

Bioenergy Crop Production in the United States: Potential Quantities, Land Use Changes, and Economic Impacts on the Agricultural Sector.

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Abstract:

The U.S. Departments of Agriculture and Energy jointly analyzed the economic potential for, and impacts of, large-scale bioenergy crop production in the United States. An agricultural sector model (POLYSYS) was modified to include three potential bioenergy crops (switchgrass, hybrid poplar, and willow). At farmgate prices of US \$2.44/GJ, an estimated 17 million hectares of bioenergy crops, annually yielding 171 million dry Mg of biomass, could potentially be produced at a profit greater than existing agricultural uses for the land. The estimate assumes high productivity management practices are permitted on Conservation Reserve Program lands. Traditional crops prices are estimated to increase 9 to 14 percent above baseline prices and farm income increases annually by US \$6.0 billion above baseline. At farmgate prices of US \$1.83/GJ, an estimated 7.9 million hectares of bioenergy crops, annually yielding 55 million dry Mg of biomass, could potentially be produced at a profit greater than existing agricultural uses for the land. The estimate assumes management practices intended to achieve high environmental benefits on Conservation Reserve Program lands. Traditional crops prices are estimated to increase 4 to 9 percent above baseline prices and farm income increases annually by US \$2.8 billion above baseline.