

**Agricultural Experiment Station (AES)
Knowledge Area (KA) Codes**

Soil

- 101 Appraisal of soil resources
- 102 Soil, plant, water, nutrient relationships
- 103 Management and sustainability of saline and sodic soils and salinity
- 104 Protect soil from harmful effects of natural elements

Water

- 111 Conservation and efficient use of water
- 112 Watershed protection and management

Forest and range resources

- 121 Management of range resources
- 122 Management and control of forest and range fires
- 123 Management of forest resources
- 124 Urban forestry
- 125 Agroforestry

Natural resources, general

- 131 Alternative uses of land
- 132 Weather and climate
- 133 Pollution prevention and mitigation
- 134 Outdoor recreation
- 135 Aquatic and terrestrial wildlife
- 136 Conservation of biological diversity

Air

- 141 Air resource protection and management

Plant production

- 201 Plant genome, genetics, and genetic mechanisms
- 202 Plant genetic resources
- 203 Plant biological efficiency and abiotic stresses affecting plants
- 204 Plant product quality and utility (preharvest)
- 205 Plant production management systems
- 206 Basic plant biology

Plant protection

- 211 Insects, mites, and other arthropods affecting plants
- 212 Pathogens and nematodes affecting plants
- 213 Weeds affecting plants
- 214 Vertebrates, mollusks, and other pests affecting plants
- 215 Biological control of pests affecting plants
- 216 Integrated pest management systems

Animal production

- 301 Reproductive performance of animals
- 302 Nutrient utilization in animals
- 303 Genetic improvement of animals
- 304 Animal genome
- 305 Animal physiological processes
- 306 Environmental stress in animals
- 307 Animal management systems
- 308 Improved animal products (before harvest)

Animal protection

- 311 Animal diseases
- 312 External parasites and pests of animals
- 313 Internal parasites in animals
- 314 Toxic chemicals, poisonous plants, naturally occurring toxins, and other hazards affecting animals
- 315 Animal welfare/well-being and protection

Agricultural, natural resource, biological engineering

- 401 Structures, facilities, and general purpose farm supplies
- 402 Engineering systems and equipment
- 403 Waste disposal, recycling, and reuse
- 404 Instrumentation and control systems
- 405 Drainage and irrigation systems and facilities

Food

- 501 New and improved food processing technologies
- 502 New and improved food products
- 503 Quality maintenance in storing and marketing food products
- 504 Home and commercial food service

Non-food

- 511 New and improved non-food products and processes
- 512 Quality maintenance in storing and marketing non-food products

Economics, markets, and policy

- 601 Economics of agricultural production and farm management
- 602 Business management, finance, and taxation
- 603 Market economics
- 604 Marketing and distribution practices
- 605 Natural resource and environmental economics
- 606 International trade and development economics
- 607 Consumer economics
- 608 Community resource planning and development
- 609 Economic theory and methods

- 610 Domestic policy analysis
- 611 Foreign policy and programs

Human nutrition

- 701 Nutrient composition of food
- 702 Requirements and function of nutrients and other food components
- 703 Nutrition education and behavior
- 704 Nutrition and hunger in the population

Food safety

- 711 Ensure food products free of harmful chemicals, including residues from agricultural and other sources
- 712 Protect food from contamination by pathogenic microorganisms, parasites, and naturally occurring toxins

Human health

- 721 Insects and other pests affecting humans
- 722 Zoonotic diseases and parasites affecting humans
- 723 Hazards to human health and safety
- 724 Healthy lifestyle

Families, youth, and communities

- 801 Individual and family resource management
- 802 Human development and family well-being
- 803 Sociological and technological change affecting individuals, families, and communities
- 804 Human environmental issues concerning apparel, textiles, and residential and commercial structures
- 805 Community institutions, health, and social services
- 806 Youth development

Program and project support and administration, education, and communication

- 901 Project and program design, and statistics
- 902 Administration of projects and programs
- 903 Communication, education, and information delivery

**Agricultural Experiment Station (AES)
Subject of Investigation (SOI) Codes**

Soil and Land

0110 Soil
0120 Land
0199 Soil and land, general

Water

0210 Water resources

Watersheds and River Basins

0310 River basins
0320 Watersheds
0330 Wetland and riparian systems
0399 Watersheds and river basins, general

Atmosphere

0410 Air
0420 Weather
0430 Climate
0440 Solar radiation
0499 Atmosphere, general/other

Recreational Resources

0510 Wilderness
0520 Campgrounds and picnic areas
0530 Parks and urban green space
0599 Recreational resources, general/other

**Trees, Forests, and Forest Products (excluding
edible tree nut crops)**

0610 Conifer forests of the North
0611 Conifer forests of the South
0612 Conifer forests of the West
0613 Mixed conifer-broadleaf forests
0620 Broadleaf forests of the North
0621 Broadleaf forests of the South
0622 Broadleaf forests of the West
0630 Chaparral and shrub lands
0640 Tropical forests
0650 Wood and wood products
0660 Paper and pulp derived products
0670 Short rotation woody crops, including holiday
trees
0680 Other products of the forest
0699 Trees, forests, and forest products, general

Rangelands and Grasslands

0710 Desert and semidesert shrub land and shinnery
0720 Pinyon-juniper
0730 Mountain grasslands, meadow, and alpine
0780 Grasslands, other
0790 Rangelands, other
0799 Rangelands and grasslands, general

**Wildlife and Natural Fisheries Management,
Endangered Species**

0810 Finfish
0811 Shellfish
0812 Fish habitats
0819 Natural fisheries, other
0820 Wild birds
0830 Wild animals
0840 Fur-bearing animals
0850 Wildlife habitats
0860 Endangered species
0899 Wildlife and natural fisheries, general/other

Citrus

0910 Grapefruit
0920 Orange
0930 Lemon
0999 Citrus, general/other

Tropical/Subtropical Fruit

1010 Banana
1020 Pineapple
1030 Papaya
1040 Mango
1050 Date
1060 Kiwi
1099 Tropical/subtropical fruit, general/other

Deciduous and Small Fruits

1110 Apple
1111 Apricot
1112 Cherry
1113 Nectarine
1114 Peach
1115 Pear
1116 Plum
1119 Deciduous tree fruits, general/other
1120 Blueberry
1121 Cranberry
1122 Strawberry
1123 Raspberry
1129 Berries and cane fruits, other
1130 Table grapes
1131 Wine grapes
1132 Raisin grapes
1139 Grapes, other
1199 Deciduous and small fruits, general/other

Edible Tree Nuts

1210 Filbert
1211 Pecan
1212 Almond

1213 Walnut
1219 Edible tree nuts, general/other

Vegetables

1310 Potato
1410 Beans (dry)
1411 Beans (fresh, fresh-processed)
1412 Peas (dry)
1413 Peas (fresh, fresh-processed)
1414 Lentil
1419 Leguminous vegetables, other
1420 Melons (includes cantaloupe, muskmelon, watermelon)
1421 Cucumber
1429 Cucurbits, other (includes pumpkin, squash, gourd)
1430 Greens & leafy vegetables (endive, lettuce, spinach, turnipgreens, celery, rhubarb, parsley, asparagus)
1440 Cole crops (cabbage, kale, broccoli, brussels sprouts, cauliflower, kohlrabi)
1450 Sweet potato
1451 Onion, garlic, leek, shallot
1452 Carrot
1453 Yam
1454 Taro
1455 Cassava (or manioc)
1459 Rhizomes, tubers, bulbs, and root crops, general/other (for potato use 1310)
1460 Tomato
1461 Peppers
1462 Eggplant
1469 Solanaceous and related crops, general/other (for potato use 1310)
1470 Mushrooms and other edible fungi
1480 Sweetcorn
1499 Vegetables, general/other

Grain Crops

1510 Corn (for sweetcorn use 1480)
1511 Popcorn
1520 Grain sorghum
1530 Rice
1540 Hard red winter wheat
1541 Hard red spring wheat
1542 Soft red wheat
1543 Soft white wheat (includes club, western)
1544 Hard white wheat
1545 Durum wheat
1549 Wheat, other
1550 Barley
1560 Oats
1570 Rye

1599 Grain crops, general/other (includes buckwheat, millet, triticale)

Pasture and Forage Crops

1610 Pasture
1620 Warm season perennial grasses (includes dallisgrass, bluestems, bermudagrass)
1621 Cool season perennial grasses (bluegrass, bromegrass, fescue, orchardgrass, perennial ryegrass, timothy, wheatgrass)
1629 Perennial grasses, other
1630 Summer annual grasses (forage sorghums, sudangrass, sorghum-sudangrass hybrids)
1631 Winter annual grasses (includes annual ryegrass)
1639 Annual grasses, other
1640 Alfalfa
1641 Trefoil
1642 Red clover
1643 Crownvetch
1644 Winter annual legumes (includes subterranean clover, arrowleaf clover)
1649 Forage legumes, other
1699 Pasture and forage crops, general/other

Fiber Crops

1710 Upland cotton
1711 Long fiber cotton
1719 Cotton, other
1720 Kenaf
1730 Hemp
1740 Ramie
1750 Agave
1799 Fiber crops, general/other

Oilseed and Oil Crops

1810 Cottonseed (for meal, oil, etc.)
1820 Soybean
1830 Peanut
1840 Castor
1841 Crambe
1842 Flax
1843 Safflower
1844 Sunflower
1845 Jojoba
1846 Coconut
1847 Palm
1848 Canola
1849 Cuphea
1850 Lesquerella
1851 Meadowfoam
1852 Rape
1853 Sesame
1854 Chinese tallow

1855 Tung
1899 Oilseed and oil crops, general/other

Tobacco

1910 Flue-cured tobacco
1920 Burley tobacco
1930 Cigar-type tobacco
1999 Tobacco, general/other

Sugar Crops

2010 Sugar beet
2020 Sugar cane
2030 Sweet sorghum
2099 Sugar crops, general/other

Ornamentals and Turf

2110 Ornamental trees and shrubs
2120 Herbaceous perennials and decorative greens
2121 Cut flowers, foliage, and greens
2122 Potted plants
2123 Bedding/garden plants
2129 Florist crops, other
2130 Turf (bentgrass, bermudagrass, bluegrass,
dichondra, fescue, ryegrass, zoysia)
2140 Ground covers
2150 Aquatic plants
2160 Arboreta and botanical gardens
2199 Ornamentals and turf, general/other

Miscellaneous and New Crops

2210 Chemurgic crops
2220 Medicinal crops, non-narcotic
2221 Narcotic plants
2230 Hops
2231 Mint
2232 Coffee
2233 Cocoa
2234 Tea
2235 Herbs and spices
2239 Flavoring and beverage plants, other
2240 Guayule
2241 Hevea
2242 Gums
2249 Rubber, gum, and resin plants, other
2299 Miscellaneous and new crops, general/other
2300 Weeds

Plants

2410 Cross-commodity research--multiple crops
2420 Noncrop plant research
2499 Plant research, general

Bees, Honey, and Other Pollinators

3010 Honey bees

3020 Honey and honey products
3030 Non-honey apiary products
3090 Other Pollinators
3099 Bees, honey, and other pollinators, general

Invertebrates

3110 Insects
3120 Spiders, mites, ticks, and other arthropods
3130 Nematodes
3199 Invertebrates, general/other

Poultry

3210 Egg-type chicken, live animal
3220 Meat-type chicken, live animal
3230 Turkey, live animal
3240 Duck and goose, live animal
3250 Ratites (e.g., ostrich, emu, rhea), live animal
3260 Poultry meat
3270 Eggs
3280 Other poultry products
3299 Poultry, general/other

Beef Cattle

3310 Beef cattle, live animal
3320 Meat, beef cattle
3330 Other beef cattle products
3399 Beef cattle, general/other

Dairy Cattle

3410 Dairy cattle, live animal
3420 Butter
3430 Cheese
3440 Meat, dairy cattle
3450 Milk
3460 Ice cream
3470 Other dairy cattle products
3499 Dairy cattle, general/other

Swine

3510 Swine, live animal
3520 Meat, swine
3530 Other swine products
3599 Swine, general/other

Sheep and Wool

3610 Sheep, live animal
3620 Meat, sheep
3630 Wool fiber
3699 Sheep and wool, general/other

Cultured Aquatic Animals

3710 Catfish
3711 Trout
3712 Salmon

3713 Striped bass
3714 Tilapia
3715 Baitfish (minnows and shiners)
3716 Ornamental finfish
3719 Other cultured finfish
3720 Crawfish
3721 Marine shrimp
3722 Freshwater shrimp
3723 Oysters
3724 Clams and mussels
3725 Ornamental shellfish
3729 Other cultured shellfish
3799 Cultured aquatic animals, general/other

Other Animals

3810 Horses, ponies, and mules
3820 Goats, meat and mohair
3830 Pets (companion animals)
3840 Laboratory animals
3899 Other animals, general

Animals

3910 Cross-commodity research-multiple animal species
3999 Animal research, general

Microorganisms

4010 Bacteria
4020 Fungi (includes yeast)
4030 Viruses
4040 Viroids, mycoplasmas, spiroplasmas, etc.
4050 Protozoa
4099 Microorganisms, general/other

Food

5010 Food (not readily associated with specific plant and animal products)

Clothing and Textiles

5110 Clothing/apparel
5120 Textiles
5199 Clothing and textiles, general

Agricultural Supplies

5210 Fertilizers
5220 Pesticides (includes herbicides, insecticides, fungicides, etc.)
5230 Feed and feed additives
5240 Seeds and other plant propagules
5299 Agricultural supplies, general/other

Structures, Facilities, and Equipment

5310 Machinery and equipment
5320 Houses (human residences), furniture, household equipment, non-textile furnishings
5330 Farm structures and related facilities
5340 Nonfarm structures and related facilities, those used in marketing, storing, processing, distributing, recreation
5350 Domestic and community water supply facilities and systems
5360 Drainage and irrigation facilities and systems
5370 Sewage and waste disposal facilities and systems
5399 Structures, facilities, and equipment, general/other

People and Communities

6010 Individuals (as workers, consumers, members of society)
6020 The family and its members
6030 The farm as an enterprise
6040 Real estate
6050 Communities, areas, and regions, including states and their institutions and organizations
6099 People and communities, general/other

Economy

6110 Economy of the United States and sectors thereof
6120 International economy and sectors thereof
6199 Economy, general/other

Marketing

6210 Farmer cooperatives
6220 Marketing, processing, and supply firms other than cooperatives
6230 Marketing systems and sectors thereof
6299 Marketing, general/other

Other technologies

7010 Biological Cell Systems
7110 Research on research management (not research management per se)

Research Equipment and Methods

7210 Remote sensing equipment and technology
7220 Sensory evaluation/analysis methods (human senses)
7299 Research equipment and methods, general/other
7310 Experimental design and statistical methods
7410 General technology

**Agricultural Experiment Station (AES)
Field of Science (FOS) Codes**

Biological

1000 Biochemistry and biophysics
1010 Nutrition and metabolism
1020 Physiology
1030 Cellular biology
1040 Molecular biology
1050 Developmental biology
1060 Biology (whole systems)
1070 Ecology
1080 Genetics (includes breeding)
1090 Immunology
1100 Bacteriology
1101 Virology
1102 Mycology
1103 Other microbiology (includes protozoology,
 phycology, etc.)
1110 Parasitology
1120 Nematology
1130 Entomology and acarology
1140 Weed Science
1150 Toxicology
1160 Pathology
1170 Epidemiology
1180 Pharmacology
1190 Limnology

Physical

2000 Chemistry
2010 Physics
2020 Engineering
2030 Geology
2040 Mineralogy
2050 Hydrology
2060 Geography
2061 Pedology
2070 Meteorology and climatology
2080 Mathematics and computer sciences
2090 Statistics, econometrics, and biometrics

Social and Behavioral

3000 Anthropology
3010 Economics
3020 Education
3030 Information and communication
3040 History
3050 Law
3060 Political science
3070 Psychology
3080 Sociology
3090 Sensory science (human senses)
3100 Management
3110 Art and architecture
3111 Landscape architecture