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U.S. Department
of Transportation



Project Title: Investigation/Simulation of Environmental Impacts and Economic Feasibility for Sweet Sorghum as a Sustainable Bioenergy Crop in South Central United States to Help Meet EISA Goals

DR. Richard Nelson

Project Goal:

The goal of this project was to develop the capacity to simulate sweet sorghum biomass yields in order to help with strategy planning for renewable fuel development from biomass feedstocks.

The objectives of this project were:

- To select the most promising crop model with the potential to model sweet sorghum biomass production in the central US.
- To develop and test sweet sorghum crop parameters for the selected model.

Project Outcomes

- Out of the five crop models (CropSyst, CERE-Sorghum, APSIM, ALMANAC, and SORKAM), ALMANAC was selected as the best suited for the development and testing of sweet sorghum crop parameters.
- The combination of Saxton and Rawls (2006) and Priestley-Taylor (1972) methods has the potential for wide applicability in the US Central Plains for simulating grain yields using ALMANAC.
- ALMANAC modeled biomass yields from the development of sweet sorghum crop model parameters with reasonable accuracy. Differences from observed biomass values ranged from 0.89 –1.76 Mg ha⁻¹ (2.8 to 9.8%) in Kansas (Riley County), Oklahoma (Texas County), and Texas (Hale County).



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Kansas State University paid faculty time, fringe benefits, and indirect cost expenses via cost share.