Abstract: If cellulosic biomass is to play a significant role in America’s energy future, research needs to be conducted on the optimal production and placement practices. This project looked at a portfolio of biomass cropping systems that might be adopted in Iowa.

What was done and why?

The initial goal of the Landscape Biomass Project was to develop a portfolio of biomass cropping systems that together are productive, profitable, and mitigate negative effects of annual crops on soil and water quality.

Specific objectives were to:
• Establish an experiment to test alternative biomass systems, along with the baseline topographic, hydrological and soil conditions for the experimental site;
• Evaluate and compare energy/fertilizer inputs versus biomass outputs among biomass production systems grown on different landscape positions;
• Evaluate and compare biomass production systems grown on different landscape positions in terms of their impacts on soil and water quality; and
• Evaluate and compare establishment, production, harvest, and transport costs of biomass production systems grown at different landscape positions.

What did we learn?

The objectives outlined in the original proposal were achieved. The price garnered by corn and soybeans skyrocketed over the course of this study, substantially affecting the profitability of biomass crops and farmer willingness to adopt alternative cropping systems, including all but the Continuous Corn system investigated here. The team sees three ways that the alternative systems studied could become more cost-competitive with the traditional commodity crops grown in Iowa:
(1) boosting the yields of alternative biomass crops through substantially greater investment in variety development via plant breeding and transgenic approaches, and crop management;
(2) creating more demand for alternative biomass crops through substantially greater and sustained investment in developing new markets for these crops, and
(3) developing Payment for Ecosystem Service schemes (USAID 2007) to compensate farmers for environmental benefits associated with alternative biomass cropping systems.