



***The World's Largest Open Access Agricultural & Applied Economics Digital Library***

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search  
<http://ageconsearch.umn.edu>  
[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from AgEcon Search may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

*No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.*



Centre for Agricultural Strategy



Grassland Research Institute

University of Reading



# Grassland in the British economy

Edited by J L Jollans

Published as  
CAS Paper 10 January 1981

# Index

age structure, 239–43  
age of sward, 257  
amenity grassland, 179–207  
aesthetic demand, 201–2  
area, 182–91  
area trends, 192–3  
classification, 179–82  
construction costs, 191  
definition, 179–80  
demand for, 192, 195–202  
expenditure estimates, 194  
fertilisers, 188–90  
fuel supply, 195  
functional demand, 200–201  
future supply, 202–4  
growth retardants, 203  
herbicides, 188–90  
income levels, 197–8  
leisure time, 198–9  
management, 188–91  
mowing, 188–90, 203  
owners, 181–2, 189  
participation rates, 195–9  
planning permission, 201–2  
recreational demand, 195–200  
scrub control, 195  
sheep, Dorset Horn, 195  
sheep, Soay, 188  
species sown, 187, 191  
technological changes, 199  
trampling, 191  
transport relation, 200  
trends, 192–5

amenity grassland – *cont*  
turf requirement, 192  
urban areas, 184–5  
area, 14, 65–6, 237, 268, 387  
area requirement, 386  
artificial dehydration, 419, 423–6, 431  
balance of payments, 148–9  
beef  
consumption correlations, 168  
demand for, trends, 32–8  
grassland area requirement, 386  
live imports, 308  
output/ha, 385  
price, 71–2  
beef cattle, geographical distribution, 311–12  
beef cows  
feed intake, 60  
hill cow subsidy, 310–1  
numbers, 308  
output/LU, 264  
output/year per cow, 265  
beef farms  
grassland output, 253  
UME from forage, 253  
beef production, 306–32  
arable farms, 313  
breeds and crosses, 327–30  
calf production, 451–4  
components of success, 325  
concentrate usage, 316–8, 384, 454–8, 462–6

beef production – *cont*

- dairy-beef systems, 313–4
- farm type, 310
- feed consumption, 327–9
- feeding systems, 454–8
- financial comparisons, 318–20
- finishing, 454–8
- grass contribution, 320–22, 466–7
- grass-cereal systems, 314–9
- herbage allowance, 459
- hill cow subsidy, 310–11
- in Europe, 23–4, 363–72
- integrated grazing/conservation systems, 449–51, 458
- live-weight gain, 317–8
- sustaining of, 459–60
- ME requirements, 320–2
- model, 329
- N fertiliser, 322–7, 447–50
- output, 306–7, 446, 457
- planning, 445–7
- potential, 444–70
- self-sufficiency, 307
- silage, 460–6
- slaughter age, 313–4
- stocking rates, 317–8, 322–4, 446
- structure, 307–9
- stubble height, 459
- suckler herds, 313
- support energy inputs, 513–4
- systems, 311–21
- technical efficiency, 322–7
- biogas, 514–6
- botanical composition, 241–44, 256, 559–63
- business size groupings, 272
- butter

  - consumption, 129–32, 167
  - demand for, 103

- butterfat – *see under* milk
- calf feeding, milk replacers, 103
- cancer, diet relation, 123–4
- CAP, future of, 74
- capital requirements, 387–8, 529–34
- cattle

  - number/100 ha, 67
  - population, 268
  - slaughterings, 308

- cheese, consumption correlations, 167
- classification, 237
- climate, 241, 582
- clover, 398–401, 407–8

  - bloat, 546–7
  - content, 243
  - diseases, 258

clover – *cont*

- N fixation, 46
- ryegrass mixture, 478–80
- seed sales trend, 231, 561–2
- stocking rate, 256
- UME, 256
- vs fertiliser N, 230–2, 382–5

Common Agricultural Policy, 74, 103–5

concentrate feeds, 244–6, 250–1, 513

- *see also under specific types of stock conservation* – *see also* artificial dehydration, haymaking and silage making
- capital utilisation efficiency, 425
- D-value, 257
- energy use efficiency, 420–5
- losses, 414–20

construction materials, 209

consumer demand, 107–17

cows – *see beef cows and dairy cows*

cream, consumption correlations, 167

cutting management, 394–5, 400

dairy cows

- bulk feed, 265
- concentrate feed, 264–5
- feed intake, 60
- grazing days/ha, 255
- ME requirements, 250–2
- milk yield, 290
- mineral requirements, 575
- number, 289, 291
- protein requirements, 57–8
- slurry, energy use, 514–6
- stocking rate, 250–2
- yield trend, 264–5

dairy herds, stocking rate, 300

dairy farms

- grassland output, 251–2
- profit margins, 252
- UME from forage, 252–4

dairy products – *see* milk products

deer, 380, 492–3

deer forest, 237

demand for

- factors affecting, 100–6
- trends, 21

diet – *see* food

diseases, 258, 395–6, 546

distribution, 14, 66–8, 229, 237–8, 241, 269, 580–3

- farm type, 523
- maps *inside back cover*

drainage, 241

drought, grass acreage reserve, 233

EC

- consumption, 23–4

EC - *cont*

- import levies, 104
- prices, 70-72
- production, 23-4
- surpluses, 23-4
- economic outlook, 146-9
- economics, political aspects, 64-75
- education, 275-6
- eggs, 102
- employment, 149, 269-72, 388, 522, 525-9
  - *see also* farm workers
- energy inputs, 73-4
  - *see also* support energy use
- energy ratios, 222-3, 512, 516-9
- energy supply, human diet, 209
- environment, 256
- export subsidies, 105

farm workers

- age distribution by farm type, 278
- labour productivity, 526-9
- labour turnover, 278-9

farmers

- ability, 19
- age, 279-82
- attitudes, 281-5
- dairy, number, 289
- hours of work, 284
- incentives, 282-3, 548-9
- information sources, 285
- number of, 271
- objectives, 234
- part-time, 285
- retirement, 280
- risk taking, 283-4
- stress, 284
- training, 233-4

farming systems, 272

farms

- business size groupings, 272, 527
- distribution, type of farming, 270, 524
- family, 522
- grassland distribution, 522
- herd/flock size, 275
- models, 25-32
- number, 521
- size, 274-6, 521

fats consumption, 119-28

fatty acids

- essential, 120-21
- polyunsaturated, 121-7

fertilisers, 30, 392-3, 399, 511-20, 564-6

- diseases, 546
  - *see also* nitrogen fertiliser
- fibre, dietary, 121-2

food

- choice criteria, 109-110
- consumption
  - EC, 108
  - trends, 126
- expenditure on, income elasticity, 161
- extracted proteins, 219
- new product requirements, 114
- technology, 112

food habits

- advertising effect, 112
- changes in, 110-3
- future trends, 113-6
- nutritional knowledge, 112
- regional variations, 107
- stability, 108-10

forage conservation - *see* conservation

forestry, 22, 549-50

fractionated forage, 496-510

- biological value, 498
- capital costs, 507-9
- DM digestibility, 499-502
- energy cost, 502
- fuel costs, 504-6
- future trend, 380
- grass age, 499-502
- land use efficiency, 498-9
- N fertiliser, 504
- pressed residue value, 504
- protein yield requirement, 502-4

General Agreement on Tariffs and Trade, 104

goats, 380, 489-91

grass - *see also* herbage

- age, 499-502
- definitions, 208
- DM digestibility, 499-502
- production, factors affecting, 304
- production potential, 390-98, 401-9
- species, 391-2
- varieties, 391-2

grassland products - *see* products

grazing efficiency, 283

hay

- dairy cows, 298
- yield trend, 262-3

haymaking

- ammonia treatment, 415-6
- capital utilisation efficiency, 425
- energy use, 420-2, 512
- losses, 414-7
- methods, 415

heart disease, 120-5

herbage

- alcohol production, 217

herbage – *cont*

- carotene source, 220
- chemical composition, 210–1
- chloroplast material, 216
- conservation, 257, 382–3
- energy content, 211–13
- fibre source, 220
- fractionation, 212, 215–7
- fuel source, 219–20
- physical properties, 211–2
- protein extraction, 215–9
- requirements for, 38–41
- soil nutrients removal, 215
- sugar production, 220
- utilisation, 212–7
  - economics, 221
  - efficiency, 21, 215, 232–3, 449
  - /ha, 227–8
  - regional variations, 18
- yield evaluation, 248–50
- yield/ha, 227–8
- yield potential, 381–2

horses, 380, 483–4

income changes, 143–51, 155–7, 161–2, 169

innovations, 52–3, 276–7

input costs, changes in, 73–4, 530

irrigation, 232–3, 407

labour – *see* employment

lamb consumption, 129, 168

land supply, 100
 

- losses, 68–70

land utilisation, 539, 580
 

- changes in, 68, 75, 387, 546, 549–50
- maps *inside back cover*

legumes, 382, 398–401, 407–9

livestock distribution, 581

livestock excreta, utilisation, 514–6

livestock production
 

- capital requirements, 534
- economic pressures, 23–32
- in Europe, price competition, 355–78

livestock rearing, farm model, 25–7, 31–2

Livestock Unit Grazing Days, 255

livestock units, 37–8, 244, 261, 581–2

live-weight gain/ha, prediction, 51–2

long-term trends, 261–6

lucerne, 232, 382, 398–400, 407–9
 

- energy budget, 516–7

maize, 233

man management, 277–9

Mansholt plan, 105

margarine, 103, 121, 129–32

meat

- consumption, 127–9
- long-term demand, 161–77
- output/ha, 265–6
- supplies, 101

mechanisation, 526

metabolisable energy, 248–9
 

- cost/MJ, 15–6
- /LU, 244
- sources, 228–9

milk

- butterfat, self-sufficiency, 102
- condensed, 167–8
- consumption/head, 290
- demand, incomes relation, 166–7
- demand, trends, 32–8
- equivalents consumption, 292
- fat, 125
- grassland area requirement, 386
- imports, 104
- legislation, 104
- long-term demand, 161–78
- price, 70–71
- production – *see* milk production
- replacers, 103
- sales, 289–301
- solids-not-fat, self-sufficiency, 102
- yield/cow, 295
- yield/ha, 385
- yield response/kg concentrates, 297

Milk Marketing Boards, 104

milk production, 289–305, 429–43
 

- calving season effect, 44, 430–1
- concentrate use, 19–20, 42, 293–7, 435–9
- conserved forage contribution, 431–45
- current state, 295–304
- data analysis, 294–5
- feeding systems, 297–8
- grass contribution, 429–30, 437–41
- in Europe, 23–4, 43, 356–63
- intensification incentive, 20
- management strategies, 39–45, 292–4
- model, 28–30
- previous nutrition effect, 437, 439
- stocking rate, 438
- sales for manufacturing, 290
- summer, 304
- supplementation at pasture, 438–9
- support energy inputs, 513–4
- % total milk used, 292
- targets, 439–41

milk products

- consumption, 127–9
- consumption/head, 289
- legislation, 104

milk products – *cont*  
long-term demand, 161–77  
prices, 105  
mineral requirements, 574–6  
mutton consumption, 128, 168

national farm, performance level, 266  
nature conservation, 577–9  
new uses, 208–23  
nitrogen cycles, 59–60  
nitrogen fertiliser, 244–6, 392–3  
average application, 230, 392  
dairy herds, 299  
gross margin/ha, 299  
losses, 46, 59–60  
optimum rate, 230  
rates requirement, 46  
stocking rate, 264, 299  
UME, 17, 254–5, 264, 299  
use trend, 52, 264, 564–6  
vs legume N, 230, 384–5

*nutrition – see food*

*nutritional opinion*, 118–30

*nutritive output maximisation*, 106

obesity, 121–3

output, definition, 248–9  
– *see also* herbage and products

owner-occupiers, 279–80

permanent grass, 46, 239

pests, 257–8, 395

pigs, 485  
protein supplements, 216–8

politics, 64–75, 545–6

population  
age structure, 197  
growth, 135–43, 150, 157–8, 161

poultry, 485–6  
protein supplements, 216–8

preferred species, 240–42  
UME, 255–6

price support, 105

production, 227–36, 539–40, 544–5  
costs, 16  
potential, 401–9  
/unit area, 527  
variations, 17  
vs total agricultural output, 227

productivity potential, 273–4

products  
catering demand, 173  
demand, from the State, 105  
demand elasticities, 171–2  
demand for, 100–6  
nutrition influence, 118–32

products – *cont*  
population changes, 135–51  
production link, 542–4  
projections, 152–9, 541–2  
structure changes, 72–3  
grassland area requirement, 386–7  
legislation, 103  
long-term demand, 161–77  
manufacturing demand, 173  
output constraints, 387–8  
prices, 70–72, 103, 171–2  
price support, 105  
real price forecasting, 162, 169, 177  
replacement, 101–3  
total value, 228  
% total agricultural output, 15, 268  
value, 15

projection methodology, 152–8, 164–6

protein  
acceptability, 218–9  
digestion model, 55–9  
novel, 172–3  
production, 216–17  
production costs, 16  
supplements, 216–8  
supply, human diet, 209  
use efficiency, 217–9, 222–4

rabbits, 380, 487–9

rainfall, 232

red clover – *see* clover

research, 19, 546

reseeding, 239

root crops, yield trends, 263

rough grazings, 237, 580

ruminants  
diet, grassland contribution, 244–6  
rumen digestion, 53–9

ryegrass  
content, 243  
diseases, 258  
pests, 258  
–white clover sward, 478–80

salt consumption, 123

seasonal distribution of yield, 397–9

seed use, 560–2

self-sufficiency, 100–106

sewage sludge disposal, 567–73

sheep  
concentrates/ewe, 344–5  
concentrates in kg/head, 384  
contribution to agriculture, 333  
dietary N, partition of, 56  
distribution, 334–8

sheep – *cont*

- farm model, 25–7
- flock size, 337, 351–3
- grass contribution, 344–6, 473
- grassland area requirement, 386
- grassland types, 472–6
- grazing management, 476–80
- gross margin, 347–9
- in Europe, 372–5
- inwintering, 351–2
- lamb production, 343–5
- lambs/100 ewes, 348, 353
- N fertiliser, 349–52
- number/100 ha, 67
- numbers, 332–4, 337–8
- output/ha, 385
- population, 268
- price/kg carcass weight, 235
- production, 332–54
- production cycle, 343–4
- sales seasonality, 345
- stocking rate, 346–51
- success components, 351

sheep farms

- UME from forage, 253

sheepmeat

- consumption, 338–42
- demand for, trends, 32–8
- imports/exports, 342
- in EC, 23–4
- lamb proportion, 343
- output/breeding ewe, 265

silage

- additives, 433
- beef production, 462–6
- concentrate supplementation, 18
- dairy cows, 298
- digestibility, 257, 432–3
- milk production, 432
- quality, 18, 432–5
- wilting, 434–5
- yield/ha, 18
- yield trend, 263

silage making

- capital utilisation efficiency, 425
- energy use efficiency, 421–4
- fermentation quality, 461–2
- growth stage, 461
- legumes, 462
- losses, 417

social factors, 274–80

soil

- fertility, 256
- K content, 257
- P content, 257
- pH, 257

soil – *cont*

- suitability, 582–3
- type, 241

species, 391–2, 559–63

- *see also* preferred species and ryegrass

Starch Equivalent, 249

stocking rate, 244–6, 250–2

- beef systems, 317–8, 322–4
- concentrate supplementation, 18, 227
- farmers age, 279–81
- gross margin/ha, 299–300
- limiting factors, 283
- model, 300
- N fertiliser, 264, 299, 323–7
- national, 261–2
- optimum, 299–300
- profitability, 324–5
- regional variations, 67–8
- sheep, 346–51
- trend, 227
- UME, 253–6, 302

sugar consumption, 119–28, 131

support energy use, 382

- fertilisers, 511–2
- grass establishment, 511–3
- haymaking, 512
- irrigation, 518
- potential for changes, 511–20

technology uptake, 547–9

temporary vs permanent grass, 262

tenants' capital, return on, 532–3

tenure, 280–1

time-series analyses, 261

trade, government intervention, 103–6

utilisation – *see* herbage, utilisation

Utilised Metabolisable Energy, 249–57

- clover, 256
- N fertiliser use, 17, 254–5, 303
- output/ha, 17
- potential, 302
- preferred spp, 255–6
- stocking rate, 253–4, 302
- trend, 301
- yield trend, 263–4

varieties, *vs* cereal cv., 229–30

veal, consumption correlations, 168

water shortage, 393–4

white clover – *see* clover

wildlife

- disease hazard, 547
- distribution, 577–9

wool supplies, 102

world economy, 145–6

# Centre publications

## Reports

- 1 *Land for agriculture* (1976) £1.50
- 2 *Phosphorus: a resource for UK agriculture* (1978) £1.75
- 3 *Capital for agriculture* (1978) £2.75
- 4 *Strategy for the UK dairy industry* (1978) £2.95
- 5 *National food policy in the UK* (1979) £2.85
- 6 *Strategy for the UK forest industry* (1980) £8.50
- 7 *The efficiency of British agriculture* (1980) £2.85

## Papers

- 1 Marsh, J S (1977) *UK agricultural policy within the European Community* £1.50
- 2 Tranter, R B (Ed) (1978) *The future of upland Britain* £13.50
- 3 Harrison, A, Tranter, R B & Gibbs, R S (1977) *Landownership by public and semi-public institutions in the UK* £1.75
- 4 Collins, E J T (1978) *The economy of upland Britain 1750-1950: an illustrated review* £2.20
- 5 McCalla, A F (1978) *International agricultural research: potential impact on world food markets and on UK agricultural strategy* £1.50
- 6 Swinbank, A (1978) *The British interest and the green pound* £1.50
- 7 Robbins, C J (Ed) (1978) *Food, health and farming: a report of panels on the implications for UK agriculture* £2.40
- 8 Ritson, C (1980) *Self-sufficiency and food security* £2.00
- 9 Tranter, R B (Ed) (1981) *Smallfarming and the Nation* £2.00

**Mailing list:** To receive notification of future publications please ask to be put on the mailing list.

**Standing orders:** To receive invoiced copies of future publications (except those exceeding £5 for which you will receive notification) please ask to be put on the standing order list.

**Orders:** All publications available from: The Centre for Agricultural Strategy, University of Reading, 2 Earley Gate, Reading RG6 2AU. Prices quoted include postage.

512.64

For explanation of maps see Appendix VIII  
page 580

ST. PAUL CAMPUS  
LIBRARY



SF  
85.4  
.G7  
G72y  
1981

UNIVERSITY OF MINNESOTA

stp  
SF 85.4.G7 G72y 1981

Grassland in the British economy : proce



3 1951 000 226 378 8