

SUBJECT INDEX

(unless species name stated otherwise, all index words apply to diamondback moth, *Plutella xylostella*)

- Abamectin 78, 384, 392, 438
 effect on parasites 309, 314, 315, 398
 effectiveness 383, 386, 394, 440
 resistance 391, 392, 394, 395, 421, 422, 437, 440
- AC30360 141, 143, 144, 145
- Acephate 86, 288, 334, 335, 384, 427, 428, 542
 effectiveness 338, 386, 430, 461
 toxicity 335, 337, 430, 431, 434
 toxicity to parasites 287, 289, 290, 292
- Action threshold 341, 493, 494, 532
 in New Zealand 345, 346, 347, 348, 349
 in Thailand 523, 524, 525, 552, 553, 554, 555, 556
 in USA 503, 504
- Adjuvant 141, 142, 143, 144, 159
- Adoxophyes orana* 317
- Adoxophyes* sp. 122
- Adult, longevity 22, 93, 274
- Agrotis ipsilon* 221, 530
- Agrotis* sp. 213, 214
- Aldrin 493
- Allagrapta* sp. 55
- Allium fistulosum* 115
- Alternate hosts 273, 494
- Altrionetus* sp. 83
- Anthocoridae 32
- Anthophila fabriciana* 228
- Antifeedant 531
- Apanteles fuliginosus* 204, 205, 207, 208
- Apanteles glomeratus* 343, 345
- Apanteles ippeus* 230
- Apanteles plutellae* (see *Cotesia plutellae*)
- Apanteles rubecula* 204, 205, 207, 208
- Apanteles ruficrus* 204, 205, 207, 208
- Apanteles* sp. 216, 220
- Apanteles taragamae* 290
- Apenesia* sp. 489
- Aphagnomus fijiensis* 240
- Aphanogmus (Ceraphron) fijiensis* 231, 233, 239, 241, 242, 272
- Aphidius* sp. 559
- Aphids 36, 553, 559
- Artogeia rapae* 51, 53, 54, 427, 450, 503, 504, 506, 507
- Asana-XL 28
- Ascia manuste* 235
- Ascotis selenaria* 161
- Aulacohora foveicollis* 543
- Autographa californica* NPV 185, 186, 187, 188
- Autographa nigrisigna* 95
- Avermectin (see abamectin)
- Azadirachta indica* (see neem)
- Azadirachtin 325, 326, 330
- Azinphosmethyl 420
- Bacilex (see *Bt*)
- Bacillus thuringiensis* (see *Bt*)
- Bactospeine (see *Bt*) 466
- Baculoviruses 185, 186
- Bassus* sp. 79
- Beauveria bassiana* 233, 238, 239, 240, 242, 569
- Belmark 234
- Belonuchus gagates* 233, 239
- Bendiocarb 272, 333, 334, 336, 337, 384
- Benfuracarb
 effect on parasites 309, 314, 315
 effect on spiders 333, 336, 338
 effectiveness 333, 336, 338, 461
 systemic action 334, 336, 338
 toxicity 334, 335, 337
 use in IPM 333, 339
- Benzoylphenylurea 393, 394, 403, 470
 resistance 387, 392, 393, 404, 469
 cross-resistance 385, 387, 391, 398, 420, 421
 genetics 387, 389, 466, 470
 in Japan 403, 460
 in Malaysia 391, 395, 441
 in Taiwan 403
 in Thailand 403, 453
 mechanism 389, 391, 394, 421, 465, 466, 469
 selection 391, 393
 stability 395, 466, 467
 selectivity 91, 398
- BHC, residue, in Honduras 493
- Bifenthrin 140, 145
- Biocenotic affinity 207
- Biocontrol 305, 567
 in Australia 215, 531
 in Cape Verde Islands 245, 567
 in Malaysia 441
 in Hawaii 216
 in Zambia 567
 inundative release 303, 305
 in Caribbean 234
 in Indonesia 531

- in Malaysia 529
 - in New Zealand 531
 - in South Africa 531
 - in the Pacific 219, 221
- Bioencapsulation 129
- Biology 273, 274
 - temperature effect 15, 21, 22, 24
- Biotrol (see *Bt*)
- Black light trap 52, 273
- Bombyx mori* 158
- Botanicals 491
- Braconidae 231
- Brachygastra mellifica* 489
- Brachymeria apantelesi* 561
- Brachymeria boranensis* 217, 218
- Brachymeria excarinata* 551, 560, 561, 562
- Brachymeria lasus* 551
- Brachymeria phya* 218
- Brachymeria sp.* 218, 220, 231
- Bracon sp.* 231
- Bravo 142, 143
- Brevicoryne brassicae* 96, 503, 504
 - chemical control 511, 517, 518
 - host-plant, resistance 57, 60, 61, 62
 - occurrence, in Australia 215
 - occurrence, in Jamaica 235
 - occurrence in Taiwan 263
 - trap crop 511, 516, 517, 518, 519
- Brevicoryne rapae* 55
- Bt* (*Bacillus thuringiensis*) 28, 31, 86, 288, 404, 428, 429, 438, 444, 542
 - application strategy 149, 282
 - bioassay 132, 157
 - cost effectiveness 355, 356
 - cross-resistance 407
 - crystal protein 157
 - culture, medium 160
 - cypermethrin mixture 491
 - dead-spore, bioassay 159
 - dead-spore, resistance 165
 - effectiveness 159, 160, 161, 162
 - evaluation 159, 160
 - formulation 157, 165
 - preparation 157, 158, 159, 161
 - UV effect 160, 162, 163, 164
 - degradation 129
 - delta endotoxin 129, 130, 131, 133, 134, 141, 181
 - effect on natural enemies 135, 136, 175, 263, 268, 284, 287, 289, 290, 314, 568
 - effectiveness 30, 32, 75, 132, 133, 134, 139, 141, 141, 143, 144, 146, 327, 352, 432, 433
 - C. binotalis* 85
 - H. undalis* 79
 - in Cook Islands 216
 - in Honduras 489, 490, 491, 492
 - in Philippines 271, 331
 - in Taiwan 465, 466
 - in Thailand 383, 523, 554, 556
 - in Togo 328
 - in USA 147, 150, 151, 153, 154, 351, 354, 355, 356, 357, 358, 427, 499, 503, 505, 508
 - fermentation 160
 - half-life 130
 - in IPM 148, 280, 524
 - mevinphos combination 149, 526
 - neem combination 328, 329, 331
 - persistence 129, 130, 133
 - profenofos mixture 491
 - recommendations in Fiji 216
 - in Honduras 492
 - in Philippines 279
 - in Tonga 219
 - in USA 504, 505
 - resistance 27, 383, 392
 - bioassay 166, 176, 177, 404
 - characteristics 175, 180, 411
 - genetics 364, 366, 459
 - in Japan 165, 167, 168, 363, 364, 366, 455, 459
 - in Malaysia 437
 - in Philippines 329
 - in Thailand 386, 523
 - in USA 147, 154, 175, 419, 447, 452, 453, 508
 - magnitude 175, 177, 178, 181
 - management 181, 508
 - mechanism 424
 - reversion 175, 178, 179, 180, 181
 - selection 178, 179, 180, 455, 459
 - stability 455, 460
 - strain differences 437, 441
 - survey 176, 177
 - selectivity 568
 - sporulation 157
 - strains 441
 - teflubenzuron combination 147, 149, 150, 154
 - threshold based application 354, 355, 525
 - transconjugated strain 149
 - use, in Australia 215
 - in IPM 135, 331, 351, 398, 487, 523, 525, 532, 571
 - in Malaysia 185, 255, 258, 260, 439, 440, 441
 - in New Zealand 215
 - in Taiwan 264, 567

- in Thailand 384, 553, 558
 - in USA 351, 358, 503
- UV degradation 129, 130, 132, 134
- Cabbage looper equivalent 346, 347
- Cabbage looper (see *Trichoplusia ni*)
- Cabbage webworm (see *Hellula undalis*)
- Cadra cautella* 121, 122
- Calosoma sayi* 32
- Capitarsia* sp. 55
- Capsella bursa-pastoris* 15, 21, 22, 23, 24
- Captan 493
- Carbamate, resistance 386, 411, 421, 455, 465, 487
- Carbaryl 234, 461, 517, 547
 - resistance 342, 412, 437, 444
 - mechanism 469, 470
- Carbofuran 288, 384, 461, 553
 - resistance 369, 378, 386
 - mechanism 406, 465, 468, 469, 470, 473
 - toxicity to parasites 287, 289, 292, 293, 294
- Carboxylesterase 369
- Cardenolides 67
- Cartap 103, 288, 384, 547
 - effectiveness 168, 511
 - resistance 386, 437, 455, 459, 469, 470
 - toxicity to parasites 168, 285, 287, 289, 290, 292, 293, 294
 - use, in india 512, 513, 516, 517, 518
- Catolaccas* sp. 233, 239, 241, 242
- Cellcap 129
- Ceraeochrysa claveri* 233, 239
- Ceraphron fijiensis* 231
- Ceraphron* sp. 231, 489
- Ceraphronoidea* 231
- Chalcidoidea* 231
- Charistoneura funiferana* 303
- Chelonus blackburni* 216, 218, 548
- Chelonus* sp. 220, 231
- Chelonus tabonus* 83
- Chemical control 91, 447, 511, 570
 - cost effectiveness 351, 355, 356, 530, 554
 - drawbacks 91
 - effect on parasites 542
 - in Australia 215
 - in Malaysia 530
 - in New Zealand 341, 342
 - in Philippines 329
 - in Taiwan 264
 - in USA 352, 357, 358
 - insecticide mixtures 432
 - insecticide selectivity 221
 - side effect 542
- Chitin synthesis inhibitors (see benzoylphenylurea)
- Chlordane 492, 493
- Chlorfluazuron 78, 86, 103, 216, 288, 333, 335, 384, 392, 404, 438
 - effectiveness 96, 420, 492
 - resistance 385, 387, 391, 394, 395
 - cross-resistance 396, 403, 407
 - genetics 403, 408
 - in Japan 388, 389
 - in Malaysia 437, 439, 440
 - in Taiwan 466
 - in Thailand 383
 - reversion 403, 405, 406, 407
 - selection 403, 405, 406
 - stability 467
 - synergism 387, 396, 397, 398, 466
 - toxicity to parasites 287, 289, 290, 292, 309
- Chloropicrin 148
- Chlorothalonil 142
- Chlorpyrifos 427, 428, 429, 430
 - effectiveness 143, 427, 430, 432, 433, 434
 - toxicity 430, 431, 434
- Chlorpyrifos-methyl 437
- Chrysodeixis chalcites* 543, 545, 548
- Chrysopidae 32
- Clean cultivation 277
- Coccinella septempunctata* 32
- Coccygomimus puniceipes* 489
- Coleomegilla maculata* 32, 233, 239
- Common cabbage worm 335, 338
- Copper oxchloride 285
- Coryca cephalonica* 298, 310, 314, 318, 319
- Cotesia plutellae* 27, 28, 186, 343, 542
 - biotype 280
 - Bt effect 284
 - establishment, in Caribbean 240, 241
 - in Fiji 216
 - in Hawaii 218
 - in Jamaica 233
 - fungicide effect 285
 - fungus pathogen 280, 285
 - generation duration 259
 - host population dependence 561
 - host range 79, 221
 - host-specificity 230
 - host-stage preference 247
 - hyperparasites 231, 240, 241, 272, 279
 - in Caribbean 241, 242
 - in Philippines 271, 276, 280, 285

- in Thailand 561
 - insecticide, effect 287, 554
 - toxicity 289, 290, 291, 292, 293, 294, 295, 531
 - introducion, in Fiji 216, 217
 - in Guam 216, 217, 548
 - in Hawaii 217, 218
 - in Honduras 490
 - in Indonesia 567
 - in Jamaica 233, 242
 - in Malaysia 532
 - in Papua New Guinea 216, 218
 - in Philippines 281
 - occurrence, in Cook Islands 216
 - in Malaysia 255, 256, 529, 531
 - in Philippines 271, 279, 280
 - in Taiwan 265, 567
 - in Thailand 309, 551
 - in the Pacific 213, 215
 - parasitism 221, 247, 258, 259, 280, 285
 - characteristic 268
 - constraints 284
 - Hellula undalis* 79
 - in Cape Verde Island 567
 - in Fiji 216
 - in Hawaii 218
 - in Jamaica 233
 - in Japan 15, 16
 - in Malaysia 256, 260, 531, 532
 - in Philippines 272, 283, 284
 - in Taiwan 266
 - in Thailand 309, 556, 560, 561, 562
 - in Zambia 567
 - sampling 282
 - seasonality 218, 268, 312
 - rearing 280, 281
 - role in IPM 256
 - taxonomy 225
 - trap crop effect 519
- Cotesia ruficrus* 230
- Cotesia* sp. 233, 235, 236, 238
- Cotesia*, taxonomy 230
- Cotesia variventris* 542, 548
- Cotesia vestalis* 230
- Crocidolomia binotalis* 186, 530
 - adult emergence 82
 - biocontrol 86
 - biology 81, 83
 - Bt effect 85
 - chemical control 85, 86
 - damage 81, 82,
 - distribution 84, 85
 - egg stage 82, 83
 - generations 84
 - hosts 82
 - in Philippines 279
 - IPM 81, 86
 - larval instar 81, 82, 83
 - larval period 83
 - life cycle 83
 - natural enemies 83
 - oviposition 83, 512
 - parasites 81, 83, 84
 - pathogens 84
 - predators 84
 - pupal stage 81, 82, 83
 - rainfall effect 81
 - seasonality 81, 84
 - temperature effect 81
 - threshold 81
 - trap crop 511, 516, 517, 517, 518, 519
 - virus infection 187, 190, 191
- Crocidolomia pavonana*, chemical control 219, 542
- Crocidolomia pavonana*, distribution 542
- Crocidolomia pavonana*, host preference 542, 545, 546
- Crocidolomia pavonana*, natural enemies 220
- Crocidolomia pavonana*, occurrence, in Guam 541
 - in the Pacific 213, 214, 215, 219
- Crocidolomia pavonana*, parasites 216, 221
- Crocidolomia pavonana*, trap crop effect 541, 548
- Crocidolomia* sp., parasites 220
- Crocidolomia*, trap cropping 221
- Crop rotation 569
- Crucifer, cultivation, in Georgia, USA 499
 - in New Zealand 341
- insect pests, in Guam 541
 - in Jamaica 235
 - in Japan 542
 - in Malaysia 530
 - in Taiwan 263
 - in USA 503
- production, in Honduras 487, 488
 - in Thailand 551
 - in Jamaica 233
 - in Malaysia 529
 - in Philippines 271, 279
 - value in USA 147
- Cultural control 264, 277, 511, 512, 569
 - in Honduras 494
 - in Malaysia 531
 - trap cropping 548
- Cutlass (see Bt)
- Cyanofenphos 456
- Cyanophos 407, 457
- Cyclodiene 407
- Cycloneda sanguinea* 233, 239
- Cycloprothrin 309, 523
- Cydia pomonella* 317
- Cyfluthrin 492
- Cyhalothrin 78, 140, 145, 314, , 523

- Cypermethrin 78, 86, 384, 428, 429, 430, 434, 438, 491, 517, 542
 control failure 432
 effectiveness 96, 427, 433, 492
 residue 492, 493
 resistance 437, 439, 440, 487, 488, 523
- Cytochrom P₄₅₀, 398, 411, 414, 420
- Dactylis glomerata* 47
- Damage, assessment 347
 causes 480, 481, 500
 economic impact 353
 in Caribbean 233
 in Jamaica 235
 in Malaysia 529
 in USA 451
 plant age effect 203
 threshold, in Costa Rica 494
 yield loss, in USA 358
- Day degrees 274
- DDT 234, 384, 493
 residue, in Honduras 493
 in Malaysia 437
 kdr factor 412
 mechanism 444
 reversion 407
- DEF 397
- Delfin 525
- Delia radicum* 503
- Deltamethrin 78, 86, 234, 288
 effectiveness 327
 resistance 439
 toxicity to parasites 268, 287, 289, 290, 294
 use, in Honduras 491
 use, in Malaysia 439
 use in Philippines 272
- Diadegma armillata* 204, 206
 in Romania 204, 205, 207, 208, 209, 210
- Diadegma*, biology 227
- Diadegma cerophaga* 204, 205, 206, 207, 227
- Diadegma chrysosticta* 204, 205, 206, 207, 208, 209, 210
- Diadegma chrysostictos* 225, 228
- Diadegma congregator* 226
- Diadegma*, diapause 228
- Diadegma eucerophaga* (see *Diadegma semiclausum*)
- Diadegma fabricianae* 228
- Diadegma fenestrata* 226, 228, 229
- Diadegma fenestralis* 204, 205, 206, 207, 208, 209, 210
- Diadegma*, food source 228
- Diadegma gibbula* 204, 205, 207, 208
- Diadegma gracilis* 204, 205, 207, 208, 226
- Diadegma hibialis* 227
- Diadegma hellulae* 226
- Diadegma holopyga*, in Romania 204, 205, 207, 208
- Diadegma*, host range 228
- Diadegma insulare* 489, 542
 effectiveness 221
 hyperparasite 233
 insecticide effect 31, 489
 introduction, in Canada 247
 in Caribbean 241
 in Guam 216, 217, 548
 in Hawaii 217, 218
 in Honduras 487
 in Jamaica 233, 237, 239
 in the Pacific 215
 overwintering 228
 parasitism 33, 248
 in Hawaii 218
 in Honduras 249, 250, 489
 in Jamaica 236, 237
 in Mexico 55
 in USA 27, 30
 taxonomy 226
- Diadegma*, interbreeding 228, 229
- Diadegma interrupta* 204, 205, 207, 208
- Diadegma lateralis* 227
- Diadegma leontinae* 227
- Diadegma*, migration 228
- Diadegma monospila* 204, 205, 207, 208
- Diadegma*, native species 226
- Diadegma*, overwintering 228, 229
- Diadegma plutellae* 226
- Diadegma polynesiensis* 226
- Diadegma pygmaeus* 226
- Diadegma rapi* 227
- Diadegma semiclausum* 27, 86, 135, 186, 227
 alternate hosts 266
 assessment, in Taiwan 264, 265, 267
 biology 272
 Bt effect 268
 distribution 227
 DNA studies 229
 effectiveness 221, 275, 343
 establishment, in Indonesia 242, 264, 567
 in Malaysia 257, 529, 532
 in New Zealand 215, 341, 343
 in Philippines 276
 in Taiwan 265, 267, 567
 generation duration 259
 host stage preference 246
 hyperparasites 276

- insecticide effect 263, 267, 268
 introduction, in Australia 264
 in Cook Islands 213, 215, 216, 217
 in Fiji 213, 217
 in Hawaii 217, 218
 in Indonesia 264, 567
 in Malaysia 255, 256, 532, 567
 in New Zealand 229, 264
 in Papua New Guinea 217
 in Philippines 271, 273, 276
 in South Africa 264
 in Taiwan 263, 264, 265
 occurrence, in Europe 264
 in Indonesia 81
 in the Pacific 215
 parasitism 258, 259, 268, 275
 in Malaysia 255, 260
 in New Zealand 345, 348
 in Philippines 271, 275, 277
 in Taiwan 264, 265, 266
 monitoring 276
 temperature effect 263
 yield response 275, 276
 rearing 264
 searching ability 260
 seasonality 268, 343, 344
 taxonomy 226, 227
 temperature effect 267, 559
Diadegma sp. 218, 220, 272
Diadegma, species 228
Diadegma subtilicornis 208
Diadegma taxonomy 225, 226
Diadegma tibialis 204, 205, 207, 208
Diadegma trochanterata 204, 205, 207, 208
Diadegma varuna 227
Diadegma vestigialis 204, 205, 206, 207, 208
Diadegma xylostellae 227
Diadromus cerophaga 208
Diadromus collaris 27, 204, 206, 230, 260, 542
 establishment, in Cook Islands 216
 in Malaysia 257, 529, 532, 567
 in New Zealand 215, 341, 343
 introduction, in Cook Islands 215, 217
 in Fiji 216, 217
 in Guam 216, 217, 548
 in Hawaii 217, 218
 in Honduras 490
 in Malaysia 255, 256, 532, 567
 occurrence in Romania 207, 208
 in Taiwan 266
 in Thailand 309, 551
 in the Pacific 215
 parasitism 221, 247
 in New Zealand 345
 in Thailand 560, 561, 562
 in Zambia 567
 seasonality 312, 343, 344, 561
Diadromus subtilicornis 15, 20, 204, 205, 206, 207, 230
Diadromus ustulatus 204, 205, 206, 207, 208
Diadromus vestigialis 204
 Diafenthuron 467
Diaphania hyalinata 238
Diatora sp. 272
 Diazinon 234, 384, 541, 547, 548
 resistance 342, 386, 407, 420, 468
Dibrachis cavus 205
 Dibrom 547
Dicaelotus parvulus 204, 205, 207, 208
 Dichlorvos 384, 386, 407, 437, 455, 511
 Dicofol 493
 Dieldrin 493
 Diflubenzuron 384, 392, 438
 effectiveness 141, 142
 resistance 385, 391, 394, 395, 396, 403
 in Malaysia 437, 439, 440
 in Taiwan 466
 in Thailand 383
 mechanism 389
 Dimethoate 78, 118
 Dimethylvinphos 384, 386, 457, 461
 Dipel (see *Bt*)
 Dipterex 234
 Diseases 17, 18, 19, 20
 Distribution 147
 in Caribbean 233
 in Jamaica 235
 in Japan 43
 in Romania 209, 210
 in the Pacific 213, 214
 spatial 168, 171
 Diuron 493
Dolichusha lensis 16
 Economic threshold, in Malaysia 529, 532
 in Philippines 279, 282
 in USA 351, 352
 Egg parasites, effectiveness 220, 320
 emergence ratio 320
 factitious hosts 298
 families 298
 host-preference 319
 in Thailand 309
 insecticide effect 309
 oviposition 318
 parasitism ability 323
 preference 317, 322

- rearing 297
- searching ability 323
- selection 298, 299, 317
- testing 317, 318, 319
- Egg parasitism 317, 322
- Eggs, attachment 20, 21, 23
 - distribution 20
 - fertility 526
 - incubation period 274
 - mortality 526
 - predation 29
 - sprinkler irrigation effect 20, 23
- Elasmus* sp. 231
- Endosulfan 52, 427, 428, 429, 493, 511
 - effectiveness 356, 358, 427, 430, 432, 433, 434
 - resistance 407, 431, 444
 - use, in India 513, 517, 518
- Endrin 493
- Entomopathogenic fungi 193, 194, 195
 - infection period 195, 196, 197
 - mass production 193
 - mode of action 193
 - survey 194, 195
- Entomophthora sphaerosperma* 28, 215
- Eperigone fradeorum* 32
- Ephestia kuehniella* 298
- EPN 115, 118, 386
- Epyris* sp. 489
- Eriborus* sp. 218
- Erynia radicans* 280, 285
- Erynia* sp. 279, 280
- Esfenvalerate 139, 140, 141, 142, 143, 144, 145, 146, 356, 505, 508
 - resistance 145, 342, 444
- Esterase isozyme 364, 366
- Esterase zymogram 363, 365
- Ethofenprox 78, 384
 - effect on parasites 309, 314, 315
 - resistance 386, 523
- Etrimfos 78
- Eupteromalus* sp. 204, 205
- Eurydema pulchrum* 559
- Evergenstis rumosalis* 235
- Exochus* sp. 220

- Fecundity 22, 37, 271, 275
- Feeding damage equivalent 346, 347
- Fenitrothion 384, 386
- Fenoxycarb 140, 145
- Fenvalerate 288, 333, 335, 384, 404, 542, 547
- Fenvalerate, control failure 428, 430
 - effect on parasites 309, 314, 315
 - effectiveness 118, 148
 - in Honduras 492
 - in Japan 457
 - in USA 150, 151, 427
 - recommendation, in Tonga 219
 - resistance 369, 378, 411, 412, 417, 470, 482
 - cross-resistance 407, 427, 432, 434, 482
 - development 427, 432, 434
 - distribution 428
 - genetics 411, 414, 415, 477, 478, 479, 480
 - in Japan 458
 - in Thailand 386, 523
 - in USA 427, 434
 - management 477
 - mechanism 411, 412, 413, 414, 417, 430, 432, 477
 - selection 406, 415, 416, 477, 478
 - stability 415, 416, 430
 - strain differences 430
 - temperature effect 416
 - synergism 411, 414
 - toxicity 335, 430, 431
 - to parasites 287, 290, 292
 - use, in Honduras 491
 - use, in India 517
 - use in Philippines 272
- Florbac (see *Bt*)
- Florinda coccinea* 32
- Flucycloxuron 139, 141, 142, 145
- Flufenoxuron 391, 392, 396
- Fluvalinate 289, 290, 292, 384
- Frankliniella fusca* 354
- Fungal pathogens 28, 185, 193, 233, 238, 239
- Fungicide 143, 285

- Galecron 234
- Galleria mellonella*, NPV 185, 186, 187, 188
- Gardona 234
- Generation, duration 271, 273, 274, 439, 440
- Generations, in caribbean 241
 - in Philippines 271, 273
 - in Romania 203
 - in Taiwan 422
 - in Thailand 309, 551
 - overlapping 247
- Geniocerus* sp. 205
- Geocoris punctipes* 32
- Geocoris uliginosus* 32
- Glutathione S-transferase 419, 420, 469, 473
- Glycosinolates 67
- Granulosis virus (see GV)
- Green peach aphid 335, 338
- GV 16, 28, 78, 185, 186, 187

- adjuvant effect 185, 188, 189, 190, 191
 bioassay 186, 187, 188, 190
 characterization 186, 190
 cross transmission 186, 187, 188
 effectiveness 188, 189, 191, 568
 in IPM 185, 191
 symptom 190
 UV effect 191
- Haltichella ornaticornis* 489
Halticus tibialis, damage in Guam 541, 543
 host preference 543, 544, 545, 546
 trap crop effect 541, 548
- Head capsule 274
- Helicoverpa armigera* 545, 551
 biocontrol 220
 chemical control 511, 517, 518
 occurrence, in Australia 215
 in Guam 541
 in New Zealand 343
 in Philippines 271
 in Thailand 558
 in the Pacific 213, 214
 parasites 542, 548
 resistance 423
- Heliothis virescens* 119, 443
Heliothis zea 298
- Hellula hydralis* 215
Hellula philidealis 330
Hellula rogatalis 213, 214, 220, 427, 450
Hellula sp. 219, 221
Hellula undalis 75, 530
 adult, morphology 76
 biocontrol 220
 biology 75, 76, 77
 Bt effectiveness 75, 78, 542
 chemical control 78, 79, 541, 545, 547, 551, 553, 556
 damage, characteristic 75, 76, 77, 79, 542, 543, 558
 diseases 79
 distribution 75, 542
 ecology 75, 76
 host-plants 75, 76
 host-preference 542, 543, 544, 545, 546
 insecticide resistance 79
 IPM, in Guam 548
 larval period 76
 natural enemies 75, 79, 218, 221, 226
 neem effectiveness 327, 328
 occurrence, in Guam 541, 542
 in Taiwan 263
 in the Pacific 213, 214
 oviposition 76, 77
 pupal period 76
 seasonality 75, 77, 542
 survival 76, 77
 trap crop 511, 516, 517, 541, 548
 virus infection 191
- Hemerobiidae 32
Hemiteles 230
 Heptachlor 493
 Hexaflumuron 384, 385, 391, 392
 resistance 383, 385, 389, 396
- Hibernation 43, 44, 45, 46, 48, 49, 364
 temperature effect, 43, 46
- High voltage electric shocker 165, 166, 169, 170
- Hippodamia convergens* 32, 239
Hirsutella sp. 233, 238, 239, 242
Homona magmanima 91, 93, 121, 122
Horismenus sp. 233, 239, 241, 242
 Host preference 348, 349, 543
 Host-plant resistance 59, 264, 530
 breeding 57, 71, 72
 genetics 57, 58, 61, 65, 66, 71, 72
 in Honduras 487, 594
 mechanism 57, 58, 60, 61, 62, 65, 569
 antibiosis 66, 67, 69
 plant morphology 66, 67, 68, 70, 71, 72
 screening 65
 source 57, 62
 variation 60
- Host-plant, specificity factors 569
 Host-plants, in Japan 15, 21, 23
 Humidity effect 24
 Hyperparasites 231, 344
 Cotesia plutellae 230, 231
 in Caribbean 231, 240, 241, 242
 in Honduras 489
 in Jamaica 233, 239
 in New Zealand 343, 344
 in Romania 203, 204, 205
- Hyposoter ebeninus*, in Romania 204, 205, 207, 208
- IIBC 245
 Imported cabbage worm 53
Inareolala argentiopilosa 81, 83, 84, 86
 Index of ecological significance 204, 206, 208
 Infestation, via seedling 503
 Information source 487, 542
 Insect growth regulator (see benzoylphenylurea)
 Insecticide resistance 129
 alternate control measures 454
 assay method 438
 bioassay 429, 445

- consequence, in USA 357
 cross resistance 385, 411, 467
 development 148, 430, 447
 distribution 147, 419, 447
 economic impact 185, 352, 356, 358, 447
 frequency of application 145
 genetics 147, 378, 383, 405, 470, 482
 in Belize 447, 453
 in Canada 447
 in Central America 487
 in Japan 99, 167, 363, 383
 in Malaysia 225, 437
 in Mexico 447
 in New Zealand 341
 in Philippines 279
 in Southeast Asia 392
 in Taiwan 263, 403, 465
 in Thailand 315, 383, 523
 in USA 139, 147, 351, 352, 443, 453, 499, 500, 503, 504
 isozyme monitoring 377, 379
 larval mortality 315
 management 146, 148, 154, 398, 419, 422, 424, 453, 465, 473
 benzoylphenylurea use 471
 Bt use 471, 472
 constraints 472
 development 473
 farmers' education 471, 472, 473, 501
 implementation 422, 505
 in USA 504, 508
 monitoring 470, 472
 mosaic sprays 470, 471
 natural enemies 471
 on-farm trials 472, 473
 recommendation 504
 research 473
 residue monitoring 472
 resistance monitoring 473
 rotation spray 461, 473, 477, 481
 selective insecticides 472, 481, 499
 spray intervals 482
 strategy 445, 472, 481
 timing 505
 use of synergists 471, 481
 mechanism 383, 419, 420, 444, 445, 465, 469
 methodology 405
 MFO involvement 468
 migration effect 453
 monitoring 379, 437, 443, 444, 447, 448, 482
 reproduction ability 482
 reversion 407
 rotation sprays 154, 470
 source, in USA 504
 spread in USA 358
 use of zymogram 369
 yield loss 154, 358
 Insecticides, application technique 150, 499, 500
 application timing 492
 effect on egg parasites 314, 315
 effect on parasites 206, 210, 220, 241, 245, 246, 272, 280, 283, 287, 309, 310, 548
 effectiveness 130, 150, 500
 evaluation 140, 144, 149, 264, 429, 505
 mixture, effectiveness 461, 499, 500
 recommendations, in Jamaica 234
 residue, in Honduras 492, 493
 selectivity 315
 side effects 503
 supervised sprays 493
 use, in Costa Rica 491
 in Honduras 493
 in Malaysia 255
 in New Zealand 342, 345
 in Philippines 272, 280
 in USA 499, 503
 Integrated pest management (see IPM)
 Intercropping 219, 264, 494, 569
 International Institute of Biological Control (see IIBC)
 Inundative parasite release 297
 IPM (Integrated Pest Management)
 action threshold 524, 532
 adaption 574
 adoption, in Malaysia 529, 536, 537
 agrochemical influence 537
 Bt use 135, 571
 components 172, 221, 566, 571, 574
 in Honduras 487
 in Japan 91, 339
 in Malaysia 529, 532, 535, 537
 in Thailand 524, 527
 constraints 527, 552, 565, 571
 cost effectiveness 172, 351, 353, 529, 554
 decision making 535
 demonstration 532, 535, 573, 574
 development 530, 571
 effect on insecticide use 492
 feasibility 574
 impact, in Malaysia 536
 implementation 533, 571
 in Honduras 218, 488, 495
 in Indonesia 572

- in Malaysia 530, 533, 572
 - in Taiwan 572
 - in Thailand 572
 - in USA 218, 503, 506, 507, 573
 - in Vietnam 572
- insecticide residue 529
- insecticide selectivity 294
- need, in Japan 462
- network, in Malaysia 536
- profitability, in Malaysia 533, 534
- promotion, in Malaysia 529, 565
- research, in Malaysia 535
- research priorities 565, 566
- role of parasites 260, 532, 536
- selective insecticides 445
- social aspects 495, 537, 574
- training need 573
- use of egg parasites 527
- use of yellow trap 523, 526
- yield response 508, 529, 533, 534, 554
- Isazophos 553
- Isdromas iycaenae* 489
- Isotima* sp. 551, 562
- Isoxathion 457
- Isozymes 363, 364
- Itoplectis alternans* 204, 205, 207, 208
- Itoplectis* sp. 218, 231
- Itoplectis tunetanus* 204, 205, 207, 208
- Itoplectis viduata* 204, 205, 207, 208

- Javelin* (see Bt)
- Juvenile hormones 531

- Konagawa-con 94

- Labiduridae 32
- Larvin 144
- Leaf-wax 59, 62
 - host-plant resistance 68, 71
 - morphology 58, 62, 68, 70, 71
- Leidyula portoricensis* 235
- Leidyula* sp. 235
- Lepidium* spp. 494
- Leptophobia aripa* 51, 53, 55, 54
- Life cycle, duration 275, 312
- Life-table 15, 24
 - in Thailand 309, 312
 - methodology 16, 17, 18, 19, 23
- Light trap 274, 570
- Lindane 437, 493
- Lipaphis erysimi* 263, 271, 330, 541, 546
- Liriomyza brassicae* 559
- Liriomyza* sp. 530, 541, 543, 545, 546
- Lygus linealaris* 55

- Lymantria dispar* 105
- Lysibia varitarsus* 204, 205

- Macromalon orientale* 230, 256
 - introduction, in Fiji 216, 217
 - in Malaysia 532
 - in Thailand 551, 560, 561, 562
- Malathion 52, 234, 333, 335, 384
 - resistance 412
 - cross resistance 371, 378
 - esterase activity 369, 370, 371, 373, 374
 - genetics 369, 377
 - in Malaysia 437
 - in Taiwan 369
 - in Thailand 386
 - isozymes 369, 372, 373, 374, 377
 - mechanism 369, 372, 374, 375, 376, 378
 - reversion 407
 - selection pressure 376
 - strains 370, 373
 - zymogram 370, 371, 372, 373, 376
 - toxicity 335, 372
- Mamestra brassicae* 298, 302, 303
- Mancozeb 143
- Mating 37, 91
 - age effect 38, 39
 - body size effect 38, 39
 - delay effect 92, 93
 - egg viability effect 92
 - fecundity effect 92
 - inhibition 92, 93
 - ovary development 39
 - oviposition period effect 92
 - reproductive potential 91
 - success 40
 - timing 38, 39, 273, 526
- Mechanical control, electric shocker 165, 166, 169, 170, 172
 - vacuum cleaner 165, 167, 171, 172
- Menochilus sexmaculatus* 559
- Mephosfolan 468
- Mesochorines* 230
- Mesochorus* sp. 83, 489
- Mesochorus vittator* 204, 205
- Metalaxyl 142
- Meteor* sp. 231, 542, 548
- Methamidophos 288, 428, 438
 - effectiveness 140, 148, 151, 356
 - recommendations 219, 505
 - resistance, cross-resistance 447
 - distribution 447
 - in Belize 449
 - in Honduras 487, 488
 - in Malaysia 437, 439, 440

- in USA 443, 444, 450, 500
 - synergism 468
 - toxicity, strain differences 230, 431
 - to parasites 287, 289, 292, 293, 294
 - use, in Honduras 491
 - in Malaysia 439
 - in Philippines 272
- Methidathion, resistance, in Japan 457
- Methomyl 16, 234, 288, 333, 335, 384, 428, 429, 469, 547
 - control failure 430, 432
 - effect on natural enemies 95, 339
 - effectiveness 115, 145, 148, 433
 - in USA 150, 151, 152, 356, 357, 443
 - resistance 468, 469, 470
 - cross-resistance 407, 447
 - distribution 447
 - in Belize 448
 - in Canada 448
 - in Honduras 487, 488, 491, 492
 - in Malaysia 437
 - in Thailand 386
 - in USA 149, 427, 434, 444, 448, 449, 451, 452
 - toxicity 335, 431
 - to parasites 287, 289, 290, 293, 294
- Methoprene 523
- Methyl bromide 148
- Methyl parathion 419, 420, 444
- Mevinphos 149, 288, 428, 429, 525
 - Bt combination 149, 526
 - effectiveness 139, 140, 143, 144, 145, 432, 433
 - in Togo 326
 - in USA 152, 153, 356, 427, 499, 500
 - resistance 342, 369, 378, 407, 468, 523
 - toxicity, to parasites 287, 289, 290, 293, 294
 - use, in Honduras 491
 - in Thailand 553
- MFO, (mixed function oxidases)
 - characteristic 468, 469
- MGK 264, 420
- Microgastrinae 230
- Microplitis manilae* 551, 557
- Microplitis plutellae* 27, 230
- Microsomal monooxygenase 391
- Migration, in Canada 49
 - in Europe 49
 - in Japan 43, 44, 48, 363
 - in USA 358
 - mechanism 49
 - seedling infestation 503
- Mixed function oxidase (see MFO)
- Mokrzeckia* sp. 231
- Mortality factors 15, 16, 17, 18, 19, 23, 91
 - in Japan 20, 24
 - in Philippines 273
 - in Romania 203
 - in Thailand 312, 313
 - in USA 27, 33, 35
 - methodology 28, 29
 - predators 568
- Movement, via seedlings 447, 499, 450, 451
- Mulching 148
- MVP (see Bt)
- Mymaridae 298
- Myzus persicae* 96, 263, 271, 417, 419, 422, 530
- Nabis americanoferus* 32
- Natural enemies 91
 - evaluation method 91, 95
 - in Jamaica 235, 239
 - in Vanuatu 219
 - in Western Samoa 219
- NC-176 386
- NC-184 387
- Neem, adverse effect 325, 331
 - azadirachtin content 325, 326
 - effectiveness 325, 330
 - aphids 330
 - in Burma 330
 - in Central America 491
 - in Dominican Republic 330
 - in Honduras 487
 - in India 519, 520
 - in Philippines 329, 330, 331
 - in Togo 326, 327
 - on *Hellula* 330
 - extraction 326, 328
 - resistance 325, 331
 - selectivity 325, 330, 331
 - temperatures effect 325
 - use in IPM 325, 330, 331
 - use in Thailand 570
- Neled 541
- Nepiera moldavica* 204, 205, 207
- NI-18 383, 385, 389
- Nilaparvata lugens* 193
- NK-081 383, 385, 389, 523
- NPV 487
 - bioassay 186, 187, 190
 - characterization 186, 190
 - cross transmission 186, 187, 188
 - effectiveness 191, 490, 568
 - in IPM 185, 191
 - susceptibility 186

- UV effect 191
- Nuclear polyhedrosis virus
(see NPV)
- Occlusion bodies 185
- Occurrence, in Australia 215
 in Guam 216
 in Hawaii 216
 in Kiribati 218
 in the Pacific 215
 in Tokelau 219
 in Tuvalu 219
- Oomyzus sokolowskii* 221, 231, 237
 establishment, in Barbados 238
 in Caribbean 240
 in Fiji 216, 217
 introduction, in Guam 216, 217
 in Hawaii 217, 218
 in Indonesia 567
 occurrence, in Jamaica 239, 237
 in the Pacific 215
 parasitism, in Cape Verde 567
 in Jamaica 233, 237, 238
 in Zambia 567
- Ophionea* sp. 568
- Opius* sp. 489
- Organophosphorus, resistance 469
 characteristic 411, 469
 cross-resistance 420, 421, 456,
 457, 459
 in Central America 487
 in Japan 455
 in Thailand 386
 mechanism 421, 444
 selection 455, 456
 stability 455, 456
- Ostrinia nubilalis* 298, 317
- Otiorhynchus sulcatus* 193
- Overwintering 453
- Oviposition 37, 54, 271
 characteristic 20
 chilling effect 45
 duration 275
 period 275
 preference 37, 512
 stimulant 67
 timing 40, 43, 273, 526
 wax bloom effect 15, 23, 24
- Oxichlordane 493
- Oxidiazon 493
- Oxydemeton methyl 518
- Paecilomyces* sp. 233, 238, 239
- Palexorista inconspicuoides* 220
- Palexorista solennis* 220
- Palexorista* sp. 220
- Pandemis heparana* 317
- Pandora blunckii* 193, 194, 197
- Parasites 567
 constancy 204
 DNA studies 229
 dominance 204
 effect on host development 246
 effectiveness, in New Zealand 215
 exploration 246
 food source 569, 570
 founder population 229
 host finding behavior 531
 impact assessment 246
 in Australia 215
 in Honduras 489
 in Jamaica 233, 237, 239
 in Papua New Guinea 218
 in Romania 203, 204, 206, 208
 in Thailand 309, 551, 560, 562
 insecticide effect 210, 241, 245,
 246, 252
 insecticide toxicity, testing
 procedure 288, 289
 introduction, in Australia 255
 in Indonesia 255
 in New Zealand 255
 inundative release 305
 needs in lowland 260
 origin 246
 population dynamics 206
 recommendations, in Philippines 286
 role in Malaysia 255
 sampling 234
 searching efficiency 252
 seasonality, in Thailand 562
 selection, criteria 300, 302
 environmental consideration
 300, 301
 host-plant adaptation 301
 host-specificity 301
 survey, in Romania 203, 206
 synecological analysis 206
 systematics 225
 taxonomy 225
- Parasitism, assessment 245, 246, 247,
248, 249, 251, 273, 310
 effect on population 257, 258
 effectiveness, in Canada 568
 in Europe 568
 in USA 568
 host density dependence 259
 host stage effect 246
 host-plant, effect 348
 in Japan 17, 18, 19
 in Romania 206
 in Thailand 560, 562
 insecticide check method 246
 insecticide effect 31, 272, 290,
 291, 292, 294
 monitoring 234, 236

- rates 231
 sampling 234, 236, 245, 247, 249, 256
 error 249, 251
 graphic method 250, 251
 methods 249, 250, 251
 standardization 236
 Parathion 419, 420, 468
Pardosa astrigera 339
Pardosa delicatula 32
Pardosa milvina 27, 28, 32
 predation rate 33, 34
 seasonality 31, 32
Pardosa pauxilla 32
 PB (piperonylbutoxide) 471
 resistance, cross-resistance 421
 synergism, of abamectin 422
 of benzoylphenylurea 387, 391, 393, 469
 of carbaryl 469
 of carbofuran 469
 of cartap 469
 of chlorfluazuron 396, 466
 of fenvalerate 411, 414, 482
 of methomyl 469
 of permethrin 142, 146
 of propoxur 469
 of pyrethroids 139, 420, 469
 of teflubenzuron 396, 466
Pectinophora gossypiella 122
 Pendimethalin 493
Peridrama sp. 55
 Permethrin 78, 140, 234, 288, 333, 335, 352, 384, 427, 429, 542
 control failure, in USA 432
 effectiveness 118, 139, 142, 143, 146, 433
 in New Zealand 348
 in USA 354, 355, 356, 427, 505
 resistance 378
 cross-resistance 439, 447
 distribution 447
 in Belize 449
 in Canada 449
 in New Zealand 342
 in Thailand 386, 523
 in Tonga 219
 in USA 443, 444, 449, 451, 500
 synergism 142, 146
 threshold based application 354, 355
 toxicity 335
 to parasites 287, 289, 290, 292
 use, in Malaysia 439
 Pesticide resistance management 252
 PH70-23 383, 385, 389
Phaeogenes ischiomelinus 204, 205, 207, 208
 Phenthoate 378, 09, 384, 404
 effect on parasites 314, 315
 effectiveness, in Japan 461
 resistance, characteristics 482
 cross-resistance 407, 457, 482
 genetics 408, 477, 478, 479, 480
 in Japan 457
 in Thailand 386, 523
 management 477
 mechanism 477
 reversion 407
 selection 406, 477, 478
 synergism 468
 Phosphamidon 511, 513
Phyllotreta cruciferae 57, 61
Phyllotreta sinuata 530, 551, 553, 559
Phyllotreta sp. 271, 279, 328
Phyllotreta striolata 57, 61, 263
Pieris brassicae 249, 302, 558
Pieris candida 271, 328
Pieris rapae 135, 298, 302
 damage, in New Zealand 341, 342, 343
 host preference 348
 host-plant, resistance 57, 59, 61, 62
 occurrence, in Australia 215
 in Taiwan 263
 parasitism, in New Zealand 345, 348
 seasonality, in New Zealand 344
Pieris rapae crucivora 95
 Pimplinae 231
 Piperonyl butoxide (see PB)
 Pirimicarb 268, 553, 559
 Pirimiphos methyl 386
 Pitfall trap 28, 33
Pleurotropis sp. 204, 205
Plodia interpunctella 181, 424
Plutella armoricae 226
Podisus maculiventris 32
Polistes sp. 32
Polybia diguetana 489
Polybia occidentalis nigratella 489
Pontia daplidice 558
 Population dynamics 171, 272
 forecasting 524
 in greenhouse 166, 168, 169
 in Honduras 247, 248
 in Malaysia 259
 in Romania 209
 in Thailand 311
 Population suppression 170
 Post-oviposition period 275
 Pre-oviposition period 22, 275
 Predation, eggs 29, 33
 in Japan 17, 18, 19

- in USA 27
- insecticide effect 32
- larvae 29, 33
- Predators 27, 568
 - Bt effect 32
 - Chrysopidae 16
 - in Jamaica 238, 239
 - in Papua New Guinea 218
 - in USA 28, 32
 - insecticide effect 27, 32
 - spiders 16
 - trapping 28
 - USA 28
- Prepupa, duration 274
- Pristomerus hawaiiensis* 218
- Profenofos 78, 86, 234
 - effectiveness, in Honduras 491, 492, 493
 - in Philippines 272, 329, 331
 - synergism 468
- Propoxur 469, 470
- Prothiophos 86, 386, 407, 420, 456, 523
- Pseudodoros clavatus* 233, 239
- Pseudohyperparasitoid 230
- Pseudomonas fluorescens* 131
- Pseudoplusia includens* 238
- Pteromalus puparum* 343, 345, 348
- Pydrin 541
- Pyraclufos 523
- Pyrethroids, effectiveness 31, 145
 - parasite mortality 30
 - resistance, characteristics 411, 469, 470
 - cross resistance 398, 420, 421, 439, 455, 459, 468
 - genetics 458
 - in Central America 487
 - in Japan 334, 338, 455, 458
 - in Thailand 386, 411
 - in USA 145, 427
 - kdr factor 412
 - management 422
 - mechanism 377, 398, 444, 465, 469
 - migration effect 458
 - selection 459
 - stability 459
 - strain 445
 - synergism 146, 420
 - toxicity to parasites 290, 339
 - use in USA, 500
- Quinalphos 288
 - synergism 468
 - toxicity to parasites 287, 289, 290, 293, 294, 295
- Rainfall effect 15, 20, 24, 28, 29, 30, 35, 145
 - in Thailand 312
 - larval mortality 33, 273
 - simulation 29, 33, 35
- Reduviidae 32
- Reproduction 91
- Resemethrin 437
- Resistance ratio 385
- Restrictive endonuclease analysis 185, 186, 187, 190
- Resurgence, insecticide 27
- Ridomil 142, 143
- Ropalidia bambusae* 218, 220
- Ropalidia sumakrae* 568
- Safer concentrate 144
- Salithion 386, 461
- Sampling 256, 353, 551, 552, 553, 554, 555
- SAN 415 (see Bt)
- Sanitation 570
- Sarasinula plebeia* 235
- Scelionidae 298
- Scouting, in Honduras 493, 494
 - in New Zealand 345, 346, 349
 - procedure 347
- Scymnus* sp. 32
- Seasonality 31
 - in Caribbean 233, 241
 - in Georgia USA, 500
 - in Guam 541
 - in Jamaica 235, 241
 - in Japan 24, 47, 48, 168, 169, 170
 - in Mexico 51, 52, 53, 54, 55, 56
 - in New Zealand 342, 343, 344
 - in Philippines 273, 274, 280
 - in Taiwan 241
 - in Thailand 312, 313, 551, 555, 556
 - in USA 28, 356
- Sex pheromone, air movement
 - effect 101, 104
 - analogues 105
 - commercial formulation 109, 110
 - components 94, 99, 105, 107, 109
 - dispenser 99, 100
 - effective distance 99, 105, 106, 107
 - effectiveness 91, 96, 109, 110, 111, 112, 113, 114
 - evaporation 110, 111, 112, 113, 114
 - fertilization effect 91
 - greenhouse use 101, 165
 - in monitoring 273, 274
 - insecticide combination 94, 103, 104
 - longevity 104

- mass trapping 43, 46, 47, 91, 99, 106, 107
 mating delay 91
 mating disruption 91, 92, 99, 100, 104, 105, 106, 107, 109, 111, 112, 113, 114, 167, 171
 efficacy 172
 evaluation 110
 in greenhouse 170
 temperature effect 170
 mating inhibition 99, 100, 102, 103
 monitoring 100, 271
 natural enemy effect 95
 open field use 101, 103
 optimum dose 105, 106, 107
 population monitoring 110, 111, 112, 113
 population reduction 102, 103, 104
 practical use 99, 100, 101, 165
 temperature effect 109
 traps 52
 use, economics 99, 104
 utilization 94
 vacuum cleaner, combination 171
Sitotroga cerealella 297, 298
 Slugs 235
Snellenius manilae 551, 557
Solenopsis geminata 541, 547, 548
Solenopsis invicta 32
 Spiders 27
Spilochakis hirtifemora 489
Spilochakis petioliventrif 489
Spilochalcis albifrons 28
Spilochalcis hirtifemora 235, 236, 240, 241
Spilochalcis pseudofulvovariegata 489
Spilochalcis sp. 231, 233, 239, 242
Spodoptera exigua 55, 357
 chemical control 118, 472, 500
 delayed mating 122
 fecundity 122
 flying distance 116
 insecticide resistance 115
 light trap monitoring 116
 seasonality 116, 117
 sex pheromone, components 115
 mating disruption 115, 116, 119, 122, 123
 monitoring 115, 117
 optimum dose 116
 oviposition effect 118, 119, 121
 population reduction 115
 trap design 116
 trapping efficiency 123
Spodoptera frugiperda 53, 55, 235
Spodoptera litoralis 119, 397, 423, 481
Spodoptera litura 105, 530
 biocontrol 220
 chemical control 467, 472, 547, 548, 553
 damage characteristics 552
 egg parasite 548
 flying distance 116
 host preference 544, 541, 543, 548
 mass trapping 96
 mating inhibition 93
 occurrence, in Guam 216, 541, 542, 543, 545
 in Philippines 271, 279
 in the Pacific 213
 parasites 542, 551
 seasonality 120, 273, 551, 557
 sex pheromone 119
 components 119
 mating disruption 120
 optimum dose 120
 oviposition effect 119, 120
 population suppression 119, 120
Spodoptera ornithogalli 55
Spodoptera spp., parasites 557
Spodoptera spp. 239, 284
 Sprinkler irrigation 24, 150, 172, 218, 264, 494
 Stearic acid 21
Stemorrhages flegia 238
 Sterile insect technique 531
 Sticker 142, 143
Sturmia inconspicuoides 81, 83, 84
 Sulfoxide 420
 Sulprofos 78
 Super cooling point 43
 Surecide 234
 Survival rate 309, 312, 313
 Synecological analysis 207, 208
 Synergism ratio 387
 Synergist, resistance 420, 421, 482
 Syrphidae 32
 Tachinid fly 220
 Teflubenzuron 78, 86, 288, 384, 392, 438
 application strategy 148, 149, 150
 Bt combination 149, 150, 154
 effect on parasites 268
 effectiveness 139, 144, 145, 148, 420
 in USA 147, 150, 151, 152, 153, 154
 resistance 147, 391, 394, 395, 398
 cross resistance 396, 403, 407
 in Asia 148
 in Malaysia 437, 439, 440
 in Taiwan 466
 in Thailand 523
 in USA 154

- selection 396, 406
- stability, 467
- synergism 387, 396, 397, 398, 466
- toxicity to parasites 287, 289, 290, 292
- use, in Malaysia 439
- Temperature effect 15, 21, 22, 24
- Tetrachlorvinphos 420, 542
- Tetrastichus ayyari* 231, 260, 532
- Tetrastichus coerules* 272
- Tetrastichus howardi* 231
- Tetrastichus israeli* 231
- Tetrastichus sokolowskii* (see *Oomyzus sokolowskii*)
- Tetrastichus* sp. 205
- Thiocyclam 455, 459, 460
- Thiodicarb 404, 427, 428, 429, 430, 434
 - control failure, in USA 432, 437
 - effectiveness 140, 143, 144, 430, 433, 434
 - resistance 407
 - toxicity 430, 431, 434
- Threshold 145, 352, 354
- Thrips tabaci* 354, 503, 504, 505
- Thuricide (see *Bt*)
- Thyraeella collaris* (see *Diadromus collaris*)
- Thysanoplusia orichalcea* 343
- Toarrow-CT (see *Bt*)
- Tokuase 159
- Toxomerus dispar* 233, 239
- Toxomerus watsoni* 233, 239
- TPP 482
- Trap crop 221, 511, 541
 - adoption, in India 519
 - cost effectiveness 520
 - effectiveness 516, 517, 518, 519
 - mode of action 512
 - natural enemy 519
 - planting 515
 - planting pattern 512, 513, 516
 - planting time 512, 520
 - sampling 514
 - yield response 517, 518
- Traps, yellow 94, 523, 524
 - BT integration 525
 - effectiveness 525, 526
 - in monitoring 525
 - placement distance 524
- Trathala flavoorbitalis* 79
- Triazophos 78, 272
- Trichlorfon 78, 386, 553
- Trichogramma agrotidis* 318, 320
- Trichogramma bactrae* 320
- Trichogramma cacoeciae* 318, 319
- Trichogramma chilonis* 317, 320, 321, 322, 339
 - introduction, in Hawaii 217, 218
 - parasitism, in Japan 16
- Trichogramma chilotraea* 317, 318, 319
- Trichogramma confusum* 317, 318, 320, 321, 567
 - occurrence, in Thailand 309, 312
- Trichogramma cordubensis* 318, 319
- Trichogramma deion* 318, 320
- Trichogramma dendrolimi* 318
- Trichogramma embryophagum* 318, 319
- Trichogramma evanescens* 298, 318, 319
- Trichogramma*, genetic change 304
- Trichogramma*, host suitability 302, 303
- Trichogramma*, improvement 304
- Trichogramma japonicum* 318, 320
- Trichogramma kairomone* 304
- Trichogramma leptoparameron* 317, 318, 320, 321, 322, 323
- Trichogramma maidis* 298, 304, 318, 319
- Trichogramma minutum* 303
- Trichogramma nagarkatti* 318, 320
- Trichogramma nubilale* 304, 318, 320
- Trichogramma*, occurrence, in Jamaica 239
- Trichogramma ostrinae* 317, 318, 320, 321, 322
- Trichogramma papilionis* 318, 319
- Trichogramma petiosum* 317
- Trichogramma pintoii* 318, 320, 321
- Trichogramma*, pre-introduction
 - selection 299
 - reproductive capacity 302
- Trichogramma pretiosum* 298, 318, 320, 321, 322, 323
- Trichogramma principium* 317, 318, 320, 321, 322
- Trichogramma*, rearing 304
 - seasonal synchronization 302
 - selection criteria 304
- Trichogramma semblidis* 317, 320
- Trichogramma*, sex pheromone 304
- Trichogramma* sp. 215, 217, 231, 233, 247, 318, 320
- Trichogramma*, strain differences 302
- Trichogramma telengai* 318, 320
- Trichogramma trjapitzini* 318, 320
- Trichogrammatidae 298
- Trichogrammatoidea bactrae* 318, 320
 - field release 310
 - insecticide effect 309, 310, 314
 - occurrence, in Thailand 309, 561
 - parasitism 317, 320, 321, 322
 - use, in Thailand 567
- Trichomalopsis apanteloctena* 272
- Trichomalopsis deplanata* 272

- Trichomalopsis* sp. 231, 272, 279, 285, 343, 344, 345
Trichomalus sp. 489
Trichoplusia ni 51, 52, 135, 450, 503, 504
 action threshold 553, 558
 Bt effectiveness 139, 141, 142, 144, 145, 427, 428, 432, 433, 434, 472
 control 506, 507, 508
 damage, in Thailand 551, 558
 egg parasite 298
 food consumption 432
 host-plant, resistance 57
 in USA 351, 500
 insecticide resistance 139
 occurrence, in Jamaica 235
 in Philippines 271
 in Taiwan 263
 parasites 238
 parasitism in Mexico 55
 seasonality 53, 54, 55, 141
 threshold 145
Trichorfon 384
Trichospilus diatraeae 233, 238, 239
Tridiphane 468, 471
Triflumuron 78, 466
Trifolium repens 46
Tritox x-100 159
Ultrafine oil 144
Valent 143
Valent X-77 144
Vamidothion 384, 386, 412
Varia ruralis 55
Viruses 264
Vydate 547
Watercress 166
Wax bloom 15, 21, 23, 24
Wild host 15, 21, 23, 24
Xanthomonas campestris 488
Xanthopimpla sp. 220
Yield loss 233, 279, 499
Yield response 523
Zeenex 438
Zoophthora raclicans 28, 185, 193, 194, 215, 260, 569
 effectiveness 221
 in Philippines 197
 infection rate 198
 infection period 198