

**ASSESSMENT OF BIODIESEL PRODUCTION POTENTIAL IN THE SOUTHEAST:  
FINAL REPORT**

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## EXECUTIVE SUMMARY

The United States consumes approximately 50 billion gallons of middle distillate fuels (diesel and home heating oil) annually. Biodiesel, which can be made by chemically combining several types of natural oils or fats with an alcohol to form alkyl esters of fatty acids, can be a viable substitute for or additive to petroleum diesel.

This study assesses the role that the Southeastern region may play in supplying feedstock for biodiesel production if demand for biodiesel expands. The study estimates the potential supply of biodiesel feedstock from oilseed crops currently produced in the Southeastern region as well as from oilseed crops that could be incorporated into agricultural production in the Southeast. In addition to examining the current supply potential, the study estimates supply potential that could result from increasing the oil content of vegetable oil seed varieties. The study also estimates the potential supply of biodiesel feedstock from animal fats, based on the current state of the livestock sector in the Southeast, with particular emphasis on the poultry industry. Further the study addresses the impact that greater biodiesel demand would have on the crop and livestock sector in the Southeast as they relate to national agricultural markets in terms of price, land use, and farm income.

Using POLYSYS as the primary methodological tool, the study analyzes hypothetical increases in the demand for vegetable oils for processing up 3.85 million gallons of biodiesel. Simulations are also conducted that examine the potential impacts of introducing oilseed varieties with higher oil content. In addition to considering interactions among major crops currently produced in the Southeast, the study also incorporates introduction of two new oilseed crops in the SERBEP region: sunflower and canola.

The analysis indicates that price increases for oil crops will range between one and four percent, and any significant acreage reallocation will occur in the traditional soybean production areas. The prices of vegetable oils experience a 30 percent increase in the most aggressive scenario considered in the analysis (one percent of U.S. middle distillate fuels contributed by biodiesel). These price increases are not sufficient to bring significant production of sunflower and canola into the SERBEP region. Moreover, impacts on vegetable oil prices are greatest for the scenarios with higher demand for biodiesel and, therefore, substantial biodiesel use could, in effect, make vegetable oils a less attractive feedstock for biodiesel production.

The resulting changes in the crop sector and soybean meal prices do not result in a significant impact in the livestock sector, and therefore in the production of animal fats. However, given the expected growth in broiler production implied in the USDA baseline, significant levels of animal fat production, mainly from chickens, may be available by the year 2007. This additional supply of animal fats could sustain the production of a handful of new biodiesel facilities in the region, most notably in North Carolina, South Carolina, Georgia, and the Alabama-Mississippi-Arkansas sub-region.

The relationship between the prices of vegetable oils and animal fats is not directly addressed in this study. However, it would be fair to assume that given the inflexibility of the supply of animal fats with respect to the price of fat, the animal fat market offers relatively small opportunities to take advantage of any price swings in the vegetable oil markets. At the same time, it is hypothesized that an increase in the supply of vegetable oils – from, for example, the use of high-oil-content seed varieties – could help lower the price of animal fats through increasing the total availability of oils and fats. As prices of animal fats decline, they would become more attractive for use in biodiesel production. The SERBEP region has potential to

contribute to the growth of the biodiesel industry as the volume of animal fat from the poultry sector increases and as the total U.S. supply of vegetable oils increases.