306,
 313, 316, 317
 Pesticide poisoning, 365
 Pesticide use, 9
 Pest-resistant varieties, 271, 273
 Petals, 246, 263
 Petiole, 276, 280, 281, 284
 Petri decline, 119
 Petri disease, 120, 124, 128
Pezicula, 380
 PFGE, 344, 345, 350
 PFGE-RFLP, 344
Phaeoacremonium, 119–121, 123, 127
Phaeoacremonium aleophilum,
 121, 123
Phaeoacremonium angustius, 121, 123
Phaeoacremonium australiense, 123
Phaeoacremonium
chlamydosporum, 121
Phaeoacremonium inflatipes,
 121, 123
Phaeoacremonium iranianum, 123
Phaeoacremonium krajdenii, 123
Phaeoacremonium mortoniae, 121, 123
Phaeoacremonium parasiticum,
 121, 123
Phaeoacremonium rubrigenum, 121
Phaeoacremonium scolyti, 123
Phaeoacremonium subulatum, 123
Phaeoacremonium venezuelense, 123
Phaeoacremonium viticola, 121, 123
Phaeomoniella, 119, 120, 121
Phaeomoniella chlamydospora,
 119, 120
Phaeomoniella pinifoliorum, 121
Phaeomoniella zymoides, 121
 Phaeotracheomycosis, 124
 Phage, 219, 220
Phakopsora gossypii, 271, 275, 280
Phakopsora pachyrizi, 308
Phanerochaete chrysosporium, 334,
 356, 360
Phaseolus vulgaris, 245
Phellinus igniarius, 119
 Phenol oxidase, 99
 Phenol, 376, 382
 Phenolic compounds, 149
 Phenolics, 11
 Phenological event, 246
 Phenological stage, 314
 Phenotype, 346
 Phenotypic uniformity, 323
 Phenylpyrrole, 10
Phialophora chlamydospora, 121
Phialophora, 121
 Phylloptosis, 62, 67
Phlebiopsis gigantea, 315
Phleum pratense, 379, 380
 Phloem, 43, 44, 47, 53
Phoma exigua, 275, 280
Phoma sorghina, 369
 Phomapsichalasin, 378
Phomopsis amygdali, 4
Phomopsis oblonga, 367
Phomopsis phaseoli, 376
Phomopsis, 367, 378
 Phosphate, 232
 Phosphorous acid, 77–81
 Phosphorous, 152, 285, 288
 Photosynthesis, 45, 146
 Photosynthetic efficiency, 312
 Photosynthetic products, 304
 Phthalamide, 10
 Phylloplane bacteria, 276
Phyllosticta, 373
 Phylogenetic analysis, 338, 358
Physalis minima, 216
 Physical barrier, 315
 Physiological activity, 99

- Physiological status, 103
Physocnemum brevilineum, 367
 Phytoalexin, 77, 235, 260
 Phytopathogenic bacteria, 202, 346
 Phytopathogenic fungi, 350
 Phytopathogens, 334, 335
 Phytophthora, 4, 61, 62–72, 74, 85, 86, 90, 94, 95, 104, 106, 107, 112
Phytophthora, 61, 62, 65, 68, 75, 81, 179, 181, 182, 309, 367
Phytophthora boehmeriae, 285
Phytophthora cactorum, 112, 382
Phytophthora cambivora, 85, 86, 90, 93–95, 104–107, 111
Phytophthora capsici, 376, 378
Phytophthora cinnamomi, 64, 85, 86, 90, 95, 104–107, 111
Phytophthora citricola, 346
Phytophthora citrophthora, 66–69, 71, 75, 77, 79, 80
 Phytophthora diseases, 77
Phytophthora hibernalis, 64
Phytophthora infestans, 161, 164–167, 169–171, 181–184, 346, 356, 357
Phytophthora megasperma, 64
Phytophthora nicotianae, 61, 64–67, 69–72, 74–77, 79, 80
Phytophthora palmivora, 65
Phytophthora parasitica, 64
 Phytophthora rot, 75
Phytophthora syringae, 64
 Phytophthora root rot, 61, 62
 Phytoplasma diseases, 43, 54
 Phytoplasma infection, 45
 Phytoplasma, 4, 43–49, 51
 Phytosanitary services, 319
 Phytotoxic metabolites, 99
 Phytotoxicity, 17, 36
 Phytotoxins, 120, 127
Picea, 321
Picea glauca, 376
 Piedmont, 89, 97
 Pine, 307, 317–321, 323
 Pinaceae, 376
 Pine species, 323
Pinus banksiana, 309
Pinus contorta, 309
Pinus contorta var. *latifolia*, 309
Pinus elliotii, 310, 318
Pinus halepensis, 318
Pinus laricio, 318
Pinus monticola, 307
Pinus muricata, 309
Pinus nigra, 318
Pinus palustris, 318
Pinus pinea, 318
Pinus radiata, 309, 318
Pinus serotina, 318
Pinus sylvestris, 382
Pinus taeda, 310, 318
Pinus virginiana, 318
 Pit hardening, 6–8, 16, 18
 Plant breeding, 303, 304, 321, 322
 Plant debris, 279, 282, 295
 Plant defense reaction, 376
 Plant diseases, 305, 317
 Plant growth hormone, 382
 Plant growth-promoting rhizobacteria, 219
 Plant nutrition, 290
 Plant pathogen, 43, 47, 334, 335, 366
 Plant pathology, 161
 Plant protectant, 382
 Plant spacing, 251, 293
 Plant species, 367
 Plant surface, 311, 314
 Plant tissue, 245, 260, 339
 Plant varieties, 321
 Plant vascular system, 44, 47
Plantago lanceolata, 52
 Plantations, 88, 95
 Planting density, 304
 Plasma membrane, 308
 Plasmodesmata, 44
 Plastic tunnel, 213
Pleospora herbarum, 369
 Plowing, 230

- Plum, 3–5, 7, 8, 12, 13, 16, 18, 138, 139
- Plum pockets, 4
- Plum pox virus, 4
- Plum pox, 4
- Poaceae, 373
- Podosphaera clandestina*, 4, 16
- Podosphaera leucotricha*, 33
- Polar flagellum, 290, 292
- Pollination, 196, 197, 204
- Polyacetylene faltarindiol, 253
- Polyethylene, 229, 234
- Polygalacturonase, 99
- Polygenic horizontal resistance, 81
- Polymerase chain reaction, 45
- Polymorphic DNA loci, 346
- Polymorphic genomic loci, 337
- Polymorphism, 337–340, 342, 343, 346, 350, 352, 353, 356–364
- Polyphenol oxidases, 226
- Polyporales, 371
- Polystyrene trays, 205
- Poncirus*, 61, 71
- Poplar, 139, 144
- Portugal, 49, 50, 88, 89, 96, 104, 105, 111, 139
- Post-harvest diseases, 271
- Postharvest fruit rots, 3, 18
- Postharvest fungicides, 260
- Potassium deficiency, 283
- Potassium phosphate, 218
- Potassium phosphonate, 77
- Potassium, 230, 233, 283, 284, 288, 289
- Potato, 161–170, 173–181, 183
- Potentilla reptans*, 52
- Powdery mildew, 3, 5, 16–18, 27, 31–33, 34, 39
- Preharvest decay, 63
- Pre-planting infections, 119
- Prevention, 72, 74, 317
- Primary inoculum, 277, 279, 288
- Primers, 7, 12, 46, 337–340, 343, 349, 351, 352, 360, 362, 363
- Principal Component Analysis, 105
- Prochloraz, 278
- Prokaryotes, 43, 44, 47, 49
- Propagating materials, 137, 144, 147–150
- Propagation cycle, 316
- Propagation, 121, 128, 130, 132
- Propagules, 63, 65, 69, 106, 225, 227, 228, 230, 231
- Prophylactic strategy, 187
- Prophylactic treatment, 31
- Propiconazole, 9, 10, 26, 29, 294
- Prosopis farcta*, 139
- Protease, 99
- Protectant fungicides, 320
- Protoplasm, 144
- Prumnopytis andina*, 374, 386
- Prunes, 3
- Pruning, 8, 13, 15, 33, 34, 36, 40, 61, 71, 74, 108–110, 230
- Prunus avium*, 4, 55
- Prunus domestica*, 3
- Prunus mahaleb*, 140, 143
- Prunus persicae*, 3
- Prunus salicina*, 3
- Prunus*, 55
- Pseudocommis vitis*, 89
- Pseudomonads, 230, 235
- Pseudomonas*, 13, 153, 192, 276, 278, 293
- Pseudomonas aureofaciens*, 293
- Pseudomonas chlororaphis*, 153
- Pseudomonas fluorescens*
PCL1606, 153
- Pseudomonas fluorescens*, 153, 291, 293
- Pseudomonas gardneri*, 214
- Pseudomonas malvacearum*, 276
- Pseudomonas pseudoalcaligenes*
subsp. citrulli, 192
- Pseudomonas putida*, 153
- Pseudomonas syringae* pv.
morsprunorum, 4, 12, 14
- Pseudomonas syringae* pv.
persicae, 12

- Pseudomonas syringae* pv. *syringae*, 4, 12, 14
Pseudomonas syringae pv. *tomato*, 213
Pseudomonas syringae, 4, 12–14
Pseudothecia, 29, 32, 40
Psyllas, 53, 55
Puccinia arachidis, 307
Puccinia cestri, 309
Puccinia chrysanthemi, 308
Puccinia conspicua, 309
Puccinia coronata, 310
Puccinia glumarum, 321
Puccinia graminis f. sp. *tritici*, 311
Puccinia graminis, 310, 318
Puccinia horiana, 308, 309
Puccinia penniseti, 307
Puccinia pittieriana, 319
Puccinia polysora, 323
Puccinia recondita, 308–310, 346, 357, 382
Puccinia sorghi, 309, 310
Puccinia striiformis, 321, 346, 357
Puccinia sylvatica, 307
Puccinia vincae, 307
Puccinia violae, 309
Puccinia, 376
Pulsed-field gel electrophoresis (PFGE), 344
Pumpkin, 193, 195
Pustules, 90, 91
Pycnidia, 40, 91, 92, 99, 101, 109, 280
Pyrlic acid, 320
Pyraecantha, 28
Pyraclostrobin, 10, 11
Pyricularia grisea, 287–288
Pyricularia oryzae, 376
Pyricularia, 376
Pyrimethanil, 10, 20, 132
Pyrrocidine A, 373
Pyrrocidine B, 373
Pyrrolizidine, 365
Pyrrolopyrazine, 376
Pyrus, 28
Pyrus communis, 55
Pythiaceae, 64
Pythium, 275, 382
Pythium ultimum, 382
qRT-PCR reaction, 345
Quantitative genetic traits, 253
Quantitative resistance, 253
Quarantine, 303, 304, 317, 319, 336
Queensland, 227
Quercus, 88, 92, 106
Quercus cinerea, 318
Quercus ilex, 88, 122
Quercus marilandica, 318
Quercus nigra, 318
Quercus petrea, 88
Quercus pubescens, 88
Quercus rubra, 318
Quercus variabilis, 386
Quercus virginiana, 88
Quick decline, 55
Quinoline, 10
Quinone, 382, 383
Quinoxifen, 10
Races, 318, 322
Race-specific resistance, 322
Rain, 5, 15, 17, 19, 29, 63, 65, 67, 76, 79, 80
Rain forests, 318
Rain tree, 383
Rainfall, 127, 186, 286, 290, 292, 297
Rainwater, 105, 106
Ralstonia solanacearum, 213
Ramularia areola, 275–278
Ramularia gossypii, 277
RAPD, 338–340, 342, 343, 349, 357, 358, 360, 361, 363, 364
RAPD fingerprinting, 338, 339, 340
RAPD fragments, 343, 349
RAPD markers, 339, 343, 349, 358
Rapeseed, 245, 254, 256
16S rDNA, 46, 52

- 16S rRNA, 352
 Real time analysis, 46
 Real time-PCR, 69
Recilia dorsalis, 296
 Reddening, 140
 Reforestation, 95
 Regulations, 336
 Reinfestation, 152
 Relative humidity, 183, 196, 197, 200, 284, 288
 Remote Sensing, 187
 Rennin, 99
 Reproduction, 304, 313, 316
 Reproduction cycles, 344
 Resistance genes, 31, 212, 289, 304, 315, 321, 323
 Resistance inducer
 microorganisms, 43
 Resistance induction, 315
 Resistance management, 11
 Resistance, 3, 8–11, 15, 16, 18, 20, 27, 29, 31–35, 40, 43, 55, 56, 61, 71, 72, 79, 85, 88, 102, 103, 111, 146, 149, 161, 163, 164, 166–169, 171, 173–177, 249, 252–254, 259, 260, 262, 273–275, 287, 289, 291, 292, 294, 297, 335, 343
 Resistant cultivars, 211, 219, 225, 291, 298
 Resistant genotypes, 11
 Resistant germplasm, 322
 Resistant varieties, 35, 283, 291, 315, 322
 Respiration, 252, 259, 260
 Restriction enzyme
 isoschizomers, 341
 Restriction fragment length
 polymorphism, 45
 Reverse transcriptase, 354
 RFLP, 45, 46, 337, 340, 341, 342, 344, 352, 353, 360
Rhinoclatiella, 378
Rhizoctonia bataticola, 280
Rhizoctonia cerealis, 376, 378
Rhizoctonia solani, 282, 285, 292, 293, 382
Rhizoctonia, 275, 309, 376
Rhizomorpha necatrix, 138
Rhizopus, 3, 4, 18, 275
Rhizopus stolonifer, 4, 18
 Rhizosphere, 235, 236
Rhodotorula rubra, 369
Rhodotorula, 8
Rhopalosiphum padi, 367, 377
 Ribes, 318
 Ribosomal gene complex, 337, 338
 Ribosomal gene polymorphisms, 352
 Ribosomal gene regions, 337
 Ribosomal gene repeat, 337
 Ribosomal gene signatures, 351
 Ribotyping, 337, 349, 353
 Rice blast, 271
 Rice crop, 286, 290, 296
 Rice diseases, 271
 Rice ecosystems, 286, 296
 Rice, 229, 234, 271–274, 286, 382
 Ripening, 67
 Risk assessment, 179
 Risk factors, 256, 257
 Risk management, 3
 Risk model, 180
 RNA, 338, 339, 357, 358, 360, 361, 363
 RNA detection assays, 339
 RNA virus, 296
Robinia pseudoacacia, 122
 Rocky Mountain juniper, 37
 Roguing, 43, 49, 51, 53, 56
 Root exudates, 65, 66
 Root rot, 61–63, 66, 67, 71, 74–76, 79, 80, 271, 381
 Rootgraft union, 35
 Roots, 244, 245, 247, 249, 252, 253, 254, 258, 259, 260, 262, 263
 Rootstock blight, 34
 Rootstock, 13, 35, 49, 55, 61, 62, 71, 72, 77, 121, 124, 131, 149
 Rosaceae, 52

- Rose, 37
 Rosellichalasin, 146
Rosellinia arcuata, 138
Rosellinia bunodes, 138
Rosellinia desmazieresii, 138
Rosellinia necatrix, 137–146, 148
Rosellinia pepo, 138
Rosellinia quercina, 138
Rosellinia root rot, 138, 156
Rosellinia, 138
 Rosellinic acid, 146
 Rosnecatrone, 146
 Rotation, 205, 228, 229, 231, 234, 250, 263
 Row spacing, 262
 rRNA, 338, 351, 352, 356, 359, 361, 362
 rRNA-based identity, 352
 RTSV, 296
 Rugulosin, 99
 Rugulosin, 380
 Russia, 5, 88
 Rust, 271, 275, 280, 303, 304, 306–311, 313, 315, 317
 Rust control, 303
 Rust diseases, 27, 37, 38
 Rust resistance, 323
 Rust sori, 310
 Rutaceae, 61
 Rye, 229
 Ryegrass, 376, 378

Salix gracilostyla var. *melanostachys*, 372
Samanea saman, 383
 Sampling, 333
 Sandwich hybridization, 338, 358
 Sanitary practices, 61, 71, 119, 128
 Sanitation, 225, 230
 Sap flow, 128
 SAR, 48, 219, 220
Sarcina lutea, 380
 Sardinia, 97, 98
Sarocladium oryzae, 294
 Saturated aminopyrrolizidine, 376
 Scab, 28, 29, 31, 32, 34, 36, 38, 39, 40
Scaphoideus titanus, 47, 50, 51
 SCAR loci, 349
Schizaphis graminum, 367, 377
Schizophyllum, 370
 Scilly Isles, 139
 Scion, 72, 77, 79
 Sclerenchyma, 292
 Sclerotia, 142, 245, 247, 249–251, 253–255, 261, 262, 280, 282, 292, 293, 295, 297, 298
 Sclerotinia diseases, 249, 252–255
Sclerotinia minor, 250
 Sclerotinia rot, 243, 244, 247
Sclerotinia sclerotiorum, 243–247, 249, 250–261, 263, 334, 346
 Sclerotinia stem rot, 251, 253, 254
 Sclerotinia, 250, 252
Sclerotium bataticola, 280
Sclerotium oryzae, 295
Sclerotium rolfsii, 275
 Scorpions, 346
 Screening, 15, 21
 Scrophulariaceae, 374
Scytalidium uredinicola, 310, 311
 SDS-PAGE fractionated proteins, 342
 Secondary infections, 183
 Secondary inoculum, 197
 Secondary metabolites, 45, 48, 382, 383
 Seed fermentation, 202
 Seed infection, 191, 196, 204, 206
 Seed production, 191, 195–197, 199, 203, 204
 Seed, 191–193, 195–204, 206, 211, 213, 216, 219
 Seedlings, 192–194, 196, 197, 199–201, 205, 277, 278, s280, 282, 288–290, 291, 292, 294
 Seeding rate, 293
 Seedling blight, 192
 Seedling diseases, 271, 298
 Seedlots, 196, 200, 202, 204

- Seeds, 191, 192, 195–204, 206, 245
 Selection pressure, 322
 Selection, 3, 5, 14
 Selective substrates, 71
 Senescing leaves, 246, 248, 252, 263
 Sensitivity analysis, 161
 Sepals, 28
Septoria musiva, 338, 357
Septoria populi, 338, 357
Septoria populicola, 338, 357
 Sequence polymorphism, 342
 Sequence similarities, 351
 Sequence tagged site (STS), 350
 Sequencing methods, 349, 350
 Serbia, 49, 50
 Serial Analysis of Gene Expression (SAGE), 349, 358
Sesbania, 293
 Sesquiterpene, 365, 379
Setaria viridis, 52
 Sexual recombination, 318
 Sexual reproduction, 182
 Sheath blight, 271, 272, 286, 292, 293
 Sheath rot, 271, 272, 294
 Shoot blight, 34, 35
 Shoots, 108, 109
 Sicily, 97
 Signal molecules, 45
 Silica, 287, 289
 Silver-enhanced gold nanoparticles, 354
 Simulated experimentation, 162
 Simulation models, 161, 168, 173
 Simulation, 161, 162, 166, 168, 169, 171–177
 Simulator, 162, 163, 167, 168, 170, 171, 172, 174
 Single nucleotide polymorphism, 341, 352
 Single-strand conformation polymorphism (SSCP), 341
 16S-23S intergenic spacer region, 46
 Skirin, 99
 Slovakia, 88, 96, 97
 Slovenija, 49
 Smut, 381
 SNP, 341, 343, 344, 346
 SNP mapping, 343
 Sodium arsenite, 119, 131, 132
 Sodium azide, 151
 Sodium dimethyl dithio carbamate, 283
 Sodium hypochlorite, 202
 Sodium orthophenylphenate, 260
 Soil, 137, 140, 141, 143–153
 Soil aeration, 67
 Soil borne inoculum, 283
 Soil borne pathogen, 137, 140
 Soil condition, 105
 Soil fumigation, 151
 Soil inoculum, 225, 228
 Soil management, 61, 71, 74
 Soil microbial profile, 254
 Soil microflora, 106
 Soil microorganisms, 152, 348
 Soil pH, 13, 145, 146
 Soil preparation, 61, 71, 74
 Soil resident diseases, 298
 Soil solarization, 152, 156, 382
 Soil temperature, 105, 282, 284
 Soil water status, 76
 Soilborne pathogens, 147, 150, 151, 156
 Soil-borne pathogens, 230, 234
Solanum bulbucastanum, 174
Solanum nigrum, 52, 216
 Solar radiation, 182, 229, 230
 Solarization, 225, 230, 234, 250, 282, 284, 293, 298
 Solarized soil, 230
 Sooty blotch, 27, 28, 31, 39, 40
Sorbus, 28
 Sordariomycetes, 138
 Sori, 306, 310
 South Africa, 64, 119, 121, 123, 127, 130, 131
 South America, 123, 130, 216
 South Carolina, 7, 9, 192, 195
 Southern hybridization, 46

- Soviet Union, 3
Soybean, 229, 245, 250, 251, 253, 254
Spain, 49, 51, 54, 55, 63, 64, 87–89,
96–98, 111, 139, 146, 148, 149,
152, 156
Spatial pattern, 70
Specialization, 228
Specificity, 201
Sphaceloma, 370
Sphaerellopsis philum, 310
Sphaerotheca pannosa, 4, 16
Spodoptera frugiperda, 367,
376, 383
Sporangia, 65, 66, 68, 74, 166
Sporangiophores, 183
Spore germination, 162, 168
Spore masses, 38
Spore production, 310
Spore, 5, 8, 19, 29, 37, 38, 40, 162,
168, 181, 183, 307, 309, 311, 312,
316, 317, 318, 322
Sporogenous structures, 340
Sporulation, 11, 16, 17, 33, 77, 88,
162, 164–166, 172, 174, 277,
279, 284
Spots, 213, 218
Spraying programs, 179
Sprouting, 152
Sprouts, 87, 88, 90, 91, 97–99, 103,
104, 108
Spruce budworm cell line CF-1, 376
Spruce budworm, 383
Squash, 192, 193
SRC, 244, 246–256, 258
5S rRNA, 337
SSCP, 341, 342, 349, 353, 356, 360
ssDNA fragments, 341
Stagonospora nodorum, 334,
346, 357
Staphylococcus aureus, 354, 380
Starch accumulation, 44
Stargrass, 382
Steam disinfection, 261
Steam, 151, 250, 258, 261, 263
Stem, 90, 91, 93, 94, 104, 271–273,
275, 276, 278–282, 284, 295,
376, 382
Stem canker, 271, 273
Stem lesions, 278
Stem rot, 271–273
Stem sawfly, 382
Stemphylium botryosum, 371
Stereum hirsutum, 119, 130
Steroid, 373
Stomata, 127, 196, 197, 216
Stone fruit crops, 3, 9, 10
Stone fruit diseases, 3, 5, 11, 20
Storage rots, 258
Storage, 3, 19, 243–245, 247, 249,
252, 253, 255, 258–260, 262
STR, 341, 342, 352–354
STR genotyping, 341, 354
Strains, 45, 46, 48, 51, 53, 54, 182
Strand displacement amplification
(SDA), 351
Strawberry, 234
Streptomyces, 236, 378
Streptomyces canescens, 236
Streptomyces citreofluorescens, 236
Streptomyces griseoviridis, 236
Streptomyces plicatus, 236
Streptomyces pulcher, 236
Streptomycin sulfate, 36, 148, 276
Streptomycin, 34, 36, 204, 217
Stress factors, 12, 382
Stress, 9, 45
Strobilurin, 9, 10, 18, 30, 31, 34, 235
Stromata, 91–93, 102, 142
Stumps, 88, 90, 91, 104, 109
Suberin, 7, 16, 21
Subiculum, 142
Sucrose glucose ratios, 252
Sucrose, 219, 220
Sugar beet, 229
Sugarcane, 273
Sulfonamides, 320
Sulfur, 17, 29
Suppression, 243, 253, 255, 258, 259

- Suppressive mechanisms, 314
 Suppressiveness, 152
 Surface wetness, 248
 Surface-like receptors, 232
 Surgery, 61, 71
 Susceptible tissues, 246, 255
 Sustainability, 87
 Sustainable management, 243
 Sweden, 187
 Sweet cherries, 6, 8, 20, 149
 Sweet clover, 229
 Sweet orange, 68, 72, 78, 80
 Sweet potato, 283
 Switzerland, 88, 96, 98, 99, 112,
 165, 318
 Symbiosis, 305, 348, 359
 symptom, 27, 28, 33, 34, 37–39, 43,
 44, 46, 48, 49, 51, 53–56, 62, 67,
 68, 72, 74, 79, 119–124, 126, 128,
 149, 192, 194, 196–198, 200, 213,
 218, 226, 228, 230–232, 235, 271,
 272, 276, 277, 280, 281, 283, 284,
 289, 291–295, 297, 334, 367
 Symptomatic plants, 129
 Synnemata, 142, 143
 Synthetic fungicides, 29
 Systemic acquired resistance, 48,
 211, 219
 Systemic compounds, 168
 Systemic fungicide, 61, 74,
 77–79, 321
 Systemic infection, 290

 T7 polymerase RNA
 amplification, 339
 Taiwan, 143, 195
Talaromyces flavus, 230
Talaromyces, 236
 Tall fescue, 367, 376
 Tannase, 99
Taphrina deformans, 4
Taphrina pruni, 4
Taxus mairei, 375, 386
 Tea, 138, 139, 382

 Teak, 383
 Tebuconazole, 10, 278
Tectona grandis, 383
 Telial horns, 37
 TEM, 43, 44, 46
 Temperature, 5, 7, 11, 17–19, 64–68,
 70, 105, 122, 130, 140, 145, 152,
 183, 185, 191, 229, 230, 233, 244,
 248–250, 256, 258, 259, 262, 263,
 277–278, 281–284, 286–288, 291,
 293–295, 297
 Template DNA, 201
Terminalia arjuna, 371, 386
Terminalia morobensis, 376
 Terpenoid, 373–374
 Texas, 195
 Text messaging, 179
 Thai medicinal plant, 371, 387
 Thailand, 64, 139, 216
Thanatephorus cucumeris, 282, 292
 Thaumatin-like proteins, 253
Theobroma gileri, 382
 Thermal PCR cycling, 354
 Thermal programmed capillary
 electrophoresis (TP-CE), 353
 Thiabendazole, 234, 235
 Thiophanate-methyl, 11, 234,
 255, 294
 Thiram, 10
 Thrips, 281
 Thymol, 8, 20
Thymus mastichina, 231
 Thysanoptera, 281
 Tiger stripes, 283
 Tillage, 225, 228, 230, 245, 251, 262
 Tillering, 288, 290, 292
 Tissues, 120, 121, 126
 Tobacco Streak Virus, 271, 281
Togninia minima, 121
 Tolerance, 232
 Tomato, 161, 162, 177, 211, 225,
 283, 359
 Tomato bacterial diseases, 213
 Tomato big bud, 49

- Tomato production, 212
 Tomato ringspot virus, 4
 Topoisomerase II, 338, 358
Torreya grandis, 375, 386
Torula, 89
 Total RNA, 339
 Toxins, 312
 Tracheomycosis, 120, 126–128, 133
 Tracheomycotic fungi, 119, 120, 127, 128
 Transcriptomes, 348, 357, 361
 Transmission Electron Microscopy, 43
 Transmission, 47, 51–53, 56, 85, 100–102, 200, 202, 203
 Transmission rates, 100
 Transovarial transmission, 47
 Transpiration, 127, 304
 Transplant, 191, 193, 196, 199, 200, 202, 204, 206
 Transplanting, 94
Tranzschelia pruni-spinosae, 307
 Tree species, 309, 316, 319, 323
 Tree, 316
Trematosphaeria, 369
 Triademefon, 29
Trichoderma atroviride, 8
Trichoderma harzianum, 106, 153, 236, 282, 283, 293
Trichoderma koningii, 236, 254
Trichoderma reesei, 334
Trichoderma viride, 8, 106, 236, 282, 283
Trichoderma, 106, 131, 150, 153, 230, 236, 253, 254, 278, 290, 291, 293, 295, 312
 Tricyclazole, 289
 Triflumazole, 10
 Trifluralin, 235
 Triforine, 10, 321
 Trimming, 251
Tripterygium wilfordii, 376, 378
Triticum aestivum, 369, 385
 Tropical tree, 3
 Trunk, 61, 62, 65–67, 72, 74–78, 80
 Trunk gummosis, 61, 62
 Tryfloxystrobin, 10
 Tuber(s), 151
 Tuber infection, 179, 180
Tuberculina costaricana, 307
Tuberculina maxima, 307
Tuberculina persicina, 307
Tuberculina sbrozii, 307
 Tuberculina, 306, 307
 Tungro Virus, 271, 295
 Tunisia, 227
 Turgor, 284
 Turkey, 64, 88, 96, 195
 Tuscany, 97, 99, 101, 319
 Twigs, 8, 13, 15, 61, 62, 66–68, 77, 78, 148
 Twig dieback, 62
 Tyloses, 226
 Udine, 87
 UK, 139, 251, 255
Ulocladium alternariae, 371
Uncinula, 370
 United States, 3, 4, 6, 7, 9, 20, 38, 62, 96, 149
 Urea, 284, 289
 Uredia, 280
 Urediniomycetes, 304, 306, 310, 315, 320
Uredo cyclotrauma, 309
Uromyces dianthi, 308
Uromyces, 307–309, 319
Urtica dioica, 52
 USA, 119, 123, 161, 165, 166, 191–193, 195, 196, 206, 211, 217, 228, 318, 319, 323, 337, 357, 358, 360, 361
Ustilago maydis, 334
 Validation, 333
 Vascular browning, 226
 Vascular pathogens, 119

- Vascular tissues, 283
 v-c groups, 100–102
 v-c loci, 100
 Ve gene, 227, 232
 Vectors, 45, 47, 49, 51–53, 55, 56
 Vegetables, 273
 Vegetative hyphae, 282
 Vegetative propagation, 43, 47
 Veins, 49
Venturia inaequalis, 28
 Vertical cordon, 132
 Verticillium, 371
Verticillium albo-atrum, 225, 228, 229, 232, 233, 236
Verticillium album-minimum, 307
Verticillium coccorum, 307, 308
Verticillium compactiusculum, 307
Verticillium dahliae race, 2, 227
Verticillium dahliae, 225–236, 275, 283
Verticillium hemileiae, 308
Verticillium lecanii, 308
Verticillium malthousei, 308
 Verticillium wilt, 4, 225, 227, 228, 230, 376
Verticillium, 225–228, 230–236, 271, 275, 283, 307
 Verticillium-free soil, 230
 Vf cluster, 32
 Vf gene, 31
Vigna aconitifolia, 282
Vinca major, 307
Vincetoxicum hirundinaria, 317
 Vinclozolin, 255
 Vine decline, 120
 Vine diseases, 132
 Vine yield, 119
 Virginia, 96, 99, 102
 Viroids, 346, 361
 Virulence, 88, 91, 100, 102, 139, 146, 153, 304, 310, 314, 335, 367, 382
 Viruses, 336, 346, 351, 356
 Volatile organic compounds, 381
 Volatile substances, 152
 Wageningen, 179
 Walnut, 94, 95, 112
 Washington, 15, 18, 251
 Water capacity, 145
 Water management, 289
 Water mold, 381
 Watermelon, 191–198, 202–206
 Waxes, 11, 109, 110
 Weather data, 179, 181
 Weather forecast, 29, 179–181, 186
 Weather stations, 179
 Weather, 161–163, 167–169, 172–174, 211, 213, 216–218, 252, 272, 276–278, 287, 289, 291–293, 298, 317
 Weed control, 225, 231
 Weed seeds, 230, 234
 Weed species, 231
 Weed, 43, 52, 56, 61, 71, 76, 137, 138, 143, 145, 149, 150, 152, 195, 197
 WGS analysis, 350
 Wheat, 250, 343, 345, 357, 358, 363, 376, 378, 382
 White mold, 253
 White root rot, 137–139, 141, 142, 146, 148–150, 152
 White swallow wort, 317, 319
 Whole genome shotgun sequencing (WGS), 351
 Wild apples, 28
 Wild bur gherkin, 195
 Wild relatives, 322
 Wilting, 91, 108, 119, 127
 Wind speed, 186
 Wisconsin, 227
 Witches' broom, 53, 90
 Witches' brooming, 44
 Wood pulping process, 218
 Wood, 119–128, 130, 132
 Wood-rotting fungi, 348
 Woody plants, 52, 378
 Wound response, 16
 Wounding, 8, 94

- Wounds, 13, 15, 20, 119, 125,
127–129, 132
- Xanthomonad races, 216
- Xanthomonads, 214, 215, 217
- Xanthomonas axonopodis* pv.
vesicatoria, 214
- Xanthomonas campestris* f. sp.
malvacearum, 275, 285
- Xanthomonas campestris* pv.
malvacearum, 276
- Xanthomonas campestris* pv.
oryzae, 291
- Xanthomonas campestris* pv. *pruni*, 4
- Xanthomonas campestris* pv.
vesicatoria, 214, 216, 219
- Xanthomonas malvacearum*, 276
- Xanthomonas oryzae* pv. *oryzae*,
290, 291
- Xanthomonas oryzae* pv.
oryzicola, 291
- Xanthomonas perforans*, 212, 215
- Xanthomonas vesicatoria*, 212, 215
- Xanthomonas*, 212–215
- X-disease, 4
- Xylaria*, 367, 382
- Xylariaceae, 138, 367
- Xylariomycetidae, 138
- Xylem vessels, 283–285
- Xylem, 120, 121, 226
- Yeast genes, 347
- Yeast, 339
- Yellowing, 140
- Yugoslavia, 88
- Zambia, 205
- Zea mays*, 369, 373
- Zinc sulfate, 291
- Zinc-deficiency, 287
- Ziram, 10, 278, 279
- ZnSO₄, 282
- Zonation, 173
- Zoospores, 65, 66, 74, 75
- Zymomonas mobilis*, 342, 356