

Evaluation of Break-even Farm-gate *Switchgrass* Prices in South-central North Dakota



Switchgrass, a warm-season perennial grass native to the region, has received considerable interest for its potential role as a dedicated feedstock for cellulosic-based biofuels. As part of the NDSU Biomass Feedstocks Project, the Department of Agribusiness and Applied Economics worked with researchers at the Central Grasslands Research Extension Center in Streeter to examine the farm-gate price needed for switchgrass to provide per-acre net returns equal to those obtained from traditional crops in south-central North Dakota.

A primary focus of the research was to examine how break-even farm-gate prices for switchgrass vary based on soil productivity. Crop budget generators and soil data were used to estimate crop revenues, production expenses and net returns on three classes of soil productivity, holding all other parameters constant (e.g., managerial skill, producer profitability).

The budgeting process used forecasted crop prices, trends in regional crop yields and annual changes in per-acre costs to forecast net returns from traditional crops from 2008 through 2017. Prices for switchgrass were calculated using an annualized equivalent analysis of switchgrass production costs and net returns from traditional crops during the 10-year period. Break-even prices for switchgrass covered production expenses and provided for a net return equal to what a producer would expect to obtain from raising traditional crops in each soil productivity group.

Specific Findings

- Switchgrass yields were estimated at 2.7 tons per acre on marginal soils, 3.0 tons per acre on average-productivity soils and 3.5 tons per acre on high-productivity soils.
- Switchgrass production costs, which included an annual charge for establishment but excluded land expenses, ranged from around \$40 per ton on marginal soils to about \$35 per ton on highly productive soils.
- Break-even switchgrass prices ranged from \$47 per ton in the low-productivity soils to \$76 per ton in the most productive soils.

A key economic criterion influencing switchgrass prices will be the forgone net revenue from displaced traditional crops. On marginal soils, just less than one-third of the break-even price was derived from the level of forgone net returns from traditional crops, whereas more than 80 percent of the break-even price was derived from the level of forgone net returns from traditional crops on the most productive soils. If switchgrass is expected to compete with traditional crops as a cash crop, the cost of acquiring biomass from switchgrass will be higher than previously estimated.

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This project was funded in part by a grant from ND Ag Products Utilization Commission.

For more information, visit the CGREC Web site at www.ag.ndsu.edu/streeter.