Biofuel Feedstock Production Economics

National Soil Dynamics Laboratory
USDA-ARS
Auburn, AL
Purpose: To assess farmers’ willingness to adopt high-residue cover crops for soil conservation and/or to produce alternative bio-energy feedstocks in the southeastern United States.

Scale: Farm Level

Data Collection: Survey administered in Alabama to 1300 row crop farmers over 200 acres in size. Plan to survey at least GA, but possibly FL, MS, NC, SC, TN.
Objective 1. Determine the sustainability of utilizing crop and livestock residues as feedstock for bio-energy production alternatives.

Sub-objective 1-1. Define representative case farms across a series nation-wide locations that have potential feedstock for bio-energy production to establish a baseline for analysis and comparison.

Sub-objective 1-2. Quantify the volume and source of different feedstock that could be used for bio-energy production and the associated costs/benefits (economic and environmental) of harvesting and delivering the feedstock for processing.

Sub-objective 1-3. Develop mathematically optimized whole-farm plans for the representative case farms, with and without bio-energy included, to compare the changes in net farm income, crop and livestock production, natural resources, and reliance on outside energy sources.

Sub-objective 1-4. Determine the economies of size and scale required for investment of an infrastructure to produce bio-energy from feedstock at the farm and/or regional level.

Sub-objective 1-5. Evaluate the farm and regional economic and environmental impacts of utilizing crop and livestock residues for bio-energy production.
Whole Farm Optimization Model

**Objective:** Programming a nonlinear whole farm optimization model in EXCEL connected to Farm Suite.

**Scale:** Representative farms in different geographical regions of the country.

**Data Requirements:** Field level crop, soils and practice data. Enterprise budgets and biofuel production costs/returns. EPIC simulation data and environmental measures.
Whole Farm Optimization Model

Location 1: Minnesota
Crops: Corn, Soybean
Biofuels Feedstocks: Corn Stover, Corn Grain, Soybeans
Considerations: Rotation, Pricing, Costs, Transportation, SOC

Location 1: Alabama
Crops: Corn, Cotton, Rye (Cover)
Biofuels Feedstocks: Corn Stover, Corn Grain, Rye Biomass
Considerations: Rotation, Pricing, Costs, Transportation, SOC, Biomass Removal

Economic Management of a Rye Cover Crop Prior to Cotton (Shorter, AL 2005)