Applicant Name: FDC Enterprises Grasslands Services

Project Director / Principal Investigator: Fred Circle, President

Project Title: Design and Demonstration of an Advanced Agricultural Feedstock Supply System for Lignocellulosic Bioenergy Production

Project Objectives:
The primary objectives of this project are to design and fabricate key agricultural harvest equipment improvements that will significantly reduce the harvest, staging, and hauling costs associated with supplying herbaceous energy crops and agricultural residues to a cellulosic biorefinery. Design, fabrication, and demonstration of three types of innovative new harvest and biomass handling machines will be completed, including a single-pass mowing and baling operation, a Bale Picking Truck, and a Self Loading Trailer. Annual demonstration harvests will be performed on large-acre tracts of biomass feedstocks including switchgrass, mixed stands of prairie grasses, and corn stover. Available plots of high yielding energy crops including miscanthus and biosorghum will also be harvested.

Potential Impact of the Project:
If the equipment performs as expected, the project team estimates this new equipment will reduce the cost of harvesting and delivering large square bales of herbaceous biomass to a biorefinery by more than $13 per delivered ton.

Major Participants:
The project team is led by FDC Enterprises, the nation's leading native grassland establishment company. The primary targeted host facility will be Abengoa Bioenergy's cellulosic biorefinery that is currently under development in Hugoton, KS. Original Equipment Manufacturers (OEMs) on the team include Kelderman Manufacturing, Allied Freeman, MacDon, JCB, and Rotochopper. Harvest acres are primarily being offered by Star Seed Inc., Mendel Biotechnology, and the Noble Foundation. Research assistance for monitoring harvest performance, carbon removal, and soil sustainability issues is being provided by Kansas State University, Noble Foundation, and Idaho National Laboratory. Burrows Custom Hay from Hugoton, KS and PrairieLands BioProducts from Ottumwa, IA will be assisting with harvest and equipment demonstration operations. Antares Group Inc. and TR Miles Consultants Inc. will provide technical assistance to the project team, including harvest planning and monitoring in collaboration with Idaho National Laboratory staff. A grinding system incorporating a Rotochopper grinder will be used to test grinding performance on several different types of feedstocks. Cost share funding and/or in-kind effort or services are being offered by the Kansas Bioscience Authority, each of the OEM's, FDC Enterprises, and harvest land providers.