

INDEX

Symbols

^{14}C 7

^{15}N 42

1-aminocyclopropane-1-carboxylic acid
(ACC) 85

1-methylcyclopropene (1-MCP) 81, 92, 93
3/8 phyllotaxy 7

A

ABA 53, 54, 84, 85, 87, 112, 117, 136, 171

abscisic acid 53, 83, 84, 88, 91, 109, 112, 113,
171

abscission 20, 84, 85, 86, 87, 93, 114, 145
control 84
rate 69
zone 54, 87, 93

ACC 172

ancestral accession 198
oxidase (ACO) 85
synthase (ACS) 85

accumulation of nutrients 39, 41

acetyl-CoA carboxylase 140

acid-growth hypothesis 83

acidity 45

acropetally 83, 111

actin 174, 176, 180

filament 176

active uptake 35

adenosine triphosphate (ATP) 39

ADP-glucose pyrophosphorylase 169

air temperature 44, 65, 66, 81, 82

albumin 143, 144, 145

alkaline invertase 139

alkalinity 45

allotetraploid 144, 149, 163, 164, 166, 197,
200

alternative respiration 87

amino acid 113, 143, 144, 145, 166, 196

Amthonomus grandis Boheman 16

amylase 84, 113

anatomy 1

ancestral accession 198

androecium 4, 5, 7, 8

annexin 174, 183

annual 1, 10, 13, 24, 30, 31, 79, 197, 198, 199,
203

anther 4, 11, 52, 59, 60, 69, 114

dehisce 6

dehiscence 63, 65

morphology 63

sterility 62

anthesis 4, 5, 7, 8, 29, 38, 45, 52, 53, 54, 60,
62, 63, 64, 67, 69, 70, 71, 88, 89, 90, 93,
118, 134, 164, 165, 181, 201
post anther 6, 54, 134, 164

antioxidant

content 90

enzyme 39, 68, 90

enzyme activity 39, 67, 68, 72, 90, 118

genes 172

metabolism 114

apical 136

cell 197

dominance 83, 193

embryo domain 136

growing point 8

meristem 84, 193, 194, 195

apoplast 7, 182

apoplastic 7, 54, 182

apoptosis 85, 110

aquaporin 169

arabidopsis 67, 110, 111, 112, 113, 115, 116,
117, 135, 136, 137, 141, 146, 166, 167,
168, 169, 170, 171, 172, 173, 178, 180,
182, 191, 200, 201

Arabidopsis thaliana 110, 133, 195

arginine 110, 113, 144

ascorbate 90, 172

peroxidase 88, 171, 172

assimilate 25, 29, 30, 31, 79
demand 30
production 30
ATP 65, 67, 69, 72, 87, 148, 172
auxin 83, 84, 85, 88, 89, 90, 109, 167, 181
transport 83, 136
auxin hormone gradient 136
auxin-mediated transcriptional repression
136
axillary 2
branch 1, 2
bud 194, 195, 202
first 2
primordium 8
proximal 193
second 1, 2, 3, 5
third 3
axis 1, 4, 7
auxin 136
branch 1
embryo 135, 141
fiber 176, 180, 182
long 176, 177
main 195
primary 1, 2, 4

B

backcrossing 13, 148
basipetally 83
bioavailable sulphur pool 145
bioinformatic 166
biomass 36, 183
biosynthesis of polyunsaturated fatty acid 141

boll 6, 7, 9, 15, 16, 20, 28, 29, 31, 36, 39, 40,
42, 52, 54, 61, 64, 69, 79, 80, 85, 86, 88,
92, 93, 94, 138, 165, 168, 179, 183, 194,
198, 202
abortion 86
abscission 20, 69, 86, 90, 91, 93
carbon assimilate demand 30
development 6, 7, 28, 29, 30, 35, 37, 40, 43,
45, 51, 52, 54, 55, 67
filling period 43
first open 42
harvestable 9
load 25, 29, 30, 36
loss 93
maturation 8, 17, 18
number 20, 80, 91
opening 6
retention 16, 42, 61, 92
size 7, 61, 89
wall 40, 42, 92, 179
weight 6, 15, 29, 39, 89, 91, 94
boll weevil 16
bollworm mortality 90
bolting 84
bract 4, 7, 10, 42, 54, 92, 195
branches 1, 4, 17, 28, 147, 165, 193, 195
axillary 1
inflorescence 195
sympodial 8, 17
vegetative 1, 2, 4, 8, 10, 81, 194
brassinazole (Brz) 87, 168, 170
brassinolide (BL) 86, 170
brassinosteroids 83, 86, 167
BR biosynthesis inhibitor 168, 170, 171
breeding 13, 15, 21, 79, 82, 133, 183, 198, 199,
204
business 15
lines 177
programs 15, 17, 19, 89, 147, 193, 199
selection 13
BROTHER OF FT AND TFL1 (BFT) 196
Bt protein 44
Bt technology 44

C

- Ca²⁺
 - sensing 174
 - signaling 169, 173, 174
- calcium 39, 41, 67, 68, 72, 168, 174, 178
- calcium dependent protein kinases 174
- callose 169, 180, 182
- calmodulin 169, 174
- calyx 4
- canopy 8, 21, 22, 25, 26, 28, 29, 30, 31, 42, 80, 81, 82, 94, 116
 - closure 21
 - photosynthesis 21, 24, 26, 30, 31
- capsule wall 7, 42
 - water potential 54
- carbohydrate 1, 52, 61, 69, 70, 72, 92, 149
 - balance 67, 69, 70, 72
 - concentration 53, 69, 91, 142
 - content 54, 69, 93
 - level 27
 - metabolism 63, 138
 - nonstructural 67, 69, 91
 - partitioning 139
 - production 61
 - reserve 70
 - sinks 138
 - soluble 65, 67, 69, 72
 - stress 8
 - supply 67, 69, 70
- carbon 25, 29, 54, 92, 135, 139, 140, 142, 146
 - budget 29
 - flux into oil 142
 - importation 139
 - partitioning 92, 140, 142
 - sink 182
 - source 140
 - supply 163
- carpel 4, 52, 62
- catalase (CAT) 88, 90
- cell
 - death 85, 114, 183
 - division 84, 85, 86, 88, 89, 110, 112, 113, 134, 136
 - elongation 40, 83, 84, 86, 87, 91, 163, 175
 - expansion 39, 51, 68, 110, 138, 167, 171, 178
 - growth 40, 85, 86, 134, 170, 178
 - guard 85
 - turgor pressure 40, 83, 84
- cellular differentiation 163, 177
- cellulase 87
- cellulose 40, 135, 177, 180, 181, 182, 183
 - biosynthesis 138
 - crystalline 181
 - fibril 176, 177, 182
 - synthesis 180, 182
- cell wall
 - deposition 163
 - hydrolysis 86, 93
 - loosening 83, 173
 - maturation 167
 - polysaccharides 87
 - rigidification 178
 - secondary 135, 163, 165
 - structure 177
 - synthesis 164
- central column 7
- CENTRORADIALIS (ATC) 196
- Chaperone 90
- chemical
 - energy 25, 30
 - messenger 83
- chilling 115, 119
 - injury 88, 118
 - tolerance 132
 - treatment 116
- chlorophyll 26, 27, 30, 81, 84, 87, 91, 93, 118
 - concentration 30
 - content 67, 93
 - degradation 92
 - fluorescence 25, 30
 - meters 43

chromatin remodeling 166
CO₂-exchange rates (CER) 25, 26, 27, 28, 29,
30
cold
 shock 43
 stress 116
 temperature 198
 treatment 116
compensation 10, 145
components of yield 61, 90
conductance 86
CONSTANS (CO) 196, 197
control of flowering 203
copper (Cu) 36, 37, 39, 40
corolla 4, 5
cotton
 fruiting form 109
 glandless 147
 irrigated 36, 38, 40
 Moco 148
 nutrition 35, 44, 45
 protein 167
 quality 89
 reflectance 44
 seed 119, 133, 134, 135, 138, 139, 142, 143,
 144, 145, 146, 147, 148, 149, 150
 seed oil 140, 141, 142, 143
 seed oil quality 143
 seed storage protein 144
 tetraploid 148, 149
 tissue 167, 171
 wild 147, 148
 yield 44, 52, 61, 62, 85, 89, 96, 194
cotton fiber middle lamella (CFML) 165, 179
cotyledon 1, 6, 135, 141
critical leaf K 37
crop
 canopy 25, 30, 82
 growth 36, 37, 43, 51, 83
 growth rate 16
 maturation 16
 maturity 16, 17, 22
 monitoring programs 9
 nutrient demand 44
 productivity 51
 yield 25, 30, 40, 51, 81, 193
crop water stress index 82
crystallinity 163
cultivar 3, 8, 9, 13, 14, 15, 16, 17, 18, 22, 39,
62, 64, 67, 68, 69, 80, 81, 82, 89, 90, 92,
115, 117, 119, 164, 171, 181, 194, 198
 commercial 21, 148
 early 17
 modern 1, 13, 15, 17, 19, 164
 newer 44
 obsolete 13, 15, 16, 19
 older 44
 Upland 27, 52
cultural practice 79, 80
cutout 8, 9, 29, 31, 79, 92, 198
cyanide 87
cyila 88
cyme 195
cysteine 144, 145
cytokinesis 84
cytokinin 83, 84, 88, 113
cytoplasm 84, 139, 176
cytoplasmic
 degradation 183
 ribosomes 84
 streaming 90
cytoskeleton 175, 176

D

daylength 19
day-neutral 19, 20, 194, 197, 198, 201, 202, 203
days to first flower 18
days to first open boll 18
deficiency 35, 37, 44, 45, 88
defoliation 13, 30, 31
dehydroascorbate reductase 172
desiccation 134, 135, 137, 145
determinate 35, 42, 92, 193, 194, 195, 196, 202, 203
 floral meristems 194
 growth 203
 growth regulation 204
 leaf shape 203
 plant growth 204
developing cotton seed 140, 141, 142, 144
diamine oxidase 110
dicot 110
dihydrosterculic acid 141
diploid
 cotton 147, 148
 cotton genomes 144
diurnal
 pattern 65
 pollen tube growth 69, 72
 temperature 65
domesticated day-neutral cultivars 198
dormancy 2, 84, 85
double fertilization 60, 133
drought 1, 7, 13, 43, 51, 55, 82, 86, 93, 115, 117, 118, 119
 stress tolerance 86
 tolerance 82, 117
dry matter 15, 16, 28, 81, 86
 accumulation 86, 91
 partitioning 15, 93
 production 81
dry weight 15, 16, 43, 53, 61, 135, 142, 169

E

earlier maturity 16, 17, 91
earliness 16, 18, 92, 194
earliness component 18
ectopic expression 136, 175, 193
electron transport rate 81
elevated CO₂ 28
elongation 4, 7, 8, 40, 83, 84, 86, 111, 113, 119, 140, 163, 166, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180
embryo 6, 118, 133, 135, 138, 139, 141, 143, 193
 development 60, 71, 84, 115, 134, 136, 137, 138
 formation 136
 globular stage 136
 growth 6, 62
 sac 6, 134
embryogenesis 110, 113, 134, 135, 136, 137, 138, 146, 149
 abundant protein 145
 somatic 136, 137
 zygotic 135
embryonic cotyledons 140
encode plastid-targeted protein 136
Endo 88
endoplasmic reticulum 139
endosperm 6, 60, 134, 138, 139, 145
 development 115, 135
 nucleus 135
 tissue 133
endotoxin 90
energy
 requirement 70, 148
 storage 142
enhanced nutritional value 142
environment 6, 10, 13, 21, 26, 35, 38, 45, 51, 62, 79, 80, 93, 96, 118, 150, 181
 adverse 20
 optimal growth 20

environmental
 conditions 7, 30, 52, 88, 109, 111, 119, 134, 150
 stress 6, 55, 92, 109, 111, 118, 119
enzyme 81, 83, 84, 85, 90, 110, 114, 139, 140, 141, 142, 144, 146, 147, 148, 178, 179
enzyme viability 81
epidermal cells 7, 89, 134, 135, 164, 166, 167, 174
ethylene 54, 83, 84, 85, 91, 92, 93, 109, 112, 113, 118, 169
 biosynthesis 87
 emission 86, 93
 formation 87
 inhibitor 85
 level 93
 measurement 86
 production 86
 receptor 85, 92
 synthesis 85, 86, 92, 93
etioplast 84
expansin 173, 177
extant diploid genome 198

F

F-actin 174, 175, 176, 180
fatty acid 139, 141, 142, 143, 149, 172, 174, 175
 biosynthesis 140, 175
 carbocyclic 141, 142
 elongation pathway 140
 synthases 140
 very-long-chain 172, 175
fertility 40, 64, 80, 147, 148
fertilization 6, 9, 38, 45, 60, 61, 62, 63, 65, 67, 69, 71, 134, 135
 efficiency 60, 63, 65, 67, 68, 69
 in vivo 59, 72
 ovule 39
 poor 6, 62, 71
fertilizer 35, 43, 44, 45
 application 43, 44, 45

fiber 14, 16, 17, 18, 19, 20, 21, 22, 28, 32, 33, 40, 45, 47, 48, 49, 52, 59, 61, 62, 74, 75, 76, 80, 86, 89, 92, 98, 100, 101, 102, 106, 111, 123, 133, 134, 135, 138, 142, 148, 157, 160, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 189, 192, 193, 198
 bundle 179, 181
 cells 89, 138
 development 7, 87, 89, 150, 164, 165, 166, 167, 168, 170, 172, 176, 177, 179
 differentiation 87, 164, 182
 elongation 7, 40, 87, 111, 119, 164, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 180, 182
 fineness 163
 genes 87
 growth 40, 167
 initials 164, 165, 166, 168, 169
 initiation 89, 164, 166, 167, 168, 169, 173
 length 7, 21, 40, 163, 166, 169, 171, 173, 175, 176, 179, 180
 lint 134
 morphogenesis 164
 number 61, 80, 163
 production 52, 89, 133, 138, 148
 proteome 170, 172
 quality 22, 40, 92, 133, 163
 strength 7, 21, 28, 40, 163, 180
 traits 21, 22
 transgenic 164
 wall thickening 171, 183
 yield 13, 14, 16, 17, 18, 19, 20, 89, 133, 163, 166, 183
fiberless phenotype 139
fibers
 fused cotton 179
 per seed 61
fiber/seed 80
finasteride 171

floral 202, 203
 branches 1
 bud 8, 52, 53, 87, 88, 118
 cluster 202
 development 4, 8, 109
 induction 114, 203
 initiation 9
 meristem 194, 195
 organ 111
 organs 6
 primordial 118
 signal 199, 203
 spot 202
 florigen 193, 196, 197, 200
 florigenic signal 201
 flower 2, 6, 7, 8, 9, 19, 20, 21, 25, 29, 37, 38,
 45, 51, 52, 53, 79, 83, 85, 86, 87, 88, 89,
 93, 109, 111, 114, 115, 118, 168, 171,
 193, 194, 195, 196, 197, 198, 199, 201,
 203, 204
 abscission 85
 bud 3, 5, 7, 53
 square 4
 development 4, 111, 114
 first 4, 16, 60, 81, 91, 94, 119, 201
 quality 92
 sexuality 84
 flowering 4, 7, 8, 15, 19, 25, 35, 36, 37, 42, 43,
 51, 52, 53, 54, 59, 60, 61, 63, 69, 71, 79,
 80, 81, 83, 88, 89, 91, 109, 111, 113,
 114, 115, 119, 167, 194, 195, 196, 197,
 198, 199, 200, 201, 203
 initiation 20
 interval 17
 node 8
 pattern 1, 30, 114
 period 45, 61, 64
 process 8
 rate 17, 52
 structure 10
 FLOWERING LOCUS T (FT) 193, 196, 197
 fluorescence 25, 30, 81, 168, 173
 foliar application 43, 44, 90, 91
 fructose 53, 70, 71, 138, 139
 fruit 7, 9, 10, 30, 35, 54, 79, 83, 84, 85, 92, 93,
 118, 119, 138, 171
 abscission 84, 91, 93, 94
 development 8, 25, 30, 88, 93, 114, 115, 117,
 118
 efficiency 61
 growth 114, 119
 growth rate 16
 load 31
 loss 29, 85, 93
 production 40, 79, 92
 removal 29
 retention 52, 91, 117, 119
 ripening 85, 87
 set 62, 83, 84, 115, 196, 198
 shed 93
 fruiting 37, 43, 51, 79, 80, 89
 branch 3, 8, 20, 79, 80, 81, 194, 201, 202,
 203
 branches 52, 198
 bud 25
 cycle 8, 96
 form 1, 10, 93
 node 9
 period 79
 position 80
 site 52, 53, 79, 81, 93
 sites 10
 stage 81
 structure 3, 10, 29
 FT 193, 196, 197, 199, 200, 201, 203, 204
 fucosylated xyloglucan 179
 fungal 84, 117
 funiculus 134, 135, 138, 145

G

G. arboreum 65, 147, 149, 166, 167, 171, 172
G. barbendense 19

- G. hirsutum* 19, 20, 64, 65, 67, 69, 82, 147, 148, 164, 166, 167, 168, 169, 170, 171, 172, 175, 179, 180, 181, 182, 198, 200, 201
- G. raimondii* 147, 149, 166, 172
- G. sturtianum* 147, 148
- galactose 139, 177
- galactoside 139
- galacturonic acid 177, 178
- gametophyte 63
- development 59, 60, 69, 71
 - female 63
 - male 63, 64
- gene
- encoding protein 138, 178
 - expression 87, 110, 135, 137, 149, 166, 167, 170, 171, 172, 174, 177, 180, 181, 182, 183
 - flowering 196, 203
 - introgression 147
 - proteinase inhibitor encoding 88
 - regulatory 135
 - seed storage proteins 144
 - transcription 169, 182
 - transcription factor 136, 167
- genetic
- diversity 19, 198
 - gain 13, 14, 16
 - modification 13, 149
 - potential 17, 21
- genetically modified cotton seed oil 143
- genome microarray 149
- genotype 15, 18, 20, 21, 26, 27, 28, 29, 45, 51, 55, 65, 82, 93, 119, 143, 171, 181, 182, 198
- genotypic
- difference 13, 67, 68, 111, 119
 - fertilization thermostability 72
 - thermotolerance 68
 - variation 27
- germinability 63, 64
- germination 39, 64. *See* pollen germination
- germplasm 27, 81, 183, 204
- collection 19
 - exotic 198, 199
- gibberellic acid (GA₃) 84, 89, 136
- biosynthesis 168, 170
- gibberellin 83, 84, 113
- glanded-plant trait 147
- global climate change 59, 70, 72
- globulin 143, 144, 145
- glucose 53, 70, 71, 138, 139, 140, 142
- glucose-6-phosphate (Glc-6-P) 139
- glucuronic acid 178
- glutathione reductase 68, 94
- glycerol 139
- glycolysis 140, 148
- glycolytic pathway 139
- Gossypium hirsutum* 13, 35, 40, 51, 59, 68, 70, 71, 79, 111, 197
- gossypol 144, 146, 147, 148, 149
- biosynthesis 146, 147, 148
 - gland 138, 147
 - ratio 148
- growth
- habit 1, 13, 92, 196, 198, 204
 - inhibitor 84, 112, 198
 - regulator 29, 82, 89, 183
- gynoecium 4
- ## H
- harvest 10, 15, 16, 18, 30, 37, 40, 89, 134, 196, 197, 198
- index 15, 93
 - process 30
 - yields 81

heat 115, 181
 sensitive 61, 116
 shock protein 110
 shock response 63, 65
 stress 39, 43, 59, 63, 65, 67, 69, 71, 72, 81,
 111, 115, 116, 119
 tolerance 27, 64, 81
 tolerant 69, 116
 tolerant genotype 65
hemigossypol 146, 148
herbicide 6, 13, 89, 198
 resistance 44
high
 fiber tensile 163
 temperature stress 27, 39, 88, 109, 116
 yield 15, 35, 43, 81, 133
homeologous 144, 149
homeostasis 145, 172
horizontal flowering interval 17, 60
hormonal 164
 balance 54, 65
 concentration 80
 pathway 111, 119
 regulation 164
humidity 8, 44
hybridization 137, 143
hydraulic conductivity 85
hydrogen peroxide (H₂O₂) 88, 90, 110, 114,
 117, 146, 168, 169, 172, 173
hydroxyl (OH⁻) 90

I

IAA 53, 54, 83, 136, 167, 168, 181
indeterminate 1, 30, 92, 194, 195, 196, 200,
 203, 204
 growth habit 31, 35, 60, 79
 growth pattern 51
 inflorescence meristems 194
 meristem 193

indole-3-acetic acid 83, 89, 90
indoleacetic acid 53
indolebutyric acid 91
inflorescence 87, 193, 194, 195, 199
 apical meristem 194
 lateral meristem 194
insect damage 8
insecticide 13, 89
insects 31, 148
intercellular signal transduction 135
internode 1, 8, 113, 193, 194, 202, 203
 length 93
interplant
 competition 16
 distance 16
invertase 138, 139, 140
ion channel 110
irrigated cotton crops 38
irrigation 9, 51, 52, 53, 80, 86, 96, 198
 scheduling 82
isoleucine 144

J

jasmonic acid 83, 87
juvenile phase 199, 200
juvenility 84

K

Kennedy pathway 141
K-fixation 40
kinases 136, 174
kinetin 91

L

L-(2-aminoethoxyvinyl)-glycine 171

leaf
 age 26, 37
 area 21, 25, 26, 29, 92, 93, 96
 assimilate 7
 blade testing 43
 concentrations 37
 modified 7
 morphology 20, 22
 normal 20, 21, 26, 27, 202
 nutrient status 38
 okra 20, 21, 26, 202, 203
 photosynthesis 27, 29, 65, 86, 93, 94
 photosynthetic rate 91
 Sea-Island 20
 senescence 84, 93, 110
 shape 20, 202
 size 27, 84
 super okra 20, 26
 tissue 37
 tissue analysis 43
 water potential 53, 54, 86
leaf/canopy reflectance sensors 43
leaf-to-boll ratio 92
leaves 1, 8, 21, 26, 27, 28, 30, 37, 39, 44, 53,
 54, 67, 81, 83, 84, 92, 93, 110, 117, 118,
 138, 166, 174, 183, 193, 194, 195, 196,
 202, 203
 cotyledon 6, 112, 134, 136, 140
 prophylls 1, 2, 4
 subtending 7, 67, 72
 true 1, 2, 4
legume crop 45
legumin 143, 144
light 197, 201
 capture 80
 conversion 80
 extinction coefficient 17
 intensity 28
 interception 17, 21, 26
 penetration 21, 29
 regimes 79
 utilization 22

lignification 135
linoleic acid 141, 142
lint 18, 40, 42, 44, 80, 133
 fiber 133, 163, 168
 index 164
 mass 80
 percent 21, 175
 percentage 15, 89, 164
 production 71, 80
 yield 28, 59, 61, 71, 80, 81, 86, 90, 91, 92,
 93, 94, 96
lipid 114, 134, 137, 139, 174
 transfer protein (LTP) 137
locules 5, 62
lupine 145
lysigenous gland 146
lysine 144, 145, 147

M

macronutrients 39
main-stem
 leaf 29, 42, 92
 leaves 203
 node 9, 17, 42, 79, 91
malvalic acid 141
master regulator 136
maturation 8, 16, 17, 80, 84, 134, 135, 136,
 137, 143, 146, 163, 183
 phase 136, 137
maturing cotton seed 139
maturity index 18
meiosis 6, 60, 62, 63, 71
membrane
 integrity 81
 leakage 81, 118
 lipid 141
mepiquat
 chloride 29, 90, 91, 92, 96
 pentaborate 91

meristem 1, 2, 4, 7, 111, 112, 114, 194, 195, 196, 197, 201
determinate 193
floral 4, 202
identity gene 195, 197, 199
indeterminate 193
vegetative 194, 202
meristematic 194, 197
cell 137
dome 4
tissue 5
metabolic 53, 150
activity 53, 119, 139
bottlenecks 143
energy 35
event 133
flux 140
function 52, 109, 119
mapping 171
pathway 111, 119, 142
process 55
regulation 150
metabolism 54, 87, 109, 110, 114, 117, 118, 148, 149, 174, 177
metabolome 140
metabolomic 150, 183
methionine 85, 144, 145
methylation 136, 166
mevalonate pathway 146
microarray analyses 172
microfibril angle 163, 165, 180
microfilament 176
micronaire 21, 28, 40, 92, 163, 175
micronutrients 36, 44
microRNAs (miRNAs) 137, 149, 166, 203
microsporogenesis 63
microtubule 175, 176, 180
cytoskeletal 180
minimum-tilled sites 45

molecular
biology 31, 149
genetic modification 13
marker 18, 19
regulation 135
structure 178
monopodial 1, 194
growth 193
inflorescence 195
main axis 195
vegetative branch 194
morphogenesis 110, 137, 163, 164, 183
morphological
characteristic 17
modification 13
morphology 1, 51, 176
mote 62
MOTHER OF FT AND TFL1 (MFT) 196
mRNAs 137, 144
mutagenesis 135, 136, 200
mutagenic silencing 149
mutant trait 21
mycorrhizae 117
mycorrhizal fungi 45

N

NADPH oxidase (NOX) 68, 173
NAWF=5 92
nested association mapping population 199
New World cotton 20
nitric oxide 113, 144, 172
nitrification 44
nitrogen (N) 30, 31, 37, 40, 42, 43, 45, 54, 91
assimilates 30
concentration 37, 40
content 42, 43
deficiencies 44
fertilization 30, 31, 38
leaf 42
slow release 44
use-efficiency 40

nitrophenolate 90
 node 2, 4, 5, 7, 8, 16, 17, 20, 29, 41, 52, 79, 80,
 193, 194, 202
 main-stem 9, 17
 node of first fruiting branch (NFFB) 18, 194
 nodes above white flower 93
 non-ruminant 138, 144, 147, 148
 nonstomatal photosynthetic inhibition 27
 non-structural carbohydrates 139
 nuclear blebbing 183
 nucleic acid 85, 90, 110, 183
 nutrient 7, 10, 35, 36, 37, 38, 39, 40, 41, 42,
 43, 44, 45, 90, 133, 135
 accumulation 37
 concentrations 43, 44
 content 38
 deficiency 1, 43, 45
 demand 44
 imbalance 45
 partition 9
 requirement 42
 status 42, 43, 44
 stress 35
 supply 45
 transport 35, 51
 uptake 35, 36, 37, 40, 43, 44, 45, 91
 use efficiency 44
 nutritional balance theory 80

O

oil 45, 118, 133, 135, 138, 139, 140, 141, 142,
 143, 146, 147, 193
 accumulation 140, 141
 biosynthesis 139, 142
 bodies 146
 body 139, 141, 146
 body membrane 145
 body protein 145
 body structure 141
 synthesis 140
Olea europea 110
 oleate 140
 oleic acid 140, 141, 142

oleosin 145, 146
 omega-3 fatty acids 143
 optimal temperature (T_{opt}) 67
 optimum temperature (T_{opt}) 82
 organogenesis 110
 ornithine 110
 osmotic
 adjustment 86
 potential 40, 54, 164
 ovarian 111, 119
 ovary 8, 53, 61, 88, 111, 117, 119
 developing 8
 ovule 4, 6, 7, 52, 61, 62, 63, 65, 72, 87, 89, 111,
 118, 133, 139, 163, 164, 166, 167, 168,
 169, 170, 171, 172, 173, 174, 176, 177,
 179, 180
 culture 172
 culture 171
 culture experiment 173, 178
 development 62, 89
 fertilization 39, 61
 initiation 6
 production 109
 size 175
 surface 166
 oxidative
 stability 143
 stress 39, 65, 67, 72, 90, 168, 172

P

palmitic acid 142, 143
 panicle 194, 195
 partitioning 25, 28, 31, 45, 150
 pathogen 87, 117, 147, 148
 peak demand 44
 pectate lyase 178
 pectin 176, 177, 178, 179
 biosynthesis 178
 cross-linking 174
 homogalacturonan 179
 primary wall 180
 sheath 177
 synthesis 177

peptides 83, 88
perennial 1, 10, 13, 19, 28, 30, 31, 51, 79, 80,
193, 197, 198, 199
peroxidase (POX) 90
enzyme 146
pest damage 35, 44
petal 5, 8, 54, 166
water potential 53
petiole 42, 86, 87
nitrate 43
testing 43
PGR-IV 91
phenotypic variation 20
phloem 7, 54, 83, 110, 197, 201
phosphatidylethanolamine binding protein
(PEBP) 193, 196
phosphoenolpyruvate (PEP) 139, 140
phosphoinositol 175
phospholipid 139, 141, 146
membrane 146
phosphorus deficiency 45
photoassimilate 25, 28
photoinhibition 27
photoperiod 19, 20, 29, 196, 197, 198, 199,
203
photoperiodic short-day plants 198
photoperiodism 22, 193, 199
photosynthesis 25, 26, 27, 28, 29, 30, 31, 67,
81, 90, 91, 110, 142
rate 21, 81
photosynthetic
assimilates 28
carbon fixation 52
rate 25, 26, 27, 28, 67, 81, 91
photosynthetically active radiation 17
Photosystem II 94
physiological modification 13
physiology 21, 35, 37, 43, 51, 82, 90, 92, 135
phytin 134
phytohormones 109, 167, 170, 173
Pima 27, 61, 81, 197
pistil 4, 39, 59, 60, 62, 63, 65, 67, 68, 69, 70,
71, 72, 93, 111, 117, 118
ATP 69, 72
oxidative 69
temperature 66
plant
architecture 193, 194, 196, 203, 204
density 80
genomics 31
growth 37, 51, 83, 86, 88, 90, 93, 96, 111,
112, 113, 119, 164, 167, 173, 193, 201,
203
height 18, 91, 96, 170
hormone 79, 80, 82, 83, 84, 85, 88
mapping 93
population density (PPD) 92
tissue 39
plant growth regulator (PGR) 79, 80, 81, 89,
90, 91, 92, 96, 109, 118
plasma membrane 169, 174, 176, 180, 182
plasmodesmata 169
plastid 84, 139, 140
pleiotropy 21
polar expansion 163, 169
pollen 6, 10, 51, 62, 63, 70, 86, 109, 114, 116,
200, 202
development 62, 63, 65, 72, 141
fertility 64
germination 39, 59, 60, 63, 64, 65, 67, 69,
71, 72, 117
grain 60, 63, 65, 69
initiation 6
performance 59, 63, 65, 72
sterile 6, 8
tube 51, 55, 59, 60, 61, 65, 66, 67, 68, 69, 71,
72, 117, 173
tube growth 6, 39, 45, 55, 63, 64, 65, 67, 68,
69, 70, 72
tube length 64, 66
viability 63, 64
pollen-pistil interaction 59, 65

pollination 4, 38, 60, 63, 65, 71, 114, 119
polyamine oxidase 110
polyamines 83, 88, 109, 110, 111, 112, 113,
114, 116, 117, 118, 119
polymorphism 19
potassium (K) 36, 37, 39, 40, 42, 43, 44, 45,
85, 115
concentration 43
deficiency 40, 45
precocious germination 135
primary wall 163, 176, 177, 178, 179, 180, 181
remodeling 179
synthesis 182
productivity 8, 81, 196, 199, 204
progamic
phase 59, 60, 61, 71, 72
protease 146
protein 30, 45, 85, 87, 90, 133, 135, 136, 138,
142, 143, 144, 145, 146, 149, 168, 169,
170, 173, 174, 176, 177, 178, 180, 182,
193, 196, 197, 200, 201
ACO 85
ACS 85
actin-modifying 176
chloroplast 84, 87
cytoskeletal 169
formin 180
phosphate synthase 182
purification 146
recombinant 146
SOD 173
soluble 147
transgenic 145
proteomic 149, 172, 177, 183
putrescine 88, 109, 119
pyruvate 140

Q

QTL 18, 19, 20, 177, 199, 201

quantitative
genetics 21
trait loci 18, 19
quantum
efficiency 67, 81, 94
yield 67

R

raceme 195
radiation use efficiency 17, 27, 29
raffinose 139
rate of flower movement up the stem 8
rate of new node production 8
reactive oxygen species (ROS) 39, 67, 90, 114,
168, 171, 172, 173, 174, 181, 183
redistributed 40, 42, 43
redistribution 35, 37, 42, 43, 45, 145
of nutrients 42, 45
reduced tillage 45
remobilization 29, 30, 42
remobilized 31
reproductive
branch 3, 4, 81
development 13, 17, 51, 55, 59, 60, 62, 63,
69, 86, 88, 89, 109, 114, 115, 116, 117,
118, 119, 196, 198
dry matter partitioning 22
growth 15, 16, 25, 28, 31, 38, 93, 198, 199,
201
morphology 1
node 93
organ 1
partitioning 28
phase 43, 93
sink 25, 30, 31
structure 5, 20, 28, 59, 71, 85, 109, 193, 201
success 67, 69
thermostability 39
thermotolerance 67, 68, 69
tissue 63, 65, 67, 69, 136

reproductive-to-vegetative ratio 15
respiration 52, 87, 92, 93, 94, 180
 alternative 87
 conventional 87
 rates 54
reversion to vegetative growth 8
RFLP marker 148
ribulose biphosphate carboxylase/oxygenase
 30
root 1, 9, 13, 28, 35, 45, 83, 84, 85, 88, 111,
 113, 136, 138, 173, 175, 178
 growth 45, 83, 91
rotation crop 45
Rubisco 30, 81, 87, 118
rubisco activase 81

S

S-adenosylmethionine (SAM) 110
salicylic acid 83, 87, 88
salicylhydroxamic acid 173
salinity 45, 115, 119
seasonal stresses 9
secondary metabolites 138
secondary thickening 7
secondary wall 173
 cellulose 163, 182, 183
 synthesis 163, 173, 182
 thickening 164, 165, 180, 181, 182
second axillary sympodia 3
seed 40, 42, 45, 60, 61, 62, 67, 71, 83, 84, 89,
 90, 112, 113, 133, 134, 135, 137, 138,
 139, 140, 141, 142, 144, 145, 146, 147,
 148, 149, 163, 164, 167, 179, 183, 193,
 198, 200
abortion 139
biomass 142
coat 133, 134, 135, 138, 139, 164, 168, 193
cotton 40, 43, 44, 81, 94
desiccation period 145
development 62, 63, 133, 135, 136, 137, 138,
 139, 149
fertilization 115, 116
fiber 133
fiberless 166
formation 45, 61, 136, 149
germinating 146
germination 51, 55, 84, 85, 87, 135
growth 135
kernel 135, 147
lipid 141
mass 80
maturation 139, 143
metabolism 149
naked 168
number 6, 61, 62, 80, 89, 119, 139
oil 142
oil content 141, 142
per boll 61, 62, 89, 202
production 62, 149, 198
protein 136, 144, 145
reserves 150
set 61, 69, 71, 88, 118, 119
size 89
storage 138
storage compound 138
storage protein 143, 145
surface 80, 89
tissue 146
trichomes 167
viability 136
weight 62, 141
yield 202
Seed Genes database 135

seedling establishment 51, 55
senescence 83, 87, 112, 113, 118
 premature 45
sesquiterpene 146
 pathway 147
sexual reproduction 59, 60, 62, 63, 71
shade 28, 67, 91
shedding. *See* abscission
side dressing 43
signaling pathway 136, 164, 171, 174
signal transduction pathway 83, 85, 135, 136
singlet oxygen (O_2^-) 90
sink 29, 31, 42, 79
 activity 28, 29
 demand 29
 secondary 31
 size 29
 strength 28, 139
 vegetative 28
slow release
 fertilizer 44
 nitrogen (N) 44
sodicity 45
soil
 fertility 44
 osmotic stresses 82
 water deficit 82
solar radiation 25, 27, 28
soluble
 protein 30
 storage carbohydrate 139
somatic
 embryo 137, 138
 tissue 147
source
 activity 28
 water 7
source-sink 92
source-to-sink 25, 27, 28, 29
specific leaf weight (SLW) 26, 93
spectral characteristics of deficiencies 43
spermidine 109
sphingolipid 175
square 4, 7, 8, 16, 18, 28, 42, 52, 53, 61, 80,
 81, 93
stachyose 139
stamen 111
starch 53, 69, 92, 134, 138, 142, 164, 169
 biosynthesis 142, 169
stearic acid 140, 142, 143
stearidonic acid 143
stem 1, 7, 8, 28, 44, 45, 53, 83, 84, 92, 165,
 195, 203
 main 4, 79, 111, 194
 reserves 42
 tissue 92
sterculic acid 141
stigma 6, 60, 63, 64, 65
stigmatic receptivity 65
stipule 1, 4, 7
stomata 85, 86
stomatal
 aperture 52, 117
 closure 27
 conductance 27, 52, 81, 93, 94
storage
 lipid 135, 141
 lipids 135
 protein 134, 135, 137, 143, 144
 protein vacuole 143
 reserve 133, 138, 141
stroma 139
style 53, 60, 61, 64, 65, 67, 69, 70, 111
sub-okra 21
subtending leaf 29, 65, 67, 68, 92, 194, 202
 photosynthesis 65, 67, 69, 72
sucrose 7, 53, 69, 70, 93, 138, 139, 140, 164,
 182, 183
 phosphate synthase 139, 182, 183
 synthase 138, 164, 182
sufficiency 37
sulfokine 88
sulfur (S) 36, 37, 39, 42
sulphur 144, 145

sulphur-containing amino acid 145
sunlight 4, 27, 28, 30, 67, 91
superoxide dismutase 68, 90, 173
Sus 138, 139, 140
sympodial 1, 2, 10
 axis 195
 branch 8, 17, 29, 194
 growth 193, 196
 inflorescence 195
 leaves 42
 unit 202
sympodium 3, 4, 5, 6, 7, 8, 9, 80, 92
synchrony 30, 31
systemic acquired resistance 87, 88
systemin 88

T

TAG synthesis 141
TCA cycle 148
temperature 6, 8, 10, 25, 59, 61, 62, 63, 64, 65,
 67, 68, 69, 72, 79, 80, 81, 82, 87, 93, 96,
 116, 181
 high 6, 8, 27, 59, 61, 62, 63, 64, 65, 67, 68,
 69, 71, 81, 92, 96, 115, 116, 117, 118,
 119, 181
 low 6, 116, 181
 monitoring system 82
 optimal 64, 65, 69
 threshold 67
 tolerance 81
temporal pattern 29
terminal 9, 110, 183, 194
TERMINAL FLOWER 1 (TFL1) 195, 196
terpenoid 146, 147
 aldehyde 138, 146
tetraploid
 genotype 198
textile industry 133
thermal
 optimum 82
 stability 67
thermogenecity 87

thermosensitive 59, 67
 cultivar 59, 68
 stage of reproduction 62, 63
 variants 67
thermospermine 109
thermostability 39, 67, 68, 72, 117
thermostable photosynthesis 67
thermotolerance
 acquired 63
thrips 7, 8
tissue 8, 29, 43, 59, 60, 61, 65, 67, 70, 83, 84,
 85, 87, 92, 110, 111, 112, 114, 138, 139,
 140, 167, 193, 199, 200, 203
 culture 84
 sampling 43
 testing 44
tonoplast 169
total soluble carbohydrate 70, 71
totipotency 115
toxicities 35
toxicity 147, 148
trace nutrient 45
transcription 138, 166, 167, 170, 171
 factor 136, 137, 141, 166, 167, 169, 176, 183,
 196, 197
transcriptional regulator 183
transcriptome 140, 149, 170
transcriptomics 149, 172
trans fatty acid 142
transgenes 44, 89, 144
transgenic
 cotton 139, 142, 164, 176, 178, 179, 180,
 182, 199
 oilseed plant 146
 seed 145, 147
 traits 44
transitional primary wall remodeling 163,
 179
translation 110, 137, 166
translocation 7, 52, 54, 90, 110
translocator 139

transpiration 51
 demand 27
 stream 35
transporter 110, 136, 137, 139
 plastidial 140
 protein 35
transport of sugar 40
triacylglycerol 139
trichome 166, 167, 182
 development 167, 169
triose phosphate translocator 139
triploid cell 133
tropistic responses 83
turgor 51, 169
 potential 86
 pressure 40, 83, 84, 163, 169, 177
 reduced 164
TWIN SISTER OF FT (TSF) 196

U

ubiquitin ligase 170
UDP-activated rhamnose 178
UDP-galacturonic acid 178
UDP-glucose 138, 164, 182
UDP-rhamnose 178
uniformity 92, 163
Upland cotton 13, 22, 27, 61, 62, 197
uppermost first-position flower 9
urease inhibitors 44

V

vacuolar invertase 139, 169
vapor pressure deficit 27
vascular
 connection 7, 53, 135
 tissue 134

vegetative 4, 7, 15, 22, 25, 28, 30, 35, 40, 42,
 45, 114, 203
 branch 1, 2, 4, 7, 8, 10, 81
 components 42
 development 4
 growth 15, 52, 80, 84, 91, 193, 198, 199, 200,
 202, 203, 204
 node 2, 93
 photosynthesis 30
 process 59, 71
 ratio 15
 reproduction 13
 structures 194
 tissue 39, 63, 70, 118, 136
 weight 93
vegetativeness 194
vernalization 203
vernolic acid 143
vertical flowering
 index 18
 interval 60
Verticillium dahliae 147
viability 10, 63, 64, 136
vicilin 143, 144
virus-derived vectors 200
virus-induced
 flowering (VIF) 200, 204
 gene silencing (VIGS) 200

W

wall deposition
 primary 179
 secondary 40, 179, 180, 181, 182
wall synthesis
 secondary 163, 173, 180, 181

water 7, 25, 35, 43, 51, 52, 53, 54, 55, 68, 82,
86, 92, 96, 117, 145, 163, 169
content 52, 53, 135
deficit 51, 52, 82, 115
potential 7, 54, 85
stress 35, 51, 52, 53, 54, 55, 80, 82, 85, 86,
87, 91, 93, 96, 115, 116, 117
supply 52, 53, 54, 96
water-deficit stress 27, 51, 52, 53, 54, 55, 86,
93, 94, 115, 117
weed competition 44
white flower 15, 16, 20, 53, 60, 111
wounding 87

X

Xanthomonas axonopodis 147
Xanthomonas campestris 147
xylem 7, 54, 83, 182, 183
conducting cell 182
sap 35, 110
system 84
xyloglucan 176, 177, 178, 179
modification 178

Y

yield 3, 15, 17, 21, 22, 25, 27, 31, 35, 37, 38,
43, 44, 53, 54, 59, 61, 62, 67, 79, 81, 85,
88, 89, 90, 91, 92, 93, 109, 111, 117,
118, 119, 140, 142, 148, 198, 203
production 28, 30, 31
yield-fiber quality relationships 22

Z

zygote 60, 71, 133, 134, 135, 137
zygotic
differentiation 134
embryo 137

