



2009 Awards

In 2009, DOE will provide \$4,072,000 in funding over 3 years, while USDA will award \$2,248,000 over 3 years.

"Accelerating the Domestication of *Miscanthus* for Biofuel Production"

- University of Georgia, Athens, \$1,200,000
- Principal Investigator: Andrew H. Paterson
- Co-Principal Investigator: Erik J. Sacks (Mendel Biotechnology)

Project Goal: This project will provide genomic tools and resources for a promising cellulosic biofuel crop, *Miscanthus*, that will (a) foster innovative strategies for its improvement and (b) develop comparative and bioinformatic approaches to enhance fundamental knowledge of *Miscanthus* genome structure, function, and organization.

"The Hunt for Green Every April: Factors Affecting Fitness in Switchgrass"

- USDA-ARS-Lincoln, \$1,182,000
- Principal Investigator: Gautam Sarath
- Co-Principal Investigators: Kenneth P. Vogel; Christian M. Tobias (USDA-ARS, Albany); Soundararajan Madhavan (University of Nebraska, Lincoln); Paul Twigg (University of Nebraska, Kearney)

Project Goal: This project will investigate winter survival in switchgrass populations and individual plants specifically selected for greater yields and with known differences in winter survival. Molecular events occurring in the crowns and rhizomes will be studied over two growing seasons and winters. The goal is to make a significant and lasting contribution to the future improvement of switchgrass as a bioenergy crop, and will also directly benefit researchers working on developing other perennial grasses into biomass energy crops.

"Phenomic Analysis of Natural and Induced Variation in *Brachypodium distachyon*"

- USDA-ARS Western Regional Research Center, Albany, California, \$1,300,000
- Principal Investigator: John P. Vogel
- Co-Principal Investigators: Michelle Watt, Robert Furbank (CSIRO, Canberra, Australia); Hikmet Budak (Sabanci University, Engineering and Natural Sciences Biological Sciences and Bioengineering Program, Tuzla-Istanbul, Turkey); Metin Tuna (Namik Kemal University, Faculty of Agriculture, Tekirdag, Turkey)

Project Goal: In this project, high-throughput phenotypic analysis (phenomics) of homozygous T-DNA mutants and natural accessions of the model grass *Brachypodium distachyon* (*Brachypodium*) will be conducted to accelerate the understanding of the basic biology underlying traits that control the utility of grasses as energy crops.

"Mechanism of Carbon Partitioning Regulation by *cpg13* in the Bioenergy Woody Crop Poplar"

- University of Florida, \$643,000
- Principal Investigator: Matias Kirst
- Co-Principal Investigator: Gary F. Peter

Project Goal: This project will characterize genes that regulate the balance of carbon going to cellulose or lignin, leading to the development of plant materials that are more suitable for biofuel production.

"A Systems Biology Approach to Elucidate Regulation of Root Development in *Populus*"

- Michigan Technological University, \$900,000
- Principal Investigator: Victor Busov
- Co-Principal Investigators: Yordan S. Yordanov, Hairong Wei; Erik A. Lilleskov, (USDA Forest Service, Northern Research Station, Houghton, MI); Robert J. Kodrzycki (Phenotype Screening Corporation); David J. Weston (Oak Ridge National Laboratory, Environmental Sciences Division)

Project Goal: This project will identify key regulators of root architecture in relation to nitrogen and water use in the bioenergy crop *Populus* using an integrated systems biology approach. This research will generate resources and innovations that can enable robust biomass productivity under marginal conditions for sustainable lignocellulosic biomass production.

"Improving Alfalfa as a Biofuel Feedstock"

- University of Georgia, Athens, \$705,000
- Principal Investigator: E. Charles Brummer
- Co-Principal Investigators: Steven J. Knapp; Maria J. Monteros (The Samuel Roberts Noble Foundation, Inc.); Gregory D. May (National Center for Genome Resources)

Project Goal: Biofuel crops must maximize the production of energy, which requires a high yield of biomass with optimum fuel quality. In this project, molecular markers that are associated with optimal biofuel characteristics will be identified in alfalfa and directly integrated into traditional field-oriented alfalfa breeding programs. The long-term goal of this project is to develop biofuel-ready alfalfa cultivars that have improved yield and quality.

"Characterization of Nitrogen Use Efficiency in Sweet Sorghum"

- University of Nebraska, Lincoln, \$390,000
- Principal Investigator: Ismail Dweikat

Project Goal: Enhancing the ability of sweet sorghum to utilize nitrogen will increase its potential as a leading and cost-effective bioenergy crop. This project will identify novel nitrogen use efficiency alleles in wild sorghum germplasm that can be used to improve sweet sorghum.