OAK RIDGE NATIONAL LABORATORY FACT SHEET
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Global Biofuel Feedstock Supply and Analysis

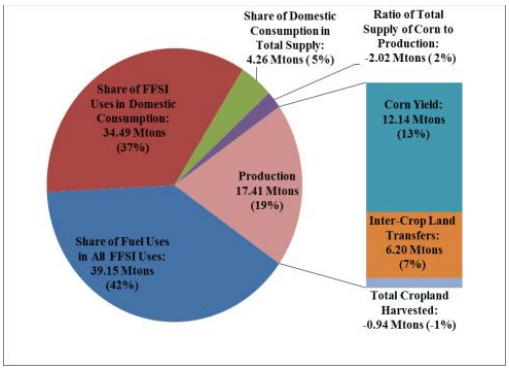
Global Interactions Crucial to National Biofuel Development

Recent policies to develop biofuel as a renewable resource in the increasingly tight market for liquid fuels place an emphasis on minimizing potential negative global implications and maximizing positive effects in sectors such as energy security, food security, biodiversity conservation, employment, and particularly climate change. In addition, the emergence of a global market for biofuels will subject the domestic biofuel industry to a myriad of competitive forces that may spur or slow its development. Understanding the roles, scope and magnitudes of these global interactions is crucial for setting domestic biofuel policies. Developing this understanding requires methods and capabilities to analyze global issues and to evaluate alternative measures to support the development of a strong and sustainable national biofuel industry.

Global Modeling of Biofuel Implications

Researchers at Oak Ridge National Laboratory (ORNL) provide analytical support to the Department of Energy (DOE) Office of Biomass Programs on the effects of meeting the requirements of the Energy Independence and Security Act of 2007 including:

- In-house capability to simulate the global implications of United States (US) biofuel production by using a modified version of the Global Trade and Analysis Project (GTAP) model. The ORNL version of this model, referred to as GTAP-DEPS (GTAP for Dynamic Energy Policy Simulations) incorporates recent US biofuel policies, estimates of cellulosic biofuel feedstock from the Billion Ton Study (BTS), sub-models for land use and supply, and dynamics. The static version of the model has been used to simulate potential indirect land-use change (iLUC) from US biofuel production and to demonstrate the impacts of various assumptions and modeling choices. The updated version of the model allows exploration of other issues beyond land-use change, including interactions of biofuels with the global oil market, food price and supply implications, and climate-change policies. The model can also be used to evaluate the importance of potential changes in biofuel policies and technologies over time.
- Analyses of empirical data to test the underlying assumptions often adopted in models for estimating the global land-use change implications of US biofuel production. For example, a recent study showed little support for large land-use changes or diversion of corn exports because of ethanol production in the United States. Instead, most of the increases in corn used for ethanol production over the past decade were met by changes in the distribution of *domestic* corn consumption among uses and higher corn yields.



Decomposition analysis of the sources of increases in corn used for ethanol production in the USA from 2001 to 2009

- Research on potential biofuel feedstock supplies in selected regions of the world. These studies generate feedstock supply curves as inputs into energy and economic simulation models to provide more accurate costs of feedstock procurement for biofuel production in various countries. A 2007 study examining Argentina, Brazil, Canada, China, Colombia, India, Mexico and the Caribbean Basin Initiative (CBI) region revealed a serious lack of adequate data to estimate supply curves for cellulosic feedstock, which are crucial to the development of second generation biofuels. Efforts are ongoing to develop improved methods for estimating supply curves for this category of feedstocks.

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