

# Critical Issues

Critical Issues	Description	Extension Themes (Smith-Lever Programs)	Research Themes (Hatch Projects)
Animal Production	This plan of work will explore different areas of animal production and protection, focusing on the production of sheep, goats, dairy and beef cattle, swine, poultry, aquaculture, and small ruminants. Equine and bees are also included. Specific topics for this program include, but are not limited to: Georgia Beef Challenge, Master Cattleman's Program, profitability of dairy farming, swine intake regulation, IPM and evaluation of new forages and feeds.	Georgia Beef Challenge, Master Cattleman's Program, Profitability of Dairy Farming, Poultry production, Swine Intake Regulation, IPM and Evaluation of New Forages and Feeds	Advances in Animal Sciences, IPM, Genetics and Genomics, Wildlife, Apiary, and Poultry
Food Safety & Quality	This plan of work will explore different areas of food safety, focusing on food processing, protection, and safety; plant production; and animal production and protection. Specific topics for this program include, but are not limited to: consumer demand for food, food industry needs, and the food processing industry.	Consumer Demand for Food, Food Industry Needs, and Food Processing Industry	Advances in Food Science and Safety
Health & Wellness	This plan of work will explore issues of chronic disease prevention and healthy lifestyles, focusing on weight control, physical activity, diabetes management and prevention, cardiovascular diseases prevention and cancer prevention to the public. A large focus of this program will be on the state's youth.	Healthy Lifestyles, Weight Control, Physical Activity, Diabetes Management and Prevention, Cardiovascular Diseases Prevention, and Cancer Prevention	Biomedical, Nutrition, Health and Wellbeing, Hazards to Human Health and Safety
Community, Home, and Life Skills	This plan of work will explore issues related to community, home and life skills. Specific topics for this program include, but are not limited to: community development, economic development, indoor air quality, water quality, waste management, energy management, homebuyer education, consumer economics, financial literacy, and emergency preparedness.	Community Development, Economics, Indoor Air Quality, Water Quality, Waste Management, Energy Management, Homebuyer Education, Consumer Economics, Financial Literacy, and Emergency Preparedness	Family Resource Management, Sociological and Technological Change
Plant Production	This plan of work will explore plant production and protection. Specific topics for this program include, but are not limited to: plant growth and crop production; plant diseases, weeds and pests; developing new breeding tools; soil quality; irrigation; plant pathology; genetics; entomology; IPM, harvest and post-harvest handling; conservation; cultural trends; and breeding programs that incorporate variability derived from interspecific hybrids from which new cultivars can be developed.	Plant Growth and Crop Production; Plant Diseases, Weeds and Pests; Developing New Breeding Tools; Soil Quality; Irrigation; Plant Pathology; Genetics; Entomology; IPM, Harvest And Post-harvest Handling; and Breeding Programs	Advances in Plant Sciences, Precision Agriculture, IPM, Genetics and Genomics
Sustainability, Conservation and the Environment	This plan of work will explore issues related to the sustainability and profitability of agriculture. Specific topics for this program include, but are not limited to: natural resource management, minimum tillage and cover crops; value added products or production practices that can improve sustainability and profitability; investigation of niche markets in Georgia; financial accounting and reporting strategies; and alternate cultural practices that will protect, improve and maintain soil fertility.	Natural Resource Management, Minimum Tillage and Cover Crops; Value Added Products or Production Practices that Improve Sustainability and Profitability; Investigation of Niche Markets; Financial Accounting and Reporting Strategies	Economics, Policy, Agribusiness, Sustainability and Ecosystem Health, Climate Change, Environmental Resource Management, Society's Role in Ag and Environmental Sciences, and Biological Engineering
Urban Agriculture	This plan of work will explore issues related to urban agriculture. Specific topics for this program include, but are not limited to: water conservation technology and training; turf disease identification and management; IPM; development of new cost estimating and job bidding software for landscape installation; and Master Gardener programs.	Water Conservation Technology; Turf Disease Identification and Management; IPM; Development of New Cost Estimating and Job Bidding Software for Landscape Installation; and Master Gardener Programs.	Controlled Environment Production, Turfgrass, and IPM
Youth & Family Development	This plan of work will explore positive youth and family development. Specific topics for this program include, but are not limited to: parenting; relationships, child and elderly care; 4-H and youth programming.	Parenting; Relationships; Child and Elderly Care; 4-H and Youth Programming	Positive Youth Development, and Human Development

# Knowledge Areas

## Natural Resources and Environment

<b>Air</b>
141. Air Resource Protection and Management
<b>Forest and Range Resources</b>
121. Management of Range Resources
122. Management and Control of Forest and Range Fires
123. Management and Sustainability of Forest Resources
124. Urban Forestry
125. Agroforestry
<b>Natural Resources, General</b>
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
<b>Soil</b>
101. Appraisal of Soil Resources
102. Soil, Plant, Water, Nutrient Relationships
103. Management of Saline and Sodic Soils and Salinity
104. Protect Soil from Harmful Effects of Natural Elements
<b>Water</b>
111. Conservation and Efficient Use of Water
112. Watershed Protection and Management

## Economics, Markets, and Policy

<b>Economics, Markets, and Policy</b>
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
607. Consumer Economics
608. Community Resource Planning and Development
609. Economic Theory and Methods
610. Domestic Policy Analysis
611. Foreign Policy and Programs

## Animals and Their Systems

<b>Animal Production</b>
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)
<b>Animal Protection</b>
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

## ANR and Biological Engineering

<b>ANR and Biological Engineering</b>
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

## Human Nutrition, Health, Well-Being & Food Safety

<b>Food Safety</b>
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
<b>Human Health</b>
721. Insects and Other Pests Affecting Humans
722. Zoonotic Diseases and Parasites Affecting Humans
723. Hazards to Human Health and Safety
724. Healthy Lifestyle
<b>Human Nutrition</b>
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

## Families, Youth, and Communities

<b>Families, Youth, and Communities</b>
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

## Food

<b>Food</b>
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
<b>Non-Food</b>
511. New and Improved Non-Food Products and Processes
512. Quality Maintenance in Storing and Marketing Non-Food Products

## Plants and Their Systems

<b>Plant Production</b>
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 Management Systems
206. Basic Plant Biology
<b>Plant Protection</b>
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

## Support, Admin, Education, Communication

<b>Program and Project Support, and Administration, Education, and Communication</b>
901. Program and Project Design, and Statistics
902. Administration of Projects and Programs
903. Communication, Education, and Information Delivery

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## Animals, Including Invertebrates, and Their Products

<b>Animals</b>
3910 Cross-commodity research-- multiple animal species
3999 Animal research, general
<b>Beef Cattle</b>
3310 Beef cattle, live animal
3320 Meat, beef cattle
3330 Other beef cattle products
3399 Beef cattle, general/other
<b>Bees, Honey, and Other Pollinators</b>
3010 Honey bees
3020 Honey and honey products
3030 Non-honey apiary products
3090 Other Pollinators
3099 Bees, honey, and other pollinators, general
<b>Cultured Aquatic Animals</b>
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
<b>Dairy Cattle</b>
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
<b>Invertebrates</b>
3110 Insects
3120 Spiders, mites, ticks, and other arthropods
3130 Nematodes
3199 Invertebrates, general/other
<b>Other Animals</b>
3810 Horses, ponies, and mules
3820 Goats, meat and mohair
3830 Pets (companion animals)
3840 Laboratory animals
3899 Other animals, general
<b>Poultry</b>
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

<b>Sheep and Wool</b>
3610 Sheep, live animal
3620 Meat, sheep
3630 Wool fiber
3699 Sheep and wool, general/other
<b>Swine</b>
3510 Swine, live animal
3520 Meat, swine
3530 Other swine products
3599 Swine, general/other

## Natural Resources and Their Products

<b>Atmosphere</b>
0410 Air
0420 Weather
0430 Climate
0440 Solar radiation
0499 Atmosphere, general/other
<b>Rangelands and Grasslands</b>
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
<b>Recreational Resources</b>
0510 Wilderness
0520 Campgrounds and picnic areas
0530 Parks and urban green space
0599 Recreational resources, general/other
<b>Soil and Land</b>
0110 Soil
0120 Land
0199 Soil and land, general
<b>Trees, Forests, and Forest Products (excluding edible tree nut crops)</b>
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
<b>Water</b>
0210 Water resources
<b>Watersheds and River Basins</b>
0310 River basins
0320 Watersheds
0330 Wetland and riparian systems
0399 Watersheds and river basins, general

<b>Wildlife and Natural Fisheries Management, Endangered Species</b>
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

## Food and Manufactured Resources

<b>Agricultural Supplies</b>
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
<b>Clothing and Textiles</b>
5110 Clothing/apparel
5120 Textiles
5199 Clothing and textiles, general
<b>Food</b>
5010 Food (not readily associated with specific plant and animal products)
<b>Structures, Facilities, and Equipment</b>
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, including those used in marketing, storing, processing, and distributing functions, and for recreational uses
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

## Human Resources, Organizations, and Institutions

<b>Economy</b>
6110 Economy of the United States and sectors thereof
6120 International economy and sectors thereof
6199 Economy, general/other
<b>Marketing</b>
6210 Farmer cooperatives
6220 Marketing, processing, and supply firms other than cooperatives
6230 Marketing systems and sectors thereof
6299 Marketing, general/other
<b>People and Communities</b>
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

## Microorganisms

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

## Other Technologies

<b>Biological Cell Systems</b>
7010 Biological Cell Systems
<b>Experimental design and statistical methods</b>
7310 Experimental design and statistical methods
<b>General Technology</b>
7410 General technology
<b>Research Equipment and Methods</b>
7210 Remote sensing equipment and technology
7220 Sensory evaluation/analysis methods (human senses)
7299 Research equipment and methods, general/other
<b>Research on Research Management</b>
7110 Research on research management (not research management per se)

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## Plants and Their Products

### Citrus

0910 Grapefruit  
0920 Orange  
0930 Lemon  
0999 Citrus, 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, general/other  
1130 Table grapes  
1131 Wine grapes  
1132 Raisin grapes  
1139 Grapes, general/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

### 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

### 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, general/other  
1550 Barley  
1560 Oats  
1570 Rye  
1599 Grain crops, general/other (includes buckwheat, millet, triticale)

### 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, general/other  
2240 Guayule  
2241 Hevea  
2242 Gums  
2249 Rubber, gum, and resin plants, general/other  
2299 Miscellaneous and new 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

### 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 (includes bentgrass, bermudagrass, bluegrass, dichondra, fescue, ryegrass, zoysia)  
2140 Ground covers  
2150 Aquatic plants  
2160 Arboreta and botanical gardens  
2199 Ornamentals and turf, general/other (includes cacti)

### Pasture and Forage Crops

1610 Pasture  
1620 Warm season perennial grasses (includes dallisgrass, bluestems, bermudagrass)  
1621 Cool season perennial grasses (includes bluegrass, bromegrass, fescue, orchardgrass, perennial ryegrass, timothy, wheatgrass)  
1629 Perennial grasses, other  
1630 Summer annual grasses (includes 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, general/other  
1699 Pasture and forage crops, general/other

### Plants

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

### Potato

1310 Potato  
Sugar Crops  
2010 Sugar beet  
2020 Sugar cane  
2030 Sweet sorghum  
2099 Sugar crops, general/other

### Tobacco

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

### Tropical/Subtropical Fruit

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

### Vegetables

1410 Beans (dry)  
1411 Beans (fresh, fresh-processed)  
1412 Peas (dry)  
1413 Peas (fresh, fresh-processed)  
1414 Lentil  
1419 Leguminous vegetables, general/other  
1420 Melons (includes cantaloupe, muskmelon, watermelon)  
1421 Cucumber  
1429 Cucurbits, other (includes pumpkin, squash, gourd)  
1430 Greens and leafy vegetables (includes endive, lettuce, spinach, turnip-greens, celery, rhubarb, parsley, asparagus)  
1440 Cole crops (includes 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)  
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

### Weeds

2300 Weeds

# Field of Science

## 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 (excludes breeding)

1081 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 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