

# Index

- Abu Hummus, Egypt, plant nursery 171
- acanthus
- literary association 26
  - in Pliny's garden 25
- acclimatization 8, 265
- bottle gourd 76–8
  - Britain 293, 297
  - in Campania 213–20, 231, 303
  - Columella on 285
  - of laurel in Corsica 76
  - Mesopotamia 50
  - northern France 264–5, 292, 304
  - Pliny on 66–9
  - prestige of 131
  - role of soldiers 75, 81–6, 264
- Actium, Battle of 59
- Aegilius, freedman 214
- olive tree cultivation 162
- Aelius Eutygianus, tomb garden at Puteoli 105
- Aemilius Paulus, triumph of 58
- Agón, Zaragoza, Spain, regulations on irrigation 118
- agricultural techniques 108–14
- changing practices in provinces 269, 299
  - to improve profitability 112, 301
  - for intensified horticulture 6, 98
  - ley farming 116
  - viewed with suspicion 162
- agriculture
- mixed (Campania) 204, 206
  - productivity 114–17, 176, 291
  - as Roman virtue 159, 307
  - small farmers 116–17
  - and war 44
  - see also* animal husbandry; cereals
- Agrippa, M. Vipsanius 47
- map of Rome's conquests 62
- Aïn Ouassel, Tunisia, tax relief for planting olives 168
- alberata* technique, grapevines trained on trees 109
- Alcanadre-Lodosa canal, River Ebro 119
- Alexander the Great 52
- and balsam resin 60
- Almonacid dam, near Zaragoza 119
- almond trees
- Emilia Romagna 228
  - introduced to Spain 239
  - peach grafted onto 182
  - planting 102
  - plum grafted onto 166
- Altinum, *municipium*
- mixed agriculture 221
  - porticoed gardens of Tiberius 48
- Ambrussum, Narbonensis, changing food preparation 256–8
- Ammianus Marcellinus, on Constantius II 148
- Ammonios, soldier, vegetable garden 83
- Amorgos island, temple of Zeus Temenites 114
- amphorae
- to import olive oil and *garum* to provinces 258
  - kilns for making 253, 276
  - marketing of 159
  - preserved peaches in 188
  - treatment to waterproof 201
- animal husbandry
- Cisalpine Gaul 221
  - Netherlands 274
- Annius Verus, M. 145
- Anthimus, on chestnuts 174
- Antioch, royal park of Seleucids 44
- Antonine Plague 307
- Antonius *see* Mark Antony
- Apicius, recipes for peaches 193
- apples and apple trees 7
- Aquileia 222
  - grafting 134
  - Matiana* cultivar 70
  - new varieties 139, 141
  - origins 80
  - plum grafted onto 166
- apricot trees 232

- association with Armenia 76, 177
- introduction 6, 177
- aqueducts 93–4
- Anio Vetus 93
- Aqua Alsietina 93, 122
- Aqua Crabra (Tusculum) 125, 190, 192
- and distribution to private properties 123, 123
- diversions for irrigation 120
- rural 126
- Aquileia
  - apples 222
  - harbour 186
- arboratores*, expert tree pruners 146
- arboriculture
  - cultural role of 2, 129
  - expansion from Iberia to southern Gaul 239
  - and grafting 132–5
  - investment and planning 5, 127, 135, 302–3
  - on large estates 69
  - large-scale 3
  - as male preserve 153
  - militarization of 52
  - plant nurseries 170–2
  - see also* fruit trees; orchards; trees
- arbustum* technique, vineyards interplanted with
  - other crops 109, 265
- archaeobotany 7–11, 299
  - aDNA analysis 10
  - apricot 177
  - Britain 11, 294–7
  - citron 216
  - and desiccation 10
  - evidence of consumption 8, 209–10, 253
  - evidence of fields and orchards 9
  - Iberian Peninsula 240–6, 242
  - and identification of cultivars 10, 166
  - mineralized (latrine deposits) 10
  - peach 178, 184–5, 187, 189
  - preservation by charring 242
  - Tres Galliae 263–5, 294
  - Vesuvius area of Campania 198
  - and waterlogged conditions 9, 223
  - and wild grape 283
  - see also* palynology
- archaeology
  - and bottle gourd 77
  - chestnuts 174
  - evidence of plant nurseries 170, 208–9
  - of gardens 7, 156
  - of horticultural fields 12
  - irrigation structures 119
  - S. Giovanni in Laterano 189–93, 197
  - small farms 116
  - southern Gaul 249
  - Aristotle, on locomotion 86
- Arleate (Arles) 249
- Armenia, apricots 76
- Arras, France
  - Actiparc site (military settlement), granary 271–2
  - Rue Baudimont site (military settlement), cereal remains 271
- Arrianus Maturus 221
- art
  - mosaic 140, 291
  - plants in 102
  - see also* painted gardens
- artichoke, development from cardoon 113
- Asinius Pollio, orator 103
- Asinius Pollio of Tralles 103
- asparagus, Ravenna 111, 222
- Assurnasipal II, king of Assyria 51
- Assyrian kings, importation of exotics to royal parks 50, 54
- Athenaeus
  - on apples 101
  - on naming of *Prunus cerasus* 62
- Athens
  - Aristotelian Lyceum 21
  - Persian occupation 55
  - Platonic Academy 21, 55
- Attalus I, king of Pergamon 66
- Attalus III, king of Pergamon 66
- Atticus 41, 125
  - Cicero's letters to 19
- aubergine 114
- Augusta Raurica (Augst, Switzerland) 258
- Augustus, (C. Julius Caesar Octavianus), Emperor
  - colonial foundations for military veterans 234, 237, 250, 299
  - and *Horti Pompeiani* 47
  - irrigation innovations 122
  - and public garden spaces 47
  - reorganization of Gallia Comata (to Tres Galliae) 258
- Avernus, Lake
  - cabbage pollen 210
  - citrus pollen 219
  - hillside cultivation 206
- azerole (*Crataegus azarolus*) (*tubures*) 72–4
  - types of 73
- Baetica, Spain 236
  - horticulture 238
  - olives 235–6
  - plum grafted onto apple 166
  - towns with Latin rights 237
- Baetis, River (Spain) 235
- Bailey, L.H. 162

- Balkans, peach from 186
- balsam plant (*Commiphora opobalsamum*) 58–60  
 commercial value 59, 64  
 displayed in Rome 56–7  
 uses for 59  
*xylobalsamum* cuttings 59
- banquets, public 46
- Barcino (Barcelona) 237–8  
 commercial horticulture and fruit trees 245–6  
 figs 247  
 hazelnuts 247
- Beaume-la-Rolande, fruit and vegetable  
 cultivation 265
- bees 213
- beets  
 Noord-Brabant 273  
 Oedenburg 267
- Béziers, France, two small farms 251, 279–82,  
 306  
 cereals 281  
 Champ Redon plant nursery 171, 287, 288  
 evidence of wine-making 280  
 Rec de Ligno, vineyard and later orchard 280,  
 283, 287
- Bibracte, near Autun 264
- Bonaparte, Josephine 4
- Bosi, Giovanna 186
- 'botanical imperialism' 42, 302
- bottle gourds 76–8  
 archaeology of 77  
 Cisalpine Gaul 224  
 northern Gaul 264–5, 293  
 subspecies 77  
 uses for 76
- box  
 Cisalpine Gaul 225  
 hedges 25
- Britain, Roman  
 archaeobotany 11, 294–7  
 bedding trenches 295  
 cereals 295–6  
 herbs and condiments 295  
 importation of cherry to 63  
 increased consumption of wild plants  
 293  
 large-scale fruit orchards 297  
 pulses 244, 296  
 Roman fruit imports into 80  
 smaller farmsteads 295, 297  
 wild crab apple 80  
*see also* Vindolanda
- broad bean  
 Britain 244  
 Iberia 243
- Broise, Henri 31, 33
- cabbages 111, 124  
 Campania 205  
 Neapolis 210  
 Pompeian 211
- Caecina Largus, lotus trees 155
- Caesar, Gaius Julius  
*de Bello Gallico* 248  
 Horti trans Tiberim 37, 47–8  
 provincial colonies 234, 249, 258  
 Calpurnius Siculus, *Eclogues*, on grafting 144
- camels 31
- Campania 199–213  
 acclimatization of exotics 213–20, 231, 303  
 agricultural productivity 200, 204  
 archaeobotany 198  
 chestnut trees 172, 174  
 commercial arboriculture 205  
 elite estates 198, 214, 231, 303  
 hazelnuts 205–6, 246  
 horticultural advances 213–20, 303  
 lemon/citron in 218–19, 303  
 modern cultivars 205  
 peaches 184  
 perfume-making 205  
 small estates 204  
 trading of produce 212  
 vegetable growing 210–11  
 viticulture 204
- Campus Martius, Rome 32, 45, 47  
 amphitheatre (Statilius Taurus) 47  
 Caesar's public buildings in 47
- Capua, perfume-making 205
- cardoon  
 domestication in Corduba 240  
 profitability of 113
- carrot, Oedenburg 267
- Carteia, Spain, Latin colony 235
- Carthage  
 and commercial horticulture 46  
 Rome and 235
- Casal Bertone, *fullonica* 195
- cassia 75
- Cassio Dio, on Livia Augusta 151
- Cassius Dionysius of Utica 115
- Castellammare di Stabia, Villa S. Marco, plane  
 trees 21
- Castritius (? C. Castricius Calvus Agricola), work  
 on horticulture 99, 187
- catachanna* (multiple-grafted plant) 145
- Cato, M. Porcius the Elder  
 on cypress 205  
 on grafting 136  
 on hazelnuts 246  
 on *hortus inriguus* 6, 91  
 on varieties of fruit trees 139

- cedar (*cedrus*), terminological confusion with citrus 217
- celery 267, 273, 281
- Celsus  
on fruit trees 101  
on peach 179, 181
- Centumcellae area 94
- cepotaphium*, garden tomb 105
- cereals  
archaeological evidence 10, 223  
barley (*Hordeum vulgare*) 225  
Britain 295–6  
Cisalpine Gaul 221, 225  
emmer 225  
millet 225  
mills for processing 86, 189  
naked wheats (*Triticum aestivum/durum*) 225, 270, 292, 294  
Narbonensis 255, 281  
northern France 270, 294, 304  
rye 230  
shift farming of 135  
for tax payment 271, 296
- Cham-Hagerdorn, Switzerland  
evidence of peach cultivation 85, 189  
water-mill 86, 189
- Champ Redon, Valros, plant nursery 171, 287, 288
- charcoal, from fruit and nut trees 210
- chard, in northern Gaul 263, 292
- Châteaubleau, north-central France, orchard 289
- Châtillon Forest, France 262
- cherries and cherry trees 60–4  
application of lime to roots 112  
Barcino 247  
Emilia Romagna 228  
and evidence of selective breeding 78  
grafting 134  
introduced by Lucullus 2, 31  
Oedenburg 268  
Plinian variety 204  
*Prunus avium* (sweet cherry) 61  
*Prunus cerasus* (sour cherry) 61–2
- chestnuts 172–6  
Cisalpine Gaul 226  
coppiced 174  
Galicia 241  
Gargilius on 102, 175  
grafting 174  
increased role in diet (late empire) 229  
new varieties 163, 175  
spread to northern Gaul 268  
use of flour 173  
use of timber 173  
varieties 173, 204
- chickpea  
Gaul 255, 263, 270  
Iberia 243
- Chresimus, Gaius Furius, freedman, farm 161
- Ciarallo, Annamaria 208
- Cicero, M. Tullius  
account of pillaging of Tusculum villa 22, 27, 108  
on arboriculture 5  
and Atticus 19, 125  
confiscation of house in Rome 22  
*de Natura deorum* 45  
*de Senectute* 44  
on grafting 141  
on irrigation 125  
on Lucullus 35  
naming of gardens 18  
on Transalpine Gaul 251
- Cillium, Tunisia, irrigated vineyard 121, 306
- Cimon, planting of plane trees in Athens 55
- Cisalpine Gaul  
agriculture 198, 303  
animal husbandry 221  
cereals 221, 225  
depopulation (after second century AD) 230, 304  
fruit 223–4, 226  
increased horticultural variety 225, 227–8, 228, 303  
invasion of Iutungi (third century AD) 230  
nuts and nut trees 226  
ornamental plants 225  
peaches (Gallic) 186, 224, 228, 303  
vineyards 221  
*see also* Emilia Romagna
- cisterns  
for irrigation 7, 307  
Pompeian orchard 194, 207  
water supply 126  
*see also* reservoirs
- citizenship  
changed nature of 88  
plants and language of 66–9
- citron (*Citrus medica*) 216  
in Judaism 217  
'Median apple' 217  
medicinal properties 218  
propagation 217
- citrus fruits 216–20  
domestication 133  
*see also* citron; lemon trees
- Cleopatra 59
- climatic changes, from early to mid empire 229, 304

- Cloaius Verus, lexicographer 99, 153  
 Clodius Pulcher, P. 35  
   shrine to *Libertas* 22  
 Colonia Iulia Equestris/Noviodunum (Nyon, Switzerland) 258  
 colonial settlers  
   allocation of best land 251–2, 278  
   choice of cultivars 278, 298  
   in provinces 71, 233, 298  
   *see also* veterans  
 Columella  
   on apricot 177  
   on care of fruit trees 70, 203  
   on choice of grape variety 278  
   on grafting 136–9  
   on horticulture 92, 95  
   on irrigation 120  
   on onions 211  
   on plant nurseries for vines 285  
   on production of vegetables 110  
   on use of chestnut timber in viticulture 173  
   on use of greenhouses 112  
   on varieties of fruit trees 140  
   on viticulture 99  
   on yield for vineyards 116  
 Constantinople, leasing of *hortulani* market gardens 128  
 Constantius II, emperor 148  
 cook ware  
   commercial production 257  
   and social differentiation (Narbonensis) 257  
 coppicing  
   chestnut 174  
   hazel 290  
 Corduba, horticulture 240, 301  
 Corellius, new variety of chestnut 163, 175  
 coriander 267  
   Britain 295  
 cornel (*Cornus mas*, Cornelian cherry), Cisalpine Gaul 226  
 Cornelia Severa, landowner in Emilia Romagna 222  
 Cornelius Fronto, M. 145  
 crab apple, wild 7, 80  
 Crassus, Licinius, lotus trees 155  
 Cremona, dates 224  
 crop rotation 114, 212  
   with cereals 270, 294  
   legumes and 243  
 cucumbers *see* melons  
 cultivars  
   archaeobotanical identification of 10, 166  
   naming of 146, 158–60  
   settlers' choice of 278, 298  
 Cumae, citrus pollen 220  
*cuniculi* (irrigation and drainage channels) 33  
 Curtius Iustus, on peach 181–2  
 cuttings  
   early evidence of transport of vine shoots 253  
   as gifts to guests 156  
   and movement of plants 70  
   for propagation of fruit trees 132  
   tools for 85  
   *xylobalsamum* 59  
 cypress  
   propagation and planting, at Nola 205  
   uses of 205  
 Cyrus, king of Persia 43  
 Damasippus, art dealer 28  
 damson 226, 228  
 Darius, king of Persia  
   palace park at Susa 44  
   transplantation of fruit trees 51  
 date palm, early domestication 134  
 dates  
   dried 267  
   as ritual offerings 223  
 De Angelis, Alberto 193  
 Deir el-Bahri temple, Egypt 50  
 Didyma, sanctuary of Apollo 54  
 dill 209, 267  
 Diodorus, on Phoenician revolt against Persian rule 23  
 Diomedis, island, tomb of Diomedes 20  
 Dionysius of Syracuse, plane trees at palace 20  
 Diophanes, *Geōrgika* 103  
 Dioscorides, physician, on Ethiopian ebony 57  
 Dioscurus, soldier, cultivation of vegetables 83  
 DNA (aDNA)  
   of bottle gourd 77  
   and selective breeding of plants 78  
 Domitius Ahenobarbus, Cn., and Licinius 27, 155  
 ebony tree 57–8  
   origins of 57  
   in Pompey's triumph 56, 64  
 Egypt  
   annexation by Rome 59  
   citron in 216  
   importation of exotics 50, 54  
   roses from 78  
   vegetable cultivation at military sites 82–3  
   water-lifting devices 120  
 elite ideology 4, 89  
   and Republican virtues 159  
 elite self-representation 5, 17–22, 48, 300  
   modes of 88, 98, 140, 291

- elites  
 as benefactors 127  
 estates in Narbonensis 252  
 and grafting 150  
 interest in development of new varieties 214  
 long-term investment in fruit production 127, 302–3  
 and naming of cultivars 146, 158–60  
 and prestige of new varieties 147  
 purchase of estates in provinces 69, 129, 298
- elm, Cisalpine Gaul 221, 226
- Emilia Romagna  
 commercial horticulture 222  
 fruit production 187, 227  
 peaches 184, 187  
 Trajan's alimentary scheme 222–3  
*see also* Cisalpine Gaul
- Erdoğan, Recep, president of Turkey 4
- Eschenz, Switzerland, vicus Tasgetium 10
- Ethiopia, ebony 57
- Eua, villa of Herodes Atticus 20
- Euphrates, River, use of water screw 120
- exotic plants  
 acquisition of 50–5  
 in military triumphs 2, 64–5  
 Pliny on 66–9  
*see also* acclimatization
- farmers  
 and commercial value of new varieties 214  
 and movement of plants 84, 87  
 smallholdings 116–17, 279–82
- fennel, seeds 267
- fig trees  
 Barcino 247  
 cultivation in North Africa 70  
 early domestication 134  
 Iberia 245  
 manuring of 115  
 varieties 97, 139, 141  
 'African' 69  
 Herculaneum variety 204  
 Pompey's new variety 2  
 Vitellius' new varieties 74
- figs  
 at Oedenburg 268  
 sun-dried 70, 273
- Flavius Secundus, T., irrigated vineyard at Cillium, Tunisia 121, 306
- flowers, forced for early blooms 112
- fodder crops 212
- food preparation, Narbonensis 256
- food preservation 101  
 methods for fruit 70, 90
- Frederic II, of Sicily 80
- freedmen  
 and arboriculture 160–3  
 entrepreneurs 160  
 as estate managers 163  
 and novelty Cretan plane tree 164–5  
 ownership of villas and *horti* 124  
 Pliny's view of 165  
 as specialist horticulturalists 163, 303
- Frontinus, Sextus Julius, on aqueducts 32, 122  
 and Aqua Crabra 192
- fructus*, as both 'fruit' and 'profit' 307
- fruit  
 archaeobotanical evidence 209  
 commercial production 127  
 consumption of fresh 187  
 declining variety in late antiquity 228, 229  
 increase in varieties 97, 228, 228  
 out-of-season 112, 148, 180  
 preserving methods 90  
 and prestige of new varieties 147  
 prices in Rome 92  
 production in Emilia Romagna 187  
 as ritual offerings 223–4  
*see also* fruit trees; *individual fruits*
- fruit galleries (*oporothecae*) 126
- fruit trees 1, 6  
 Béziers 280  
 Britain 295  
 commercial production 195–6  
 earliest domestications 133–4  
 early introductions to Italy 76  
 in gardens 25  
 and interplanting of vegetables 192, 211, 265  
 introduction of new varieties 2, 129, 198, 298  
 naming of new varieties 2, 146–50, 153, 158–60  
 painted gardens 158  
 planted in rows 91  
 to produce charcoal 210  
 pruning of 146, 289  
 revenue from 166  
 Roman introduction to northern Europe 80, 233  
 transplantation of new 51–2  
*see also* apple trees; arboriculture; cherries; fig trees; grafting; lemon trees; orchards; peaches; pear trees; plums
- fullonica* washing/bleaching or tannery, Casal Bertone 195
- funerary rituals, and plant remains 223–4
- Furius Crassipes, property in Rome 28
- Gabinus, pillaging of Cicero's Tusculum villa 22, 27
- Gadatas, satrap, transplantation of fruit trees 51–2

- Galicia  
 archaeobotanical record 241  
 introduced fruit and nuts 241  
 spread of vine and chestnut 241
- Gallia Cisalpina *see* Cisalpine Gaul
- Gallia Narbonensis (southern Gaul) 249–53,  
 292  
 archaeology 249  
 centuriation of agricultural land 251–2  
 changes in diet and food preparation 256, 292,  
 304  
 changing vegetation and cultivation 252, 274,  
 290  
 elite landowners 252, 306  
 expansion of viticulture 253, 282–6  
 fruit cultivation 286–92  
 introduced fruits 255–6  
 planned urbanization 250  
 plant dispersal and social access 253–8,  
 292  
 remodelling of Celtic settlements 256  
*see also* Béziers
- Gallienus, and out-of-season fruit 148
- garden tombs 104–8
- gardeners  
 on elite villa estates 160  
 Persian 52  
 Pliny's 25  
 slave horticulturalists 139, 160, 163,  
 303
- gardens  
 design of 156  
 ideological dimension of 107  
 natural–artificial combination 24, 26,  
 30  
 and public image of owner 5, 17–22, 48, 108,  
 300  
 as spaces for *ambulationes* and display 154–6,  
 301  
 walkways in 155–6
- Gargilius Martialis  
 on chestnut 102, 175  
*de hortis* 101  
 on peach 179, 181–3  
 on watering 195
- garlic, Oedenburg 267
- garum* (fish sauce), imported to provinces 160,  
 258
- Gasquinoy, Béziers, farms 279–82  
 wild grape vines 283–4, 306
- Gaul 248–58  
 agricultural expansion in northeast 261–3  
 colonization programmes 234  
 extent 248  
 peach in 186  
 pomegranate cultivation 201  
 viticulture 71, 100, 276  
*see also* Cisalpine Gaul; Gallia Narbonensis;  
 Tres Galliae
- Gellius, Aulus 44
- geographic mobility 304  
 of Roman army 75, 293
- geography  
 expeditions 62  
 and maps 62  
 military campaigns and 62
- Germania, Tacitus on 63
- Gier aqueduct, Lyon 120
- glass, containers for preserving food 90
- Gleason, Kathryn 146
- Gortyn, Crete, novelty plane tree 164
- Gothic War (535–554) 230
- gourds  
 production techniques 110  
*see also* bottle gourds
- Gracchus, Tiberius 45
- grafting 1, 301  
 and arboriculture 132–5  
 as control over nature 142–6, 153  
 economic value of 166–72  
 and elite prestige 131, 154  
 to hasten maturity 134  
 importance of 131  
 impossible combinations 143–4, 166  
 introduced to northwestern Europe 86  
 Livia Augusta 151–3  
 male connotation 152  
 morality of (Pliny) 149  
 mosaic depiction 140, 291  
 multiple 145–6  
 olive trees 134, 167–70, 283  
 peach trees 182  
 Pliny on 130–1, 146, 154, 166  
 to produce new varieties 139–41, 141  
 in response to increased demand 142  
 for selective breeding 133, 135  
 as skill to boast of 154  
 sour cherry onto wild cherry 61  
 symbolism of 18, 130  
 as unnatural 162  
 Virgil on 130, 142–4, 149
- grafting techniques 132, 135–42  
 bore-grafting (with Gallic auger) 138,  
 282  
 ‘inarching’ 138  
 methods (Columella) 137  
 plant compatibility 136, 138–9  
 rootstock 136
- granaries 7, 251  
 northern France 271

- grapes and grapevines  
 choice of variety 100, 277  
 early domestication 134  
 and grafting 135  
 grapes for table 286  
 Holconia variety 204  
 Pompey's new variety **141**  
 propagation 283  
 by layering 284  
 protection from frost with transparent panes  
 112  
 wild and intermediate types 282–6, 306  
*see also* viticulture; wine-making
- Greece  
 consumption of chestnuts 174  
 gardens and aftermath of war 55  
 and grafting 135  
 plane trees 21  
 royal parks 44
- Hadrian, emperor 302  
 Hadrian's Wall *see* Vindolanda  
 Hatshepsut, of Egypt, importation of trees 50  
 hay, composition of (Oplontis) 212  
 Haye Forest, northeast Gaul 261  
 hazelnuts  
 from Campania 205–6, 246–8  
 Cisalpine Gaul 226  
 coppiced 290  
 early domestication 247  
 possible introduction to Spain 246–8  
 Tres Galliae 289
- Helico, *holitor* (in Tusculum) 125  
 Henchir Mettich, Tunisia, olive plantations 168  
 herbal toxicology 66  
 herbs and condiments  
 aromatic 213  
 Béziers 281  
 Britain 295  
 Oedenburg/Biesheim-Kunheim 266
- Herculaneum  
 evidence of foods 209  
 House of the Stags 184, 185  
*taberna* of Verecundus, chestnuts 174  
 Villa Sora 3
- Herennia Tertia, Cadianus estate at Nola 240  
 Herod, king, gardens at Jericho 155  
 Herodes Atticus, villa at Eua 20  
 Herodotus, on tribute of ebony from Ethiopia 57  
 Hispania Citerior (Tarraconensis)  
 commercial wine production 236, 245, 306  
 fruit varieties 244  
 local wine production 237  
 olives 245  
 rural settlements 239
- honey 213  
 Hoogeloon, Netherlands  
 farmstead/villa 294  
 introduced plants 273  
 Horace, on cabbage 124  
*borrea* (warehouses/granaries) 251  
 Hortenius, Q. 35  
*horti*  
 political potential of 37, 45  
 suburban villas in Rome 11, 17, 28, 89–95  
*see also* Lucullus; Pompey  
*horti*, fruit orchards 46  
 Horti Scipionis, Rome 45  
 Horti trans Tiberim, Rome 37, 47–8
- horticultural techniques  
 greenhouses and protective screens 112  
 planters on wheels 112, 122  
 transferred to provinces 71
- horticultural treatises 88, 95–104, 128, 279, 298  
 on cultivation and propagation of peach  
 181–4  
 on viticulture 99
- horticulture  
 and *ars* vs. *natura* 148  
 Baetica, Spain 238  
 emergence of large-scale 88, 132, 306  
 geographical specialization 96–7  
 Persian nobles' training in 44, 54  
 and Roman suburban residences 46
- hortus*, meanings of term 17, 96  
 Hostius Pamphilus, C., epitaph on garden tomb  
 108  
 Hyères, France, Etruscan Grand Ribauld  
 F shipwreck 253
- Iberian Peninsula 235–48, 292, 304  
 archaeobotany 240–6, 242, 290  
 decline in varieties in late antiquity 244  
 distribution of fruit species 245  
 effect of colonization on 238  
 introduced fruits and vegetables 239–40, 242,  
 246–8  
 irrigation infrastructure 119  
 peaches 188, 243  
 regional differences 248  
 Roman landowners 235  
 trade 236  
 variety of cultivation types 241  
 viticulture 71, 276, 283
- indigenous populations  
 North African water-management 121  
 role in plant dispersal 233  
 irrigation and irrigation technologies 114,  
 117–27  
 archaeological evidence 119



- irrigation and irrigation technologies (cont.)  
 Barcino 246  
 canals 119  
 cisterns 7, 307  
 for commercial production 125  
*cuniculi* 33  
 dams 119  
 on imperial estates 122  
 medieval Muslim techniques 117  
 North African water-management 121  
 Pompeian orchard 194, 207  
 reservoirs 119, 190  
 Roman legal water rights 118  
 use of Archimedes' screw 120  
 water-lifting technology 120  
*see also* water supply
- Irun (Oiasso), Spain, peaches 188, 243  
 Iulia Benedicta, tomb garden at Puteoli 105  
 Iulius Atticus, treatise on viticulture 99, 282  
 Iulius Epaphra, C., fruit-seller 188  
 Iulius Graecinus, books on viticulture 100, 282  
 Iulius Hymetius, C. 124  
 Iutungī tribes, invasion of northern Italy 230  
 Ivanishvili, Bidzina, acquisition of trees 4
- Jaime II, king of Spain 80  
 Jashemski, Wilhelmina 12, 155, 171  
 fruit orchard in Pompeii 193, 207  
 on fruit sellers 212  
 on lemon/citron 217  
 Jericho, Herod's gardens 155  
 Jolivet, Vincent 31, 33  
 Judaea  
 balsam plantations 59  
 first Jewish revolt (AD 66–73) 59  
 Jewish refugees from 217  
 Judaism, and citron 217  
 jujube tree (*zizipha*) 72–4  
 Cisalpine Gaul 224  
 Julian, jurist 125  
 Justinian, *Novella* 128  
 Justus Lipsius 107
- Languedoc, vineyards 281  
*lapis specularis* (selenium gypsum), for  
 greenhouses and protective screens 112  
 Lattara, Latera, (Hérault)  
 archaeobotanical evidence of changing foods  
 255–6  
 changing food preparation 257  
 laurel, in Corsica 76  
 Le Bois Harléé, near Longueil-Sainte-Marie,  
 Gallo-Roman site 265  
 leeks 78
- legumes  
 and crop rotation 243  
 as fodder crops 244  
 northern France 270  
 lemon (*citrus x limon*)/lemon trees 216  
 in Campania 218–19, 232, 303  
 introduction 6, 218–20  
 origins of 217–19
- lentils  
 from Egypt 209  
 Iberia 243
- lettuce 115  
 grown in Pompeii 211  
*liberalitas*, concept of 38, 49  
 Licinius Crassus, L., lotus trees 27, 155  
 Livia Augusta (Livia Drusilla), wife of Augustus  
 150–3  
 creation of new fig by grafting 151–3  
 exceptional honours 153  
 'painted garden' at Prima Porta villa 102, 103,  
 146, 301  
 political role 150–1  
 rural aqueduct 126
- Lleida, Catalonia, peaches 188, 243  
 lotus trees 27, 155  
 Lucullus, L. Licinius  
 date of retirement from public life 34–7  
 delayed military triumph 29, 37–8, 64  
 as epitome of luxury 30–1, 35  
*horti* (on Pincian Hill) 28–38, 64, 300  
 archaeology of 31, 33  
 date of creation 32  
 irrigation and drainage channels 33  
 later ownership 29  
 political significance of 36–7, 45, 49  
 site of 31–2  
 introduction of cherry tree 2, 61–2, 64  
 rivalry with Pompey 29
- Lugdunum (Lyons) 249, 259  
 lupins 213  
 Lysander, visit to king Cyrus 43
- Macedonia, and grape vine 53  
 Macrobius, on grafting 130  
 Maecenas, Gaius, gardens 98  
 Maenas (Maecenas) Licinus, on food  
 preservation 101  
 Mago, Carthaginian agriculturalist 46  
 and fertilizer 115  
 on planting almond trees 102  
 Malmaison, Château de 4  
 manuring 114–16, 269  
 human excrement 115  
 pig dung 115  
 to produce out-of-season fruit 115

- marble, black (Lucullan) 30  
 Marcellus Aeserninus, and novelty plane tree 164  
 Marcius Philippus, L., villa in Puteoli 37  
 Marcus Aurelius, emperor, on multiple grafting 145  
 Mark Antony 47, 59  
 market forces  
   and cultivation techniques 109  
   and value of named varieties 159, 301  
 Martial  
   on jujube 73  
   on peach 196  
   on protection of orchards from winter cold 112  
 Mas de Vignoles IX, Nîmes, archaeobotany of wells 252  
 Masclus, decurion 84  
 Massalia (Marseille) 249  
 Matius (Calvena), Caius 187, 222  
   on entertaining 101  
   ‘invention’ of topiary 101  
   new apple variety 70, 100  
 Mattingly, David 1  
 medlar, in northern Gaul 264  
 melons/(cucumbers)  
   Cisalpine Gaul 226  
   Iberia 248  
   *melopepo* (new melon or watermelon?) 213  
   northern Gaul 264–5  
   snake 112  
   watermelon 226  
 Memmius, C., tribune 29  
 Mesopotamia  
   grape vine 53  
   importation of exotics to royal parks 50, 54  
 Messala Corvinus, Valerius 29  
 Messalina, empress 29  
 Minius Percennius, propagation of cypress 205  
 Mithridates 65–6  
   interest in medicinal properties of plants 42, 66  
 Modena (Mutina) 227  
   peaches 185–6  
 morality  
   condemnation of luxury of the table 110  
   Pliny on 110, 113, 149  
 Morley, Neville 104  
 Muel dam, near Zaragoza 119  
 mulberry 149  
   in northern Gaul 264  
 must fermentation 71  
 naked wheats (*Triticum aestivum/durum*) 225, 270  
   as choice 270  
   imported (northern France) 271  
   processing 270  
 Narbo Martius (Narbonne), founding of 249, 251  
 nature  
   grafting as control over 142–6  
   and modification of landscape 143  
   symbolism of taming 13  
 Neapolis  
   peaches 215  
   quinces 205  
   terraced fruit orchards 206  
 Nemetacum, near Arras, France 271  
*nemus* (grove), in Porticus Pompeiana 40  
 Nero, emperor, Horti Maiani 26  
 Nicolaus of Damascus 31  
 Nikopolis, Moesia, funerary inscription 148  
 Nîmes 285  
   aqueduct 120  
   Codols villa 289  
   evidence of intensive horticulture 286  
   viticulture 286  
 Nineveh, gardens 51  
 Noord-Brabant, Netherlands  
   cattle 274  
   evidence of agricultural change 272  
   new plant foods 273  
 North Africa  
   indigenous water-management techniques 121  
   olive production 167–70  
   *see also* Egypt; Tunisia  
 Northern Italy  
   archaeobotanical sites 11  
   *see also* Cisalpine Gaul  
 nurseries *see* plant nurseries  
 nuts and nut trees  
   charcoal from 210  
   Cisalpine Gaul 226  
   funerary offerings 224  
   wild 293  
   *see also* chestnuts; hazelnuts; walnuts  
 Octavian *see* Augustus  
 Oedenburg/Biesheim-Kunheim, Alsace, France 77, 265–70  
 Argentovaria civilian settlement 266  
 changing diet under Romans 269  
 fruits and nuts 268  
 herbs and condiments 266  
 imported plant foods 268  
 locally grown fruits 268  
 as military camp 266  
 temple complex 268  
 vegetables 267  
 walnut 268

- Ofellius Ferus, Gaius 40  
oleaster, wild olive 134, 167  
olivaster, feral form of olive 134, 167  
olive oil, imported to provinces 258  
olives and olive trees 1  
    absence from Tres Galliae 264  
    in Centumcellae area 94  
    Cisalpine Gaul 224  
    commercial production 276–7  
    cultivation of 162  
    early domestication 134  
    grafting of 167–70  
    wild olive onto oleaster 134, 169, 283  
Pompey's new variety 141  
presses and mills 7, 276–7  
spread to provinces 71  
tax relief for planting 168  
varieties 277  
onions, from Pompeii 205, 211  
Oplontis  
    Villa A (Villa of Poppaea) 174, 210  
    lemon plant 220  
    Villa B (L. Crassius Tertius)  
    hay 212  
    pomegranates 199, 201–2  
Oppius, *On Wild Trees* 103  
Orange, France  
    hydrogeological work 234  
    land hierarchy 252  
orchards  
    Châteaubleau 289  
    contouring of soil 208  
    density of planting 146, 194, 203–4  
    as display of skill 154  
    on large estates 70, 127  
    Pompeii 193–5  
    spacing of 203, 211  
    terraced 206  
    yields of pomegranates 202  
    *see also* fruit trees  
Oss-Westerveld, Netherlands, new plant foods 273  
Ovid, on chestnuts 173  
painted gardens 156, 301  
    Livia's Prima Porta villa 102, 103, 146, 301  
Palladius (Rutilius Taurus Aemilianus Palladius)  
    on grafting 139  
    grafting of cherry 61  
    lemon trees 232  
palynology (pollen studies) 10, 210  
    citrus 219–20  
    Oedenburg 268–9  
pandemics 230, 307  
Papinius Allenius, Sextus 72–3, 187, 269  
*paradeisos*, concept of 44  
Parma, chestnuts 226  
*pastio villatica*, high-quality food production 44, 91, 141  
pea  
    Britain 244  
    Iberia 243  
peaches and peach trees 177–97  
    in Campania 215  
    Cisalpine Gaul 186, 224, 228  
    cultivation 181–4  
    in Italy 184–6, 185, 196  
    *duracina* early-ripening 180, 193  
    'farm' at S. Giovanni in Laterano 166, 189–93  
    hybrid peach–almond rootstock 183  
    introduction 6, 177  
    in northern Gaul 264, 293  
    origins 178  
    from Persia 76  
    preserving methods 183, 187–8  
    propagation 181–4  
    grafting 182  
    from seed 182  
    size of fruits 187  
    soil conditions 182  
    textual evidence for 179  
    varieties 180  
pear trees  
    in Centumcellae area 94  
    Falernian variety 204  
    grafting 134  
    new varieties 97, 139, 141  
pepper  
    grown in Italy 68  
    imported 259, 267  
perfume-making  
    Campania 205  
    *xylobalsamum* cuttings for (Balm of Gilead) 59  
peristyle garden, symbolism of 17–18  
Persia  
    horticulture as part of elite education 44, 54  
    importance of rulers' gardens 43–4  
    trees in royal parks 23, 51  
Petronius (Gaius Petronius 'Arbiter'), Satyricon,  
    on tomb gardens 106  
Phaedrus, C. Iulius, fables 158, 307  
pharmacology  
    medicinal plants 103  
    Mithradates' interest in 42, 66, 103  
philosophy, association of plane trees with 21, 26  
Phoenicians, revolt against Persian rule 23  
pigs  
    dung as fertilizer 115  
    for pork meat 115  
pine nuts 224

- pistachio tree 74  
 grafting 134  
 introduction 269  
 Oedenburg 269
- Plague of Cyprian (AD 249–62) pandemic 230, 307
- Plague of Justinian (541–3) 230, 307
- Plancus, L. Munatius, founding of colonies 258
- plane trees 20–2, 21  
 in Athens 55  
 Cisalpine Gaul 225  
 to give shade 25  
 Greek associations of 21  
 in hippodrome garden 25  
 novelty Cretan 164–5  
 in Porticus Pompeiana 40, 58, 65
- plant nurseries 70, 170–2, 208–9  
 Béziers 171, 287, 288  
 for vines 285–6
- plant pots 172  
 kiln for production of 170  
*ollae perforatae* 286, 287
- plants  
 aromatic 205  
 development of new varieties 214, 290  
 and language of citizenship 66–9  
 naming of 62, 146–50  
 selective breeding of 78, 116, 133  
 symbolism of 4, 22–8, 48, 300  
*see also* fruits; trees; vegetables; *individual plants*
- plants, medicinal 103  
 interest of Mithridates in 42, 66
- plants, movement of 69–75  
 agents of 79–87, 304–5  
 and identification of best varieties 129  
 introduced to provinces 7, 80, 233, 292  
 need for technical knowledge 80  
*see also* acclimatization; colonial settlers; Gaul; Iberian Peninsula; veterans
- Pliny the Elder 1  
 on ‘African’ fig 69  
 on Augustan colonies 237  
 on balsam 60  
 on Britain 63  
 on cabbage 125, 148  
 on cassia 75  
 on cherry 61, 63  
 on chestnuts 163, 173, 175  
 on citron (‘Median apple’) 218  
 commercial revenue from fruit cultivation 166  
 on Corduba 240, 301  
 on ebony 57  
 and freedmen arboriculturalists 161  
 on grafting 149, 166  
 to create new varieties 130–1, 146, 154  
 tree at Tibur 144
- on jujube and azerole 72  
 on Lucullus 31  
 on manuring and irrigation 115  
 on *melopepo* 213  
 moral view of horticulture 110, 113  
 on Narbonensis 251  
*Naturalis Historia* 2, 98–9  
 on novelty Cretan plane tree 164–5  
 on peach 179–80, 192  
 on plane tree 20, 165  
 on Pompey’s triumph 56  
 on profitability of horticulture 113  
 on profitability of viticulture 99  
 on samphire 293  
 on Seleucus Nicator 53  
 sources for horticultural information 98–9  
 on varieties of fruit trees 141, 159, 204  
 view of exotic plants 66–9  
 on Vitellius and pistachio 74, 269  
 on viticulture in Cisalpine Gaul 221  
 on water-lifting devices 120
- Pliny the Younger  
 choice of plants 26  
 description of garden in *Tuscis* 23–7, 301  
 gardener’s name clipped in box 25  
 hippodrome garden form 24–5  
 on mixed agriculture 221  
 name clipped in box 25
- plums and plum trees  
 Emilia Romagna 227–8  
 grafting 134  
 introduced to Iberia 241
- Plutarch  
 on grafting 144  
 on *horti* of Lucullus 33–5  
 on plane trees in Athens 55  
 on triumph of Aemilius Paulus 58
- politics  
 Augustan period of stability 89, 98, 196, 302  
 and private–public architecture 23, 34, 48, 300  
*see also* elites
- pomarium*, fruit orchard 96
- pomegranate (*malum Punicum*) 76  
 Cisalpine Gaul 224  
 early domestication 134  
 for medicinal preparations 200  
 packed for transport (Oplontis) 199, 202  
 to Spain 239  
 traded 200  
 use of human urine as fertilizer 115  
 uses for 199  
 yields 202

- Pompeii  
 bakery next to House of the Chaste Lovers 212  
 'Casa del Frutteto' (House of the Fruit Orchard) 158, 218  
 'Casa della Regina Carolina' 156, 287  
 charcoal record 210  
 chestnuts 174  
 depictions of Archimedes' screw 120  
 evidence of foods 209  
 evidence of plant nurseries 171–2  
 fruit (peach) orchard 184, 193–5, 207  
 gardens 12  
 House of the Floral *Lararium* 172  
 House of the Garden of Hercules 171  
 House of the Ship Europa 203  
 House of the Wedding of Hercules and Hebes 219  
 lupin sellers 213  
 market gardens 155, 307  
 preserved fruits and vegetables 90  
 Villa of the Mosaic Columns, tomb garden 105  
 Villa of the Mysteries 211  
 Villa of the Papyri 219
- Pompeius Falco, Q., senator 145
- Pompeius Flaccus, and pistachio in Hispania 74, 269
- Pompeius Lenaeus, translation of Mithridates' pharmacological notes 66
- Pompey the Great  
 live trees exhibited in triumph 42, 55, 57, 301  
 and Mithradates' botanical and herbal documents 43, 66  
 new fig variety 2, 150–1  
 political use of *horti* 38, 49  
 Porticus (theatre-cum-temple complex) 30, 38–42, 45, 65, 108  
 date of project 41  
 later owners 47  
 layout 40  
 opening of 46  
 plane trees 40, 58, 65  
 rivalry with Lucullus 29  
 significance of triumph 56, 64–6
- Porticus Liviae (Augustus, for Livia Drusilla) 40, 47
- Porticus Octaviae 47
- Porticus Vipsania (Marcus Agrippa) 40, 47  
 map of Rome's conquests 62
- Potitus, Valerius Messalla, and viticulture 99
- pottery  
 commercial production in Gaul 257, 259  
 plant pots 170, 172  
*see also* amphorae; cook ware
- Prima Porta, 'painted garden' at Livia's villa 102, 103, 146
- propagation of plants  
 of chestnut 175  
 evidence of, Vindolanda 84–5  
 by layering 191, 208, 283–4  
 methods, fruit trees 132, 134  
*ollae perforatae* planting pots 286, 287  
 peach trees 181–4  
 by seeds 132, 283  
 by suckers 132  
 use of trees for shade 208  
*see also* cuttings; grafting
- Propertius, on grafting 144
- pruning, of fruit trees 146, 289
- pruning hooks 85
- Prunus* species 228*see also* almond; cherry; damson; plum
- public gardens 17, 30, 40, 45–9
- public works 17
- Pudion, planting of olive trees (North Africa) 170
- pulses 210  
 Britain 296  
 in funerary contexts 223  
 Iberia 243  
 northern Gaul 294
- Puteoli  
 entrepôt 215  
 perfume-making 205  
 tomb garden 105
- quinces, Neapolis 205
- Quintilius Condianus, Sextus, on peach 181–2
- Quintilius Valerius Maximus, Sextus, on peach 181–2
- radish, Neapolis 210
- Ravenna  
 asparagus 111, 222  
 vineyards 221
- Rea, Rossella 192
- Rec de Ligno, Valros, France, vineyard and later orchard 283, 287
- reeds (*Arundo* or *Phragmites*), for vine supports 282
- Regulus, M. Atilius, Horti trans Tiberim 26
- Remnius Palaemon, Q. 161–2
- Renaussas, Narbonensis  
 viticulture 281, 284  
 wine-making 284
- reservoirs 119  
 S. Giovanni in Laterano 190
- Rhegium, plane trees 20

- roads  
 Iberian Peninsula 238  
 Tres Galliae 259
- Roman army  
 food supplies 200  
 Gallic auxiliaries 260  
 geographical mobility of 75, 293, 305–6  
 and introduction of plants to provinces 8, 259  
 and movement of plants 72, 81–6, 269, 305  
*see also* veterans
- Roman empire  
 engineering feats 143  
 introduction of plants by Romans 7–8, 259  
 plants as symbol of conquest 55, 57  
 and status 67
- Roman law  
 litigation over trees 299  
 water rights 118
- Rome  
 Augustan era 5, 49, 88–9, 128, 234, 298  
 Republican virtues of simplicity 159, 307
- Rome, city of  
 aqueducts 93–4  
 Campus Martius 32, 45, 47  
 Casal Bertone *fullonica* 195  
 Casale di Galeria inscription 122  
 citron 220  
 Colosseum (sewers) 187  
 demand for land 28  
 Forum Holitorium (vegetable market) 92  
 gardens 5–6, 17–49 range - chapter  
 gardens of temple of Heliogabalus 12  
 Livia's building projects 150  
 Pompey's theatre 39  
 population 6, 92, 104, 129  
 public gardens 17, 30, 40, 45–9  
 quadripertico gardens (Pompey) 39  
 and suburban *horti* 11, 17, 28,  
 89–95  
 temple to Venus Victrix 39  
 Via Gaetano Sacchi *hortus* 93  
*see also* S. Giovanni in Laterano
- roses  
 from Egypt 78  
 introduced 79
- royal parks  
 Antioch 44  
 Greece 44  
 importation of exotic plants and trees 50–5  
 Mesopotamia 50  
 Persia 23
- Russell, Amy 23
- Russi, near Ravenna, peaches 186
- Rutupiae (Richborough), Kent, commercial  
 horticulture 296
- S. Giovanni in Laterano  
 apparent abandonment 192  
 archaeology 189–93, 197  
 buildings 191  
 cultivated area 191  
 dating of 192, 196  
 as imperial property 195  
 irrigation system 122, 190–1  
 peach farm 166, 189–93  
 reservoir 190–1  
 road 190
- Saint-Romain-en-Gal, near Vienne, mosaic  
 depiction of grafting 140, 291
- salt pans (*salina*), Vigo, Galicia 241
- samphire 293
- Sant'Agata Bolognese, rural villa excavations 11,  
 227
- Sarno, River, transportation of agricultural  
 produce 211
- savory, summer 267
- Scafati, near Pompeii  
 field with furrows 12  
 peaches 215  
 vineyard 12
- Sceptius, freedman, and *mala Sceptiana* apple  
 161
- Scipio Africanus 46, 162, 214
- seafood, consumption of 274
- seeds  
 propagation from 132, 182, 283  
 and reversion to wild form 132
- Seleucids 52  
 royal park in Antioch 44
- Seleucus Nicator, king of Syria, attempted  
 introduction of spices 53
- Seneca, Lucius Annaeus 162  
 on horticulture in Campania 214–15
- Sennacherib, gardens in Nineveh 51
- shipwrecks  
 Dramont C 254  
 El Sec (Majorca) 254  
 Etruscan Grand Ribauld F 253  
 Madrague de Giens 254
- Sicily, plane trees from 20
- slaves  
 specialist horticulturalists 139, 160, 163, 303  
*see also* freedmen; gardeners
- snails, land, consumption of 274
- soil erosion, need to control 116
- South Etruria Survey 126
- Spain, apple cultivar 71
- spices and aromatics  
 attempts at introduction 53, 75  
 imported 209
- Squatriti, Paolo, on chestnuts 174

- Stabiae, Villa Arianna 12, 146, 156, 157, 158
- Stackelberg, K.T. von 58, 153
- Statilius Taurus, amphitheatre 47
- statuary  
 archaeological evidence for 19  
 Cicero's 19  
 in gardens 18  
 herm of head of Athena 19  
 in Porticus Pompeiana 40  
 statues of owner 26
- Sthenelus, Acilius, vineyard 161
- Strabo  
 on Baetica 235, 238  
 on Campania 200, 204  
 on Cisalpine Gaul 221  
 on grape vines in Mesopotamia 53  
 on Lake Avernus 206  
 on Persian nobles 44  
 on water-lifting devices 120
- Suetonius  
 on colonization 234  
 on Narbonensis 249
- Sutrium, between Rome and Viterbo, aqueduct 126
- sycamore fig, early domestication 134
- symbolism  
 of grafting 18, 130  
 of nature-taming 13  
 of peristyle garden 17–18  
 of plants 4, 22–8, 48, 300
- Tacitus, on Germania 63
- Tbilisi, Georgia 4
- Tegea, basilica of Thyrsos 110
- Tereus, freedman, new variety of chestnut 163, 175
- territorial expansion, plants as symbols of 50
- theatre, Pompey's first stone-built in Rome 39, 41
- Theophrastus  
 on citron ('Median apple') 217  
 on fruit trees 152  
 on grafting 135  
 on propagation from seeds 133
- Thünen, Johann Heinrich von 6  
*The Isolated State* model of agricultural location 90
- Thutmosis III, of Egypt 50
- Thyrsus, freedman of Augustus 124
- Tiberius, emperor  
 at Misenum villa 158  
 porticoed garden at Altinum 48  
 use of planters on wheels for snake melons 112
- Tiberius Nero, foundation of Narbonensis colonies 249
- Tibur  
 fruit farming 117  
 multi-grafted tree 144  
 Villa of Cassius 20
- Tiglat-Pileser I, Assyrian king, botanical gardens 50
- Tiro, Sabinus, work on gardening 98
- Titus, emperor, display of balsam plant 56
- tomb gardens 104–8  
 as *locus amoenus* 106
- tools  
 cleaving knife (for cuttings) 85  
 pruning hooks 85
- topiary 24  
 box 25  
 'invention' of 101
- Torre del Greco, Naples, citrus 219
- trade, and warehouses 251
- trade networks 75  
 Campania and Iberia 247
- traders, and movement of plants 69, 84, 87, 304–5
- Trajan, emperor, alimentary scheme (*Tabula* from Veleia) 222–3
- trees  
 transplanted 27, 50  
 transported into royal parks 52  
 in triumphal processions 42, 55, 57, 301  
*see also* arboriculture; fruit trees; *individual species*
- Tremellius Scrofa, Gn., fruit galleries 126
- Tres Galliae (Aquitania, Belgica, and Lugdunensis) 258–63, 292  
 agricultural continuity and changes 261, 274  
 archaeobotany 263–5, 294  
 cereals 270, 294, 304  
 colonies 258  
 elite landholdings 260–1  
 evidence of introduced plants in rural sites 264  
 growth of towns 259  
 north and northeast region 270–5, 293  
 northward diffusion of plants 263, 304  
 road system 259  
 two stages of plant diffusion 265–70
- triumphs, military 57  
 display of exotic plants 2, 64–5  
 live trees exhibited 42, 55, 57, 301
- Tunisia  
 olive plantations 168  
 vineyards 121, 306
- Turkey  
 archaeobotanical collections 4  
 'Ata Tohum' (Ancestral Seed) Project 4
- Tusculum, Cicero's villa 22  
 Academia garden 19  
 commercial garden 125

- Ulpian, *Digest*, on manuring 115
- Umbricius Scaurus, *garum* container (*urcei*) 160
- urbanization 142, 299, 307
- Baetica 237
  - and demand for fresh produce 89, 127, 299, 305
  - Narbonensis 249–50
  - suburban orchards and vegetable gardens 6, 11
  - Tres Galliae 259
- Ureu, Tunisia, grafting of olive trees on  
*Aufidianus* estate 168
- Vada Sabatia, Emilia Romagna, plant remains in well 227
- Valerius Asiaticus 30
- Valerius Maximus 27
- on Pompey's theatre 41
- Valerius Messalla, M. 35
- Valgius Rufus, C., on medicinal properties of plants 103
- Valros, France 307
- Champ Redon 171, 287, 288
  - Rec de Ligno, Valros, France 283, 287
- Varro, M. Terentius 41, 139
- de Re Rustica* 91–2
  - on Lucullus' aviary 30
  - on display 3
  - fruit galleries (*oporthecae*) 126
  - grafting of cherry 61
  - on honey production 213
  - on varieties of fruit trees 140
- vegetable gardens (*horti*) 6, 12
- in colonial towns 250
  - as female space 152
  - market gardens, on lease 127
  - Neapolis 210
  - near military sites 82–3, 266, 305
  - owned by professional associations 128
  - Roman suburbs 124
- vegetables 6, 129, 301
- Britain 295
  - commercial production (small-scale) 127–8, 211, 306
  - effect of market forces on production techniques 109
  - increased size of 111, 148
  - interplanted with fruit trees 192, 211, 265
  - price of 111
  - root, Oedenburg 267
  - salad crops, Oedenburg 267
  - supply to urban population 89, 127, 299
  - techniques to produce unusual shapes 113
  - see also cabbages; legumes; lettuce; pulses
- Veleia, near Piacenza, Trajan's *Tabula* 222–3
- Verecundus, Iulius, commander at Vindolanda 84
- Virgil 2
- on balsam 60
  - Georgics* 143
  - on grafting 130, 142–4, 149
- Vespasian, emperor, display of balsam plant 56
- Vesuvius, Mt
- AD 79 eruption 199
  - chestnut trees on 173
- vetches (*Vicia ervilia*, *Vicia sativa*) 210
- Iberia 243
- veterans
- in Gaul 260, 285, 293, 306
  - settlement in provinces 71, 129, 132, 234, 299
- Vienne 285
- founding of 249
  - horrea* (warehouses/granaries) 251
- Vigo, Galicia, saltpans 241
- villa complexes
- and display of agricultural productivity 3, 126
  - suburban Rome, terraces 126
- Villa della Pisanella, Campania 204
- Vindolanda (Hadrian's Wall)
- evidence of horticulture 81–2, 305
  - evidence of plant propagation 84–5, 305
- Vindonissa (Windsch-Breite, Switzerland), pomegranate 200
- vinea*, vineyard 96
- vineyards
- Britain 295
  - interplanted with other crops 109, 265
  - irrigated (North Africa) 121
  - soil preparation 12
  - water to establish 127
  - yields 116
  - see also grapes and grapevines; viticulture
- Vitellius, L. 2
- introduction of fig varieties 74
  - and pistachio tree 74
- viticulture
- and access to plant stock 285
  - alberata* technique 109
  - arbustum* technique 109
  - Campania 204
  - Cisalpine Gaul 224, 226
    - Galicia 241
    - Hispania Citerior 245
    - spread to provinces 71
    - trained on trees 109, 206, 221
- commercial 277
- early evidence of transport of cuttings 253
  - Gaul and Iberian Peninsula 71, 100, 276
  - horticultural treatises 99
  - improved techniques 108, 277, 282



- viticulture (cont.)  
   as male preserve 153  
   Narbonensis 253  
   profitability 99, 277, 306  
   use of chestnut posts 173  
   *vite mariata* technique 206  
 Vitruvius, water wheels 122  
 Vorderberg, Switzerland, Petinesca *vicus* 77
- walkways, in gardens 155–6  
 walnuts  
   Cisalpine Gaul 226  
   improved 154  
   in northern Gaul 263, 292  
   Oedenburg 268  
 war  
   and agriculture 44  
   and arboriculture 52  
 water rights 125  
   in Roman Law 118  
 water supply  
   aqueducts 93–4  
   cisterns 126  
   distribution to private properties 123, 123  
   to Roman *suburbium* 92  
   Rome 17  
   S. Giovanni in Laterano 189  
   *see also* aqueducts; irrigation  
 water-lifting technology 120  
   Archimedes' screws 120  
   shaduf type 281  
   water wheels 120, 122  
   for wells 120, 281  
 water mills, for processing cereals 86, 189  
 Watson, Andrew 79, 117  
 wealth  
   display of 3, 27  
   Lucullus' 30–1, 35  
 weights and measures, standardization of  
   104  
 wells, water-lifting devices 120, 281  
 wild plants  
   crab apple 7, 80  
   as food 293  
   grapes 283–4  
   olive (oleaster) 134, 167  
 wine-making 284, 306  
   barrels 284  
   *cellae vinariae* 277  
   *dolia defossa* 277  
   presses 71, 277  
   Punic technique 277  
   transfer of techniques to Hispania 236,  
   277  
 wines, Laietanian 237, 245  
 Xenophon, *Oeconomicus* 43  
 Zenon archive, Egypt, evidence of plant nurseries  
   171