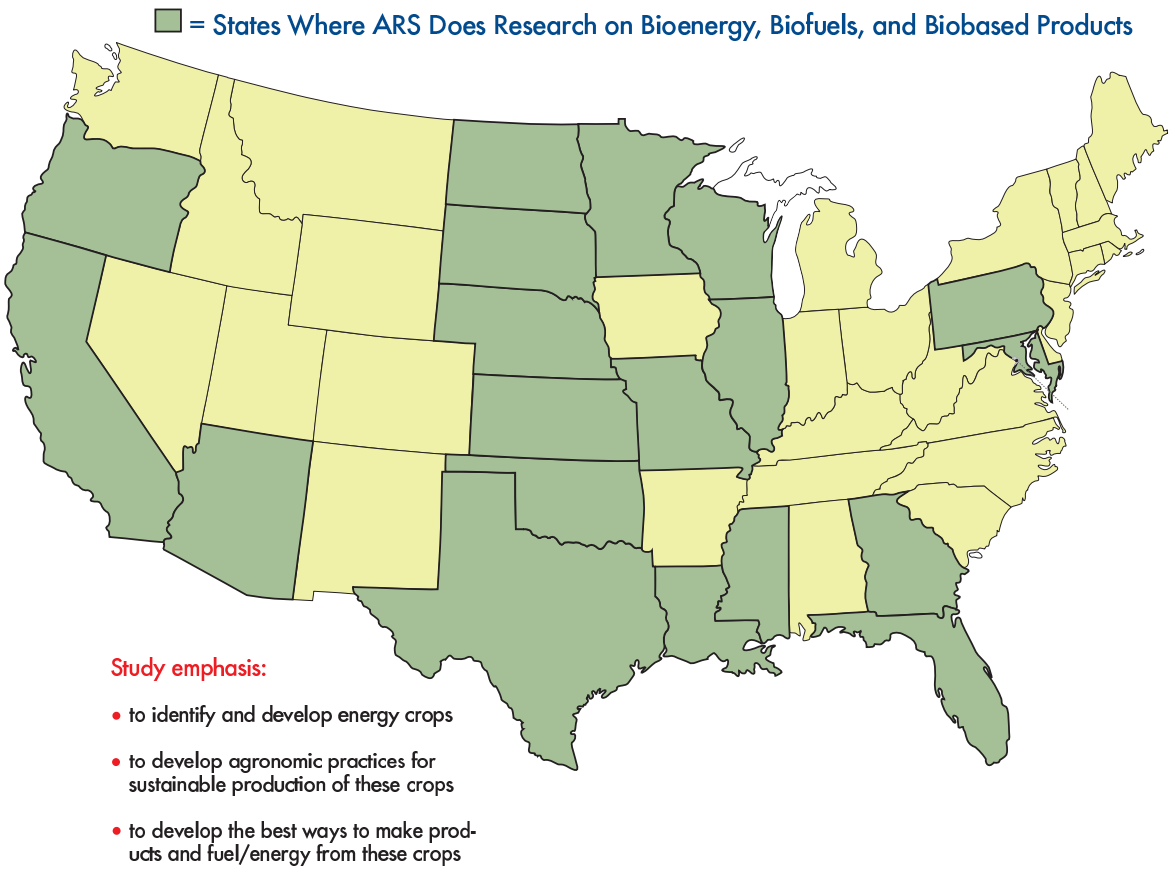
ARS National Research Programs for Bioenergy and Biobased Products



The mission of the ARS National Research Program for Bioenergy and Energy Alternatives (#307, www.nps.ars.usda.gov) is to reduce the nation's dependence on foreign oil, improve the environment by developing alternative energy sources, increase use of agricultural crops to produce biofuels, and help create jobs and economic activity in the United States.

Bioenergy research is, without a doubt, one of today's hottest topics. But ARS has been conducting bioenergy research for more than 50 years, with such successes as helping perfect the cold tolerance of biodiesel, finding that brief exposure to anhydrous ammonia can reduce costs of fuel ethanol production from corn, and developing a whole host of bioproducts from agricultural crops.

ARS is uniquely positioned to contribute to developing bioenergy from renewable agricultural resources. The agency's nationwide network of research laboratories—with experts in genetics and genomics, sustainable agricultural production, and biochemical conversion technologies—allows integrated and coordinated efforts to be focused on developing bioenergy, biofuels, and biobased products such as lubricants, inks, and composite materials.

ARS research is looking at the entire continuum of producing energy from agricultural materials—starting with DNA fingerprinting of plants to study their suitability as bioenergy crops, then improving growing and harvesting procedures, and finally, developing new processes for converting a wide range of agricultural products into high-quality energy, fuel, and other valuable products.

A major new focus for ARS research is developing both biological (enzymatic) and thermal combustion methods to convert plant cellulose, hemicellulose, and lignin to bioenergy, fuels, and other value-added products.

The agency is using its historical plant genebanks to identify crops that are most suitable for bioenergy production in various regions of the United States. This work will help growers better manage risks associated with weather, climate, and plant diseases.

In addition, ARS continues to conduct research to develop high-value, biobased products from both the raw crop and the leftovers from biofuel production. Such products would help make bioenergy and biofuels more efficient and economically viable.

The research conducted under the ARS National Program for Quality and Utilization of Agricultural Products (#306, www.nps.ars.usda.gov) complements the Bioenergy and Energy Alternatives program, and the two are coordinated to take the best advantage of ARS expertise and resources to meet national needs. We plan to integrate the relevant components of ARS research on crop genomics and genetics and oil-seed production with the bioenergy and bioproducts research. This will enable ARS to be a major contributor in building the next generation of biorefineries that will produce energy, fuel, and a variety of biobased products from agricultural crops to meet our national needs. This work will also help mitigate the adverse impacts of imported petroleum on our environment, economy, and national security. ✸