

# Subject Index

- actinomycin D 301  
activated charcoal 11, 184  
additive genetic variance 48  
adenine sulfate 427, 432  
*Aesculus* 6  
agar 450  
agarose 55, 115, 186  
*Agrobacterium tumefaciens* 315, 355  
albinism 115, 161, 419  
albino plants 87, 160, 190, 400  
alfalfa 458–471  
allogamous plants 250, 347, 358, 417  
allooctoploids 403  
allozyme markers 316  
amino acids 60  
amphidiploids 217  
amylase 56  
androgenesis 3, 5, 79, 102, 146, 153, 186,  
218, 222, 250, 258, 280, 312, 329, 362, 408,  
450, 473, 488, 504, 522, 532  
androgenetic callus 324  
– embryoids 190, 324  
– plants 105, 375  
aneuploids 20, 24, 84, 196, 228, 237, 317,  
354, 359, 405, 418, 454  
anther culture 3, 49, 115, 125, 204, 218,  
266, 279, 311, 348, 361, 408, 430, 472, 498,  
530  
– density 147  
– orientation 57, 153  
anthocyanin 531  
antispasmodic 498  
apomixis 245, 418, 481  
apple 20  
*Arabidopsis thaliana* 309–321  
*Arachis* 5  
*Arachis hypogaea* 12  
asparagine 432  
*Asparagus officinalis* 6, 322–345  
atrazine resistance 23  
*Atropa belladonna* 15, 21, 85, 151  
atropine 291  
autotrophic 20  
auxotrophic 20  
*Avena sativa* 22  
BA 311, 419, 505  
backcrossing 333  
bacterial blight 27  
BAP 56, 186, 293, 348, 406, 485, 532  
barley 47  
– haploids 125–175  
benzyladenine 317  
*Beta vulgaris* 6, 346–357  
biochemical cytology 301  
biotin 22  
blast disease 207  
*Brassica* 5, 85, 310, 358–373  
*Brassica campestris* 358  
*B. carinata* 360  
*B. hirta* 6, 360  
*B. juncea* 6, 360  
*B. napus* 6, 358, 360  
*B. oleracea* 6, 358–373  
Brussels sprout 48, 358–373  
bud formation 285  
bulbosum method 3, 18, 103, 127, 169  
cabbage 358–373  
*cajanus* 5  
calliclones 413  
capsaicin 374  
*Capsicum annuum* 374  
*C. baccatum* 374  
*C. chinese* 374  
*C. pubescence* 374  
*Capsicum* species 374–392  
carbon 11  
cardiac sedatives 277  
– glycosides 287  
carotenoids 374  
carrot 393–402  
– extract 376, 379  
casein hydrolysate 163, 185, 431  
*Cassia* 5, 14  
catkins 246  
cell genetics 3  
– hybridization 217  
CHA 18, 111  
charcoal 181, 362, 376, 400, 532  
chelating agent 10

- chemical hybridization agent 18, 111  
 chenopodium 346  
 chlorate resistant 22  
 chromatin 74  
 chromosome doubling 243, 333  
   – elimination 18  
   – stability 317  
   – variation 84  
*Cicer* 5, 12  
*Cichorium intybus* 450  
 clonal propagation 217  
 cluster analysis 539  
 cobalt 60 245  
 coconut milk 294, 377, 448, 455, 488, 532  
*Coffea arabica* 7  
*Coix lacryma-jobi* 19  
 colchicine 4, 178, 244, 473  
 cold treatment 137, 188, 280, 298, 314, 399, 452, 535  
 Compositae 417, 428  
 crop improvement 48  
 cross pollination 358  
 Cruciferae 58  
 cryopreservation 24, 94, 105  
 cryostorage 25  
*Cyamopsis* 5  
 cybrid 23  
 cytokinins 4, 11, 311, 421, 448, 504  
 cytolysis 259  
 cytoplasmic changes 87  
   – genomes 87
- Datura innoxia* 21, 77  
*Daucus carota* 7, 393–402  
 dedifferentiation 89, 268  
 diallel analysis 103  
*Dianthus* 185  
 differentiation 498  
*Digitalis grandiflora* 278  
*D. lanata* 278  
*D. lutea* 278  
*D. purpurea* 277  
*Digitalis* species 7, 277–289  
 dihaploids 28, 167, 316, 385, 429  
 diplochromosomes 88  
 diseases 266  
 distant hybrids 216, 440  
 DMSO 26  
 DNA 134  
   – cloning 309  
   – synthesis 74  
   – uptake 23  
 doubled haploids 101, 367  
 2,4-dichlorophenoxyacetic acid 11, 56, 163, 181, 254, 281, 310, 328, 485
- electronmicroscopy 76
- elimination of chromosomes 18  
 embryogenesis 5, 78, 194, 247, 281, 291, 388, 503  
 embryogenic ability 105  
   – callus 396  
   – pollen 73  
 embryoids 45, 187, 218, 220, 269, 294, 305, 485, 495  
 endomitosis 4, 84, 329  
 endoplasmic reticulum 68  
 endopolyploid 89  
 endoreduplication 84  
 environmental factors 52  
 epistatis 49  
 ethrel 18, 111, 141  
 ethylene 506  
 Euphorbiaceae 216  
 euploids 84, 230, 481
- FeEDTA 10, 379  
 fenridazone-potassium 111  
 field trials 393  
 Florin 113  
 folic acid 143, 240  
*Fragaria* × *ananassa* 403–416  
*Fragaria chinoensis* 403  
*F. virginiana* 403  
*Freesia* 7  
 fructose 60  
 fruits 307  
 Fusarium 340
- GA 222, 260, 271, 419, 532  
 gametocides 18, 197  
 gametoclonal variation 84, 101, 113, 197, 216, 539  
 gametogenesis 120  
 gametosomatic hybrids 23  
 gamma rays 20, 462  
 gas chromatography 507  
 generative cell 5, 72  
 genetic analysis 194, 247, 286, 365, 384, 410, 453, 524, 536  
   – instability 24, 316  
   – recombination 216  
   – selection 120  
   – stability 83, 159, 194, 286, 365, 385, 410, 426, 453, 491, 536  
   – variability 24, 83, 177, 231  
 genetic engineering 29, 369  
   – manipulation 17, 83, 217, 341  
   – transformation 23, 46  
 gene mutation 217, 454  
   – transfer 83, 279, 455  
 genetical factors 46  
 genomic variability 116

- genotypes 16, 47, 135, 186, 216, 218, 313, 330, 446, 453, 534  
 genotypic differences 522  
*Gerbera jamesonii* 19, 417–427  
*G. viridifolia* 417  
 germplasm 48, 428  
 glucose 58, 247  
 glutamine 60, 120, 145, 164, 271, 521  
 Golgi cisternae 68  
*Gossypium* 5, 7  
 Gramineae 45, 87, 176  
 growth regulators 9, 254  
 gynogenesis 369, 389, 419, 442, 473  
 gynogenic plants 435  
  
 halophytes 346  
*hap* gene 127  
 haploid cultures 20, 83, 310, 400  
   – embryos 1, 198, 215, 237, 309, 428, 498  
 haplodiploidization 117  
*Helianthus annuus* 19, 428–441  
*H. bolanderi* 431  
*H. divaricatus* 431  
*H. decapetalus* 431  
*H. hirsutus* 431  
*Helianthus* species 431, 436  
 helicase 22  
*Helminthosporium maydis* 198  
*H. turcicum* 198  
 henbane 290  
 herbicide resistance 170, 191  
 heterosis 109, 204, 217, 247, 322, 359, 459  
 heterozygous 443  
*Hevea benthamiana* 215  
*H. brasiliensis* 215  
*H. camporum* 215  
*H. guianensis* 215  
*H. microphylla* 215  
 high quality rice 206  
 homozygous lines 324, 374, 401, 418, 430  
   – plants 3  
 hordein 126  
*Hordeum brevisubulatum* 125  
*H. bulbosum* 7, 125  
*H. jubatum* 125  
*H. marianum* 125  
*H. vulgare* 7, 125–175  
*Hordeum* species 290–305  
*Hyacinthus orientalis* 15  
 hybridization 238, 333, 531  
 hybrid maize 177  
   – rice 204  
 hyoscyne 290  
 hyoscyamine 290  
*Hyoscyamus albus* 7, 291  
*H. aureus* 291  
*H. muticus* 7, 291  
  
*H. niger* 7, 66  
*H. pusillus* 7, 291  
*Hyoscyamus* species 290–305  
 hypohaploids 24  
  
 IAA 56, 128, 243  
 IBA 285, 437, 485  
 improved variety 204  
 inbred lines 429  
 inositol 164, 186, 319  
 insect resistance 428  
 intergeneric hybridization 455  
 interspecific hybridization 455  
 in vitro manipulation 309  
 iron 10  
 irradiation 420  
 isochromosomes 86  
 isogenic diploids 4, 20  
   – lines 303, 429  
 isolated pollen culture 198, 493  
 isozyme analysis 491  
  
*Jacaranda acutifolia* 14  
  
 karyotype 16, 375  
   – instability 83  
 kinetin 181, 243, 311  
 kinetochores 86  
  
 lactalbumin 185  
 lagging chromosomes 89  
 leaky auxotrophs 22  
 Liliaceae 322  
*Lilium davidii* 19  
 liquid nitrogen 25  
 litchi 264–274  
*Litchi chinensis* 7, 264–274  
*L. philippensis* 264  
*Lycopersicon cheesmanii* 446  
*L. chilensi* 446  
*L. esculantum* 7, 442–457  
*L. peruvianum* 7  
*L. pimpinelifolium* 7  
  
 maize 176–203  
 male sterile inbreds 400  
   – sterility 18  
 malt extract 59  
 maltose 59  
*Malus domestica* 8, 250–263  
 mannitol 247  
 MCPA 11  
 media 9, 10, 55, 143, 183, 220, 240, 253, 268, 294, 311, 328, 370, 461  
*Medicago sativa* 8, 458  
*Medicago* species 458–471  
 medicinal plants 275–305

- mercuric chloride 280  
 methionine 22  
 metrical variation 46  
 microinjection 370  
 microphotometry 134  
 microsporogenesis 195, 419, 533  
*Mimulus luteus* 19  
 mitochondria 68  
 mitochondrial DNA 115  
 mitotic index 93  
 mixoploids 154, 328, 405, 443, 462  
 molasses 480  
 molecular alterations 84  
 monoploids 19, 532, 539  
 morphogenesis 331, 510  
 morphogenetic capacity 421  
 multicellular embryo 499  
 multinucleate pollen 18  
 mustard 358  
 mutagens 22, 278  
 mutants 204, 238, 290  
 mutations 3, 20, 83, 429, 459  
  
 NAA 186, 285, 311, 328, 349, 485  
 N6 medium 10, 198  
 nematodes 28  
 new varieties 334, 367, 413, 494, 539  
*Nicotiana rustica* 19  
*N. tabacum* 19  
 nicotinic acid 186, 352  
 nitrogen fixation 248  
 norhyoscyne 291  
 nuclear fusion 84  
   – genomes 85  
 nutritional quality 27  
  
 oleic acid 428  
 ontogeny 5  
 organic nitrogen 185  
 organogenesis 226, 279, 286, 463, 501, 505  
*Oryza glaberrima* 17  
*O. sativa* 8, 19, 204–211  
 osmoregulation 11  
 osmotic shock 105  
 ovule culture 3, 18, 126, 216, 232, 421, 438, 472  
  
*Paeonia lactifolia* 77  
 paprika 374  
 parthenogenesis 18, 111, 178, 244, 332, 404, 418, 442  
 pedigree 118  
*Pennisetum americanum* 8  
 PFP 24, 92, 413  
 pepper 374–392  
 percoll 166  
 pesticides 355  
  
*Petunia axillaris* 19  
*P. hybrida* 22  
*Phaseolus* 5, 8, 315  
 phragmoplast 70  
 physiological conditions 523  
*Phytophthora capsici* 29, 375, 530  
*P. infestanse* 29, 530  
 picloram 310, 314, 487  
*Pisum* 5, 12  
 plant regeneration 93  
 plasmodesmata 70  
 plastids 68, 132  
*Poinciana regia* 8  
 polarity 5  
 pollen callus 17, 240  
   – culture 298  
   – diamorphism 134  
   – embryogenesis 1, 45, 51, 66, 71, 157, 294, 296, 506  
   – irradiation 348  
   – ontogeny 68  
   – plantlets 4  
   – viability 251  
 polyembryony 348, 375, 404  
 polyhaploids 404  
 polyploids 24, 228, 251  
 polysomy 5  
 poplars 237–249  
*Populus* species 237–249  
*Populus alba* 238  
*P. balsamiter* 238  
*P. lasiocarpa* 237  
*P. nigra* 238  
*P. simonii* 238  
*P. trichocarpa* 239  
 potato 530  
   – extract 60, 120  
   – medium 11, 105  
   – virus A 516  
*Potentilla* 404  
 Powdery mildew 115  
*Primula obconica* 8  
 proembryos 10, 396  
 proline 22, 60, 185  
 protein 67, 78, 126, 301, 374, 458, 472, 515  
 provitamin A 374  
*Pseudomonas tabaci* 22  
*P. solanaearum* 530  
*Psophocarpus tetragonolobus* 472–479  
*Puccinia melanocephala* 495  
 pure lines 20, 119, 217  
 pyridoxine 352  
  
 quantitative variability 495  
  
 radiosensitivity 23  
 recessive alleles 83

- regeneration 129, 190, 313, 331, 363, 383, 409, 421, 424, 521  
 rhizogenesis 282  
*Rhizomania* 355  
 rhizome 322  
 rice 204–236  
 RNA synthesis 75, 301  
 root nodules 472  
 rubber 215–236  
  
*Saccharum berberi* 480  
*S. officinalis* 8, 480  
*S. robustum* 481  
*S. sinense* 481  
*S. spontaneum* 480  
*Saccharum* species 480–487  
 salt tolerance 170, 355  
 Sapindaceae 264  
 saponins 277, 458  
 scanning electron microscopy 132  
*Sclerostachya* 484  
 scopolamine 290  
 Scrophulariaceae 277  
*Secale cereale* 8, 85  
 self incompatibility 29  
 sib pollination 429  
 Solanaceae 290, 374, 452, 498, 514  
 solanidine 498  
 solanine 498  
*Solanum acaule* 514  
*S. boyacense* 530  
*S. carolinense* 8, 498–513  
*S. chacoense* 8, 514–529  
*S. melongena* 477  
*S. nigrum* 503  
*S. surattense* 500  
*S. tuberosum* 8, 530  
*S. vernei* 515  
*S. verrucosum* 503  
 somaclonal variation 115, 453  
 somatic embryogenesis 93, 279, 355, 408, 502  
   – hybrids 454, 539  
 source of variability 88  
 spherosome 69  
 spike culture 162  
 starch 294  
 stomata guard cells 426  
 strawberry 403–416  
 sucrose 185, 255, 269, 450  
  
 sugarbeet 346–357  
 sugarcane 480–497  
 sugars 11  
 sunflower 428–441  
 super male plants 324  
  
 thermal shocks 14  
 TIBA 128, 186  
 tomato 442–457  
 totipotency 45  
 toxins 355  
 transfer to field 384, 535  
 transformation 370  
 translocation 52, 86  
 tree haploids 213  
 trisomics 516  
*Triticale* 9, 119  
*Triticosecale* 85  
*Triticum aestivum* 8, 19, 101–124  
*T. durum* 9  
*T. spelta* 9  
 tropane alkaloids 291  
 tuber dormancy 530  
  
 ultrastructural cytology 300  
 ultrastructure 1, 66, 153, 194  
 ultrathin sections 68  
  
 variants 453  
 vegetables 307  
 vegetative cell 5, 67  
   – propagation 53  
*Verticillium wilt* 516  
*Vigna mungo* 9, 12  
 vitamins 186, 403  
*Vitis vinifera* 9  
  
 wheat haploids 101–124  
 wild potato 514–529  
 wild tomato 498–513  
 winged bean 472–479  
  
 X-rays 20  
 xylogenesis 241  
  
 yeast extract 461  
 yellow rust 115  
  
*Zea mays* 9, 19, 176–203  
 zeatin 293, 349, 448