
Index

-
- acreage allotments, 115
 - acreage reduction program (acreage diversion/set-asides), 115, 175, 176, 178-179, 180, 185, 197
 - additives in feed, 10, 39, 43, 85
 - adoption of technology
 - by farm size, 12, 123, 130-131, 133, 289, 290
 - financial impacts on, 156-159
 - rates-of-adoption profiles, 15, 78-79, 114, 277-278
 - Advanced Genetic Studies, 213
 - Agracetus, 213
 - agricultural experiment stations, 19, 253, 257, 260, 275, 290
 - air quality, 56, 209
 - American Cyanamid, 273
 - American Express, 141
 - anti juvenile hormonal activity, 62
 - applications technology, 50, 51, 53, 60, 61, 207, 210
 - aquiculture, 39, 40, 207
 - ARS (Agriculture Research Service, see Department of Agriculture)
 - artificial insemination, 5, 36, 37, 268
 - Asimolar conference, 213

 - Bacillus thuringiensis*, 6, 41, 45, 51**
 - Bank for Cooperatives, 116, 141
 - banking, commercial, 13, 142, 144, 147, 150-152
 - branching, 13, 142, 151-152
 - products and services, 13-14, 151
 - beef cattle production, 10, 77, 78, 81, 83, 97, 99-100, 101, 103-104, 109, 115-116, 270
 - behavioral technology, 207
 - Berg, Paul, 213
 - Bergland, Robert, Secretary of Agriculture, 115
 - bGH (bovine growth hormone, see growth hormones)
 - bimodal farm structure, 15, 20, 96-97, 105, 132, 286
 - Biotechnica International, 273
 - biotechnology (see **also**, individual technologies), 2-6, 8, 10, 12, 25, 31-32, 33-53, 81, 85, 123, 124, 125-126, 128, 129, 131, 132, 133, 134, 207
 - Block, John R., Secretary of Agriculture, 176
 - bovine growth hormone (bGH) (see growth hormones)

 - capital
 - debt, 140, 141-145
 - equity, 140-141, 145-147
 - investment, 145, 147
 - profits and net income, 145-147
 - unrealized capital gains, 145, 146-147
 - requirements for production, 12, 13, 23, 114, 123, 125-127, 133, 290
 - requirements for technology, 139
 - Cargill, 110
 - cell culture, 6
 - cell fusion, 3-4, 5, 31, 32, 35, 207
 - Center for Biotechnology Research, 273
 - cleaning technology (crop), 68-69
 - Coca-Cola, 110
 - Cochrane, Willard, 163, 277
 - Commodity Credit Corporation (CCC), 143, 144, 145, 175, 180, 198, 202
 - commodity policy, 115, 131, 132, 133
 - comparative advantages
 - in crop production, 163-171
 - in dairy production, 189, 190
 - competitiveness, international, 4
 - computer technology (see information technology)
 - concentration of land resources, 109
 - concentration of production, 9, 12, 14, 15, 16, 17, 18, 91, 96-97, 103-105, 109, 163-185, 189-202, 221-222
 - policy impacts on, 171-185, 194-202
 - regional differences, 222-241
 - confinement operations, 40, 42, 67
 - conservation reserves, 115
 - conservation tillage, 43, 54, 55, 56-57, 60, 61, 210, 212, 216
 - continuous cropping, 50
 - contracting, 12, 22, 110, 125, 133
 - controlled traffic farming, 55
 - conventional farming, 78
 - Cooperative Farm Credit System, 147
 - cooperative research agency (RAC), 290
 - cooperatives, 23, 285, 290, 292
 - corn production, 11, 14, 61, 77, 78, 80, 82-83, 97-98, 101, 102, 103, 164-165, 169, 170, 171-173, 176, 233, 235, 236, 270
 - Corps of Engineers, U.S. Army, 246
 - cotton production, 11, 14, 77, 80, 81, 82, 83, 101, 102, 103, 168-169, 170-171, 173-175, 176, 238, 270
 - credit, 137-159
 - policy, 116, 131, 132
 - regulations affecting, 150-154
 - role of, 147-150
 - creditworthiness
 - of borrowers, 13
 - of technology, 148-149
 - crop loss assessment, 50

- crop production (see also, specific crops), 3, 10, 11, 12, 14, 110, 125-132, 133-134, 163-185
- crop residue technology, 42-43, 56, 126, 207
- cross breeding, 41
- crown gall, 49
- custom-prescribed tillage, 55-56
- dairy production, 10, 12, 14, 15, 17, 18, 77, 78, 80-81, 83-84, 97, 99, 101, 102, 103, 104, 132, 189-202, 232, 233, 235, 236, 244-245
- costs and returns, 192-194
- herd size, 190-191, 193, 194, 199
- technological impacts on, 232, 244-245
- debt restructuring, 15, 183-185, 201-202
- Department of Agriculture (USDA), 18, 24, 25, 143, 145, 171, 196, 253, 255-259, 261, 264, 266-267, 271, 276-277, 278, 290
- Agricultural Research Service (ARS), 256, 258, 259
- Economic Research Service (ERS), 256, 258, 259
- extension, 255, 258-259, 264, 266
- research, 255-258, 264, 271
- Department of Defense, 259
- Department of Energy, 259
- Diamond v. Chakrabarty*, 273
- disease control
- animal, 7, 40-42, 125, 195, 207
- effects of environment on, 40, 42
- plant, 49-50, 77, 126, 210-211
- disease resistance
- animal, 31, 34, 40
- plant, 45, 49-50
- displaced farmers (see transition from farming)
- DNA (see *also*, recombinant DNA technology), 6, 38, 44, 46
- Dow Chemical, 273
- drug residue detection, 40
- Du Pont, 273
- ear implants, 37, 41
- economic feasibility of technologies, 13, 14
- economies of scale, 14, 15, 113, 163-176, 189, 190, 202
- electronic technology, 6-7, 8, 63, 65, 67-68, 69, 127
- Eli Lilly, 35, 273
- embryo transfers, 5-6, 10, 31, 32, 36, 40, 76, 195, 206, 268
- emerging technologies, defined, 4-8, 31-71
- Engenics, 273
- engines, 68, 127
- environmental control technologies, 42, 126, 207
- environmental impacts (see technological impacts)
- environmental policy, 15, 131, 215-216
- Environmental Protection Agency (EPA), 16, 213, 246
- erosion (see soil erosion)
- ERS (Economic Research Service, see Department of Agriculture)
- ESCAP (Agricultural Experiment Station Committee on Policy), 274
- estrous cycle detection, 7, 38, 64, 206
- evaluation of products, 19, 23, 262, 265-266, 290
- exports, agricultural, 4, 21-22, 285
- farm bill
- of 1977, 256, 257, 264, 272
- of 1981, 184
- of 1985, 263
- Farm Credit Administration, 141
- Farm Credit System, 116, 141, 152-154, 246
- farmer-owned reserve, 175, 180, 198
- Farmers Home Administration (FmHA), 13, 24, 116, 143, 145, 147, 154-157, 158, 159, 246, 292
- Farm Foundation, 266
- farm policy, 14, 15, 115-116, 131-132, 175-182, 184, 256, 257, 263, 264, 272
- elimination of, 179-180, 185
- farm statistics
- employment, 94-95
- income, 8-9, 91, 93-96
- numbers of, 91, 96-97
- size (see concentration of production)
- FDA (see Food and Drug Administration)
- Federal Land Banks, 116, 141, 144
- Federal Reserve System, 138, 150
- feed costs, 197, 201, 202
- fertilizer technology, 53, 56, 58, 60-61, 113, 130, 209
- self-fertilizing plants, 10, 31
- fiber optics, 66
- finance, 12, 137-159
- regulation of, 150-154, 158
- financial characteristics
- of representative crop farms, 171-175
- of representative dairy farms, 192-194, 196-197
- financial situation, present, 12, 15, 23, 137-138, 140, 290
- findings of report, 10-20
- fiscal policy, 138-139
- FmHA (see Farmers Home Administration)
- Food and Drug Administration (FDA), 35, 48
- Ford Foundation, 266

- Foundation of Economic Trends, 35
 freezing, of embryos, 5, 32, 36, 37
 fruit production, 17, 101, 102, 103, 270
 fuels, 68, 207

 gene insertion, 5, 6, 10
 Genentech, 35
 genes, 50
 gene splicing (see recombinant DNA technology)
 genetic engineering
 animal, 5, 31, 32, 33-43, 76, 81, 206-207, 212
 controversy about, 16, 35, 43-44, 213-215
 plant, 6, 31, 32, 44-53, 76, 77, 208, 210, 212
 Genetic Engineering, Inc., 36
 gene transfer technology, 6, 46, 47
 Genex, 273
 giberellins, 49
 Goldschmidt, Walter, 221-222, 226, 228, 229, 239
 ground-based repeater systems, 66
 groundwater, depletion and pollution, 53
 growth and development technology
 animal, 206-207
 plant, 76
 growth hormones, 5, 10, 31, 34, 35, 36, 38
 bovine, 10, 34, 38, 81, 85, 195, 201, 232
 human, 35
 growth regulator (see plant growth regulators)

 herbicides, 10, 48, 59, 61, 113, 212, 255
 human capital development, 13, 25, 270, 293
 Humane Society of the United States, 35
 hybridoma, 36

 ice nucleation bacteria (see genetic engineering, controversy)
 identification technology (animal), 7, 39
 immunization, 35, 40-41
 income, farm
 sources
 onfarm, 145-146
 off-farm, 147
 supports, 15, 176, 177-178, 182, 185, 289
 tax, 200-201, 202
 information technology, 6-7, 8, 10, 12, 25, 31, 32-33, 40, 52, 58, 62-67, 123, 126, 127, 128, 130, 131, 132, 133, 134, 201, 207
 central computer system, 7, 32, 52, 64
 local area networks (LANs), 32, 62
 microcomputers, 7, 48, 62, 64, 65
 software, 7, 62, 64-65
 insect control technology, 7, 41-42, 45, 50-52, 62, 113, 125, 207, 210-211
 slow-release technology, 41, 207
 insurance companies, 142, 144

 interest rate subsidy, 15, 183-184, 185
 interest rates, 13
 fixed, 13, 141
 real, 138-139
 regulation of, 150-151
 variable, 13, 141
 Interstate Highway System, 246
 investment tax credits, 115, 116, 176, 200
 IPM (integrated pest management, see pest control technology)
 irrigation technology, 7, 10-11, 53, 54, 65, 210, 212
 IWMS (integrated weed management system, see weed control technology)

 J.C. Penney, 150
 Joint Council on Food and Agricultural Sciences, 258

 Kellogg-Foundation, 266
 Knutson, Ronald, 110

 labor (see farm statistics, employment)
 labor-saving technology (see *also*, mechanical technology), 67-68
 lactation stimulator (prolactin), 5, 36
 land
 availability, 10-11, 15, 84-85
 use, 205, 212
 land-grant universities, 24, 114, 253, 255, 256, 257, 258, 259-264, 265, 271-276, 277, 278, 290, 291, 292, 293
 extension, 261-264
 research, 259-261
 land management technology, 54-56, 127
 legislation
 Agricultural Adjustment Act of 1933, 15
 Dairy and Tobacco Production and Stabilization Act of 1983, 195
 Depository Institutions Deregulation and Monetary Control Act of 1980, 150
 Farm Credit Act of 1971, 152-153
 amendments (1980), 153
 Federal Job Training Partnership Act, Title III, 291
 Food Security Act of 1985, 263
 Garn-St. Germain Depository Institutions Act of 1982, 150
 Plant Variety Protection Act of 1970, 273, 276
 light (see photoregulation)
 limited partnership syndicates, 116
 livestock production, 125-132, 133-134, 233, 238
 loans
 bank, 142

- cooperative, 141
- FmHA
 - guaranteed, 143, 156
 - insured, 143
- Government, 143, 154-157
- insurance, 142
- shared appreciation mortgages (SAMs), 142-143
- State, 156
- supplier/merchant, 143-144
- local area networks (LANS), 32, 62
- low-power radio links, 32, 33
- Lindow, Steve, 213
- Lugar, Richard, U.S. Senator, 270
- market access (see technological impacts)
- marketing loan, 22
- Marshall, H. Peter, 261
- mathematical modeling, 36, 48, 57, 58
- mechanical technology, 58-59, 67, 68, 69, 116, 124, 126-127, 128, 130, 131, 132, 133
- Merrill Lynch, 150
- MGI, 273
- Michigan State University, 273
- microbial inocula, 6, 32, 44-45, 47, 214
- mite control, 7, 50-52, 125
- monitoring and control technology, 8, 31, 32, 42, 63-65, 69, 127
- monoclonal antibody production, 31, 35-36, 206, 207
 - uses for, 36, 41
- Monsanto, 6, 35, 45, 273
- multiple cropping, 56, 57, 58-59, 77, 209-210, 212
- National Aeronautics and Space Administration (NASA), 259
- National Agricultural Research and Extension Users Advisory Board (Users Advisory Board), 257, 258
- National Institutes of Health (NIH), 213, 259, 264
- National Science Foundation (NSF), 215, 259, 264
- Needs Assessment for Food and Agricultural Sciences, 257
- nematode control (see pest control technology)
- Neogen, 273
- new entrants to farming, 14, 184-185
- nitrogen fixation technology, 32, 44, 52-53, 61-62, 208, 212
 - self-reliance, 32, 53, 61
- non-land-grant universities, 255, 256, 272
- nonrecourse loan, 21, 22, 288, 289
- nutrition
 - animal, 39-40, 125, 206-207
 - human, 39
- Office of Management and Budget (OMB), 223
- organic farming, 56, 61-62, 78, 127, 209
- packet radio systems, 66
- Panopoulos, Nicholas, 213
- patent rights, 25, 265, 272-276, 293
- pest control technology, 7, 50, 56, 65, 77, 195, 207, 210
 - integrated pest management (IPM), 7, 41, 52, 210, 266
- pharmaceuticals, protein, 5, 32, 76
- photoregulation, 42, 207
- photosynthesis technology, 46, 47-48, 53, 77, 208
- plant breeding, 44, 47, 53, 54, 58, 61-62
- plant growth regulators, 48-49, 77, 208, 209, 268
- plant propagation, 6, 32, 44-45
- policy impacts
 - of research and extension, 254-279
 - on crop production, 175-185
 - on dairy production, 194-202
 - on environment and natural resources, 25, 215-216
 - on rural communities, 24-25, 244-248
 - on structure of agriculture, 20-24, 115-116, 171-185, 194-202
- policy options
 - for balancing productivity with public interest, 293
 - for large, commercial farms, 21-22, 288
 - for moderate-size farms, 22-23, 289-291
 - for rural communities, 24-25, 292-293
 - small, part-time farms, 23-24, 291-292
- pork production (see swine production)
- poultry production, 10, 77, 78, 80, 81, 83, 97, 101, 102, 103, 104
- poverty, rural, 242-244
- price supports, 115, 176, 177, 180, 184, 185, 195, 198-199, 201, 202
- processing technology (plant), 68-69
- Production Credit Association, 116, 141, 144
- protestants, 48, 60
- quotas, dairy, 199-200
- RAC (see cooperative research agency)
- Ralston Purina, 110
- recombinant DNA technology, 3-4, 5, 16, 31, 33-35, 36, 38, 40-41, 47, 49, 206, 207, 213, 275
- regional research, 19, 260-261, 278-279

-
- reproduction technology (animal), 7, 37-38, 40, 125, 206-207
 - research and extension, 15-16, 18, 21, 22, 253-280, 287
 - balance between, 266-269
 - components of, 255-266
 - county level, 19, 261-262, 270, 279
 - Federal level, 255-261
 - private sector, 255, 264-266, 277
 - State level, 19, 24, 258, 259, 260, 261-264, 269, 277, 279
 - functions, 254-255
 - funding, 18-19, 25, 256, 266-268, 270-272, 278, 288
 - competitive grants, 270-272
 - social contract, 18, 25, 272-273, 278, 292
 - staff, 269-270
 - residue monitoring, 39
 - resistance (plant), 208
 - to disease, 10, 32
 - to harsh environments, 32, 48, 54, 58
 - to insects and pests, 10, 32, 49-51
 - result demonstration, 267
 - Rhizobium, 44, 52-53
 - rice production, 14, 77, 80, 81, 82, 83, 167-168, 169-170, 171, 173-174, 176
 - ripeners, 49
 - robotics, 67
 - Rockefeller Foundation, 265
 - rural agricultural counties, defined, 223
 - rural community impacts, 16-18, 221-249, 292-293
 - rural development policy, 24, 242-244, 245-248, 292
 - Rural Electrification Administration, 246

 - safeners, 48, 60
 - satellite technology, 33, 57, 64, 66-67
 - Science and Education Administration, 263
 - Sears Roebuck, 141, 150
 - Secretary of Agriculture, 115, 176, 257
 - set-asides, acreage, 115
 - sexing, of embryos, 5, 32, 36, 37
 - sheep production, 10
 - Small Business Administration (SBA), 143
 - Social Security System, 246
 - soil disease suppression, 62
 - soil erosion
 - control technology, 15, 43, 56-58, 127, 205, 209, 210, 212
 - estimation of, 56, 57
 - process of, 56
 - soil productivity, 52-53, 56-62, 208, 209, 210, 212
 - sorghum production, 176

 - soybean production, 10, 14, 77, 80, 81, 82, 83, 97-98, 101, 102, 103, 129, 164-165, 170-174, 209, 233, 235, 236, 270
 - specialist, State extension, 262, 269
 - specialization of production, 113, 129
 - Stanford University, 273
 - structural impacts
 - on environment, 211-212
 - on rural communities, 111-112, 221-248
 - on technology adoption, 123, 132-133
 - structural neutrality, 115
 - structure, agricultural
 - causes of change in
 - economic and political, 109-111, 116
 - institutional, 114-116
 - technological, 112-114
 - past changes, 9, 92-96
 - distribution of sales and income, 9, 93-94
 - farm size, 9, 92-96
 - income sources, 94-96
 - present, 9, 91, 97-105
 - by major commodity, 97-100
 - by region, 100-102
 - comparisons, 102-103
 - projected changes, 9, 92-96
 - public policy impacts on, 115-116
 - sugarcane production, 238
 - Superior Oil, 110
 - superovulation, 5, 31, 32, 36, 37, 38, 76
 - supply and demand
 - domestic, 84, 85
 - world, 3, 4, 10, 11, 84-85
 - surplus dairy production, 189, 195
 - swine production, 10, 77, 78, 80, 81, 83, 97, 100, 101, 102, 103, 104, 270

 - target price/deficiency payments (see price supports)
 - tax-exempt bonds, 156
 - tax policy, 14, 115-116, 131, 132, 133, 139-140, 181, 182
 - technological impacts
 - on environment and natural resources, 15-16, 205-217
 - on human health, 207, 209, 210, 212
 - on structural elements, 123-134
 - barriers to entry, 12, 124, 125, 129-130, 133-134
 - capital and labor, 124, 125-127, 131, 133
 - market access, 12, 124, 125, 126, 129, 133-134
 - regional structure, 123, 124, 125, 130-131, 133, 134

- vertical coordination and control, 124-125, 126, 127-128, 133-134
- on structure, 12, 277-278
 - of crop production, 181-183
 - of dairy production, 194-195, 196, 201, 202
 - on yields, 3, 10-11, 14-15, 61, 76-85, 181-183, 194-196, 201
- telecommunications technology, 32-33, 65-67
 - high-speed, 65-66
 - low-power radio links, 33
- Tenneco, 110
- tillage technologies
 - conservation tillage, 43, 54-58, 59, 60, 61, 62, 210, 212, 216
 - no-tillage, 56-57
 - minimum tillage, 56, 58
 - reduced tillage, 56, 61
- conventional tillage, 60
- controlled traffic farming, 55
- conventional tillage, 60
- custom-prescribed tillage, 55-56
- crop residue, 42-43, 56, 126, 207
- multiple cropping, 56, 57, 58-59, 77, 209-210, 212
- rotational tillage, 60
- tobacco production, 238, 270
- transition from farming, 17, 23, 24, 290-291
- transponders, 7, 40, 64
- tree nut production, 101, 102, 103
- Tysons, 110

- unemployment (see transition from farming)
- Universal Soil Loss Equation, 57
- University of California (Berkeley), 44
- University of Pennsylvania, 35
- University of Washington, 35
- USDA (see Department of Agriculture)
- vertical integration, 3, 9, 12, 110-111, 113, 124, 125, 127-128, 129, 133, 134
- waste technology (animal), 41-42, 43, 207, 209
- water
 - efficiency of use, 15, 48, 53-54
 - quality, 56, 207, 208, 209, 210, 212
 - Supply, 205, 207
- weather prediction, 48, 66-67
- weed control technology (see also, herbicides), 48, 59-60, 62, 210-211
 - integrated weed management system (IWMS), 59, 210
- wheat production, 10, 14, 77, 80, 81, 82, 83, 97-98, 101, 102, 103, 105, 165, 166-167, 170-171, 173-174, 209, 233, 235, 236, 270
- Wind Erosion Equation, 57
- yields (crop) (see technological impacts)

O