



**Regional Biomass Research Centers:** development and production.  
([www.ars.usda.gov/regionalbiomass](http://www.ars.usda.gov/regionalbiomass))

**Central-East** (Hub, Lincoln, NE) stations focus on development of perennial grasses (switchgrass) and biomass sorghum, along with corn grain ethanol and corn stover management, collection, and conversion. Emphasis is on integrating dedicated feedstock production into central-eastern agricultural production systems to increase system efficiency by way of nitrogen-fixing plants and cover crops, integrating perennial grass feedstocks help reduce nutrient escape from fields to surface and ground waters and reduce greenhouse gas emissions and increase carbon sequestration.

**Southeastern** (Hub, Tifton, GA) stations assess economic feasibilities and environmental effects of biomass production systems from switchgrass, giant miscanthus, energy-cane, sugarcane, energy beet, sweet & biofuel sorghum, and oilseeds: canola/rapeseed, camelina and sunflower for conversion efficiency to bio-based fuels, chemicals, and co-products such as biochar. Winter cover crops are being studied for the potential of reducing inputs and increased outputs, reducing erosion, and improving soils for subsequent crops.

**Northwestern** (Hub, Pendleton, OR) stations focus on regionally unique oil seed crops and cereal-based feedstock production systems. Significant emphasis is on sustainable utilization of crop straw post-harvest residues with specific attention given to maintaining soil carbon levels after harvest and the prevention of soil erosion. Oil seed crop efforts are in conjunction with efforts conducted by the Western Regional Utilization Center, with an emphasis on the integration of expanded production and minimization of its impact on existing wheat-based

production systems. ARS is also focused on the restoration of western rangelands through the harvest and removal of invasive western juniper and piñon pine trees.

**Western** (Hub, Maricopa, AZ) stations focus on next-generation sequencing technologies to develop markers enabling direct linkages with genomes of switchgrass (improve soil properties and reduce greenhouse gas emissions through crop rotation schemes in rain-fed production areas), guayule (alternative to petroleum as a source of latex and rubber and for biomass for energy production) and *Brassica napus* to advance genetics and biochemical pathways which regulate oil production and accumulation. ARS scientists are exploring wild ryegrass to improve rangeland forage production and also provide a new potential low-input perennial grass feedstock. Simulation models are being used to predict biomass yields and greenhouse gas fluxes in various biofuel cropping systems in three states.

**Regional (Utilization) Research Centers:** bio-conversion. ([www.ars.usda.gov/bioenergy](http://www.ars.usda.gov/bioenergy))

**Eastern** (Wyndmoor, PA) conducts fundamental, applied and developmental bio-conversion research on a broad spectrum of agricultural commodities with the following major thrusts: • Chemical and microbial technologies • Sustainable bioenergy and agricultural practices • Bioactive ingredients and functional foods • Biobased products.

**National Center for Agricultural Utilization Research** (Peoria, IL) conducts a broad-based program of catalytic, enzymatic, microbial, biochemical, genetic, and fermentation engineering research to develop bioproducts and bioprocesses for conversion of agricultural commodities into biofuels, chemicals, enzymes, and polymers. • Lipid-based advanced biofuels from lignocellulosic biomass hydrolysates in collaboration with industrial biorefiners, • Co-products research includes organic, physical, analytical, and lubrication chemistry, as well as modified chemical and physical properties of vegetable oils to develop enhanced fuel additives and lubricants, or major components of fuels (Biodiesel), metalworking fluids, detergents, paints, inks, composites, and other industrial materials.

**Southern** (New Orleans, LA) conducts biochemistry, molecular biology, chemistry and chemical engineering to create industrial adsorbents, soil amendment, and fuels from manure and oilseed byproducts; develop enzymatic processes for production of industrial oils from sustainable resources; develop better raw sugar production for food and bioenergy.

**Western** (Albany, CA) conducts bio-conversion of grain products and crop residues by developing biobased products and biofuels through improved enzymatic conversion tools, grain separation processes, and processing technologies. Research falls within the context of biorefining, whereby crops are disassembled or modified to create value-added products and co-products as fuels, commodity materials, specialty chemicals, and as platforms for further processing.