



Enhancing Value and Growing the Future



Southern Regional Research Center
Thursday, March 10, 2016





“Enhancing Value and Growing the Future”

Throughout its 75 years of existence, the Southern Regional Research Center has remained one of the bright lights of agricultural research for our Nation.

The research here in New Orleans has run the gamut from basic scientific building blocks to finished products, and the results are interwoven throughout a range of food products and consumer goods people use routinely in their day-to-day activities.

On this celebration day, I salute all of the staff – both former and present – for all that you have done to make the Agricultural Research Service the world-class research organization it is, and for your commitment to advancing agricultural research that matters in the lives of all Americans.

Best Wishes,

Chavonda Jacobs-Young
Administrator
USDA, Agricultural Research Service



USDA HISTORY

In 1862, when President Abraham Lincoln founded the U.S. Department of Agriculture, he called it the "People's Department." In Lincoln's day, 48 percent of the people were farmers who needed good seeds and information to grow their crops. Today, USDA continues Lincoln's legacy by serving all Americans and USDA remains committed to helping America's farmers and ranchers. We provide leadership on food, agriculture, natural resources, and related issues based on sound public policy, the best available science, and efficient management.

ARS MISSION

The Agricultural Research Service (ARS), was established under Memorandum 1320 of the Secretary of Agriculture, Supplement 4, November 2, 1953. The memorandum consolidated most of the physical, biological, chemical, and engineering research of the Department of Agriculture within a single organization - creating, ARS as the USDA's primary scientific research agency. As the in-house research arm of the U.S. Department of Agriculture, ARS develops new knowledge and technology to solve technical and agricultural problems of broad scope and high national priority in order to ensure adequate production of high-quality food and agricultural products to meet the nutritional needs of the American consumer, to sustain a viable food and agricultural economy, and to maintain a quality environment and natural resource base.



SRRC HISTORY

The Southern Regional Research Center (SRRC) is one of the four regional research facilities of the USDA's ARS established by the Agricultural Adjustment Act of 1938. Completed in 1941 on a 39.9 acre site adjacent to City Park, SRRC employs approximately 150 scientists and technical support staff with an annual budget of \$20 million. As with the vision of its founding, SRRC showed the favorable impact scientific investigation could have on the welfare of American farmers, industries, and its citizens. Research of high national priority has helped to improve the environment and provide new and stable markets, high-quality fiber and nutritious, safe food, and industrial products at reasonable costs.

SRRC payroll is \$14 million, leading experts to calculate its regional economic impact as \$79 million annually. Coupled with additional purchases of equipment and supplies, the Center's overall impact to the local economy is \$88 million. SRRC research products have also made a significant national economic impact and the estimated return on investment value is 34%. Many of the conveniences we take for granted - such as frozen concentrated orange juice, wrinkle-resistant and flame retardant cotton clothing - we owe to the work done at SRRC.

Please visit our website at:

www.ars.usda.gov/main/site_main.htm?modecode=60-54-05-00



SRRC MISSION

The Center conducts research on the postharvest use of agricultural commodities produced in the Southern United States. Its mission is to enhance the use and profitability of these agricultural products in domestic markets and for export, develop new uses and processes for farm products, promote human health and nutrition, improve product safety and quality, and develop new crop production and processing technologies with minimal harm to the environmental.

Current research programs are divided into:

- cotton quality, modification, and fiber bioscience
- food processing, quality and safety
- commodity utilization, processing and new uses.

SOUTHERN REGIONAL RESEARCH CENTER

RESEARCH IMPACTS:

Results from SRRC contribute to improving the way we live. Products produced make life healthier, safer, more convenient and better tasting. Thousands of industry jobs have been created. A sampling of significant research accomplishments that benefit our lives each day are highlighted below:

- Cotton durable-press clothing makes ironing obsolete
- Flame retardant textiles: clothing, batting, furniture, automobile seats, and mattresses
- Frozen orange juice concentrate
- Cotton fabrics that are: formaldehyde-free, dyeable, temperature-adaptable, stretchable, antibacterial, oil repellent, mildew and rot resistant
- Our science in your grocery cart includes: defatted peanuts, infant formula, dehydrated sweet potato flakes, sunflower seed butter, firmer pickles, rice bread, flan-like pudding, carbonated milk beverage, rice fries and low oil-uptake batter, rice bran oil, improved quality of cut fruits
- Cotton processing improvements from better textile machinery, efficient processing to innovative testing equipment helped save the U.S. cotton industry
- Emulsifiers, stabilizers, plasticizers, coatings, and texturizers in food and cosmetics
- Products from Southern pines: paints, varnishes, lacquers, turpentine, paper sizing, printing inks
- Development of new sugarcane varieties, management practices, and processing methods
- Control of aflatoxin, a carcinogen, using biotechnology

SOUTHERN REGIONAL RESEARCH CENTER

RESEARCH IMPACTS:

- Environmentally friendly compounds to control Formosan termites and early detection baits
- Biochars and Activated carbons from nut shells and poultry manure for waste water clean-up
- Encapsulation biological control agents for safer pesticide application and weed control
- High calorie fat emulsion for intravenous feeding used by hospitals for postoperative care
- Prevention detection of off-flavor in catfish and meat
- Phytase improves animal feed by increasing phosphate bioavailability and reduces pollution from animal waste
- Process to culture taxol, a drug successful in treating cancer
- Methods to measure food flavor and aroma help food industry maintain high standards
- Elimination of endotoxin in cotton dust, the cause of byssinosis among textile workers
- Smart cotton wound dressing for chronic wound therapy
- Nonwoven cotton fabrics for disposable diapers, feminine hygiene, adult incontinence and wound treatment
- Treating obesity and diabetes with glyceollin

CURRENT RESEARCH PROGRAMS AT SRRC

COMMODITY UTILIZATION RESEARCH UNIT

The Commodity Utilization Research Unit uses principles of biochemistry, molecular biology, chemistry and chemical engineering to develop technologies that enable growth and profitability in the commercial conversion of sugarcane, sweet sorghum, and energy beets into sugar, advanced biofuels, and bioproducts and to increase the value of cottonseed. Specific research areas related to sugar processing are focused on reducing color, starch and high viscosity in processing operations, improving storability of sugar solutions, producing sustainable advanced biofuels and bioproducts, and linking crop traits to sugar quality for food and products. Specific research areas related to cottonseed are focused developing cotton varieties with unique oil composition, improving the oil processing techniques of new cotton varieties, developing high value applications for seed protein (e.g., adhesives) and carbohydrate fractions (e.g., for composite materials), and identifying new bioactive food ingredients in seeds from new cotton varieties.

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CURRENT RESEARCH PROGRAMS AT SRRC

COTTON CHEMISTRY AND UTILIZATION RESEARCH UNIT

The Cotton Chemistry and Utilization Research Unit develops new processes, applications and product enabling technologies which facilitate the expanded use and enhanced value of U.S. cotton. Current research is focused on developing new chemistries to improve fire retardant finishes on cotton for mattresses and children's sleepwear, development of biomedical textiles, including bandages to be used for the treatment of chronic wounds, antibacterial textiles to prevent disease transmission and cotton-based decontamination fabrics for chemical and biological warfare agents and food safety. Green technologies will address climate change issues via supercritical CO₂ and enzyme treatments which will reduce wastes and energy consumption for cotton processing. This technology has application in other areas such as cellulosic ethanol and bioenergy. The unit is developing technology to facilitate greater use of cotton in industrial and home use nonwoven products such as wipes, furniture and mattress batting, medical and personal care products, acoustic insulation for automobiles and basic knowledge of the parameters required to enable cotton-based nonwoven products and processes. Many of these products will find utility in the food safety and health fields. Also, fundamental knowledge will be developed regarding covalent bonding to cotton, novel cotton processing conditions, the relationship between cotton quality parameters and nonwovens performance and sustainability and guidance toward new cotton varieties.

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CURRENT RESEARCH PROGRAMS AT SRRC

COTTON FIBER BIOSCIENCE RESEARCH UNIT

Cotton Fiber Bioscience Research Unit develops innovations in cotton fiber that will increase its value. The unit programs align with bioenergy priorities, as well as general agricultural sustainability needs to decrease our dependence on petroleum for production and maximum utilization of natural fiber products. Applied disciplines include genomics, biotechnology, molecular biology, plant physiology, chemistry and biochemistry. Specific research areas include better understanding of the biology of fiber development such as gene expression in the fiber, discovering the genetic and genomic mechanisms controlling fiber traits, and developing breeding and selection tools and innovative methods to enable "value-capture" from improved cotton fiber traits or products.

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CURRENT RESEARCH PROGRAMS AT SRRC

COTTON STRUCTURE & QUALITY RESEARCH UNIT

The Cotton Structure and Quality Research Unit increases the value and global competitiveness of U.S. cotton by enabling new technologies and methods for accurately assessing the quality of cotton fiber at various processing stages from field to fabric (or “from dirt to shirt”). Specific research areas include development of new rapid and accurate methods to assess cotton fiber quality; development of economical, accurate and real-time methods to assess product quality and process efficiencies in pre-mill operations (prior to textile manufacturing); demonstration of new methods to detect, quantify and remove undesirable non-lint materials such as various sugars, seed coat fragments, non-leaf plant trash, etc. from cotton; determination of the impact of fiber quality and fiber processing practices on yarn and fabric quality and processing efficiencies; and determination of the expected impact of new germplasms, agronomic practices, and ginning practices upon fiber quality, textile processing efficiency, and final product quality.

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CURRENT RESEARCH PROGRAMS AT SRRC

FOOD & FEED SAFETY RESEARCH UNIT

Scientific endeavors in the Food and Feed Safety Research Unit address priority areas of food safety, health and nutrition, and are directed towards: (1) understanding of the genetic regulation of aflatoxin biosynthesis using a genomics approach; (2) characterization of antifungal compounds and their associated genes to control toxin-producing or other fungi that reduce the quality and safety of food and feed; (3) elucidation, using genomic, transcriptomic and proteomic tools, of the complex mechanisms controlling aflatoxin synthesis during the plant-fungus interaction to enhance host-resistance to fungal invasion; (4) analysis of complex interactions in the agroecosystem between the toxin-producing fungus, other endemic microflora and the crop plant (particularly as affected by climate change) to reduce fungal growth and/or toxin production in field conditions; and (5) development of integrated management procedures by integration of acquired knowledge for assuring a safe, domestic supply of food and feed thus enhancing global food security through sustainable agriculture.

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CURRENT RESEARCH PROGRAMS AT SRRC

FOOD PROCESSING & SENSORY QUALITY RESEARCH UNIT

Food Processing and Sensory Quality Research Unit develops technologies that optimize the nutritional and health benefits, functional properties, and sensory qualities of agricultural commodities, thus, enhancing their utilization. A multi-disciplined team of scientists are meeting these challenges by: 1) obtaining a basic biochemical understanding of the interactions of food components attributed to quality characteristics including flavor (development and deterioration) and functionality properties of the food and its individual components, 2) scientifically defining and measuring sensory and other quality attributes in foods before and after processing, 3) designing cost-effective, environmentally-acceptable processes for converting foods and their separated components into value-added products, and 4) developing technologies for predicting and assessing the nutritional, sensory, and processing quality attributes of foods.

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Southern Regional Research Center
Celebrates 75 Years

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