

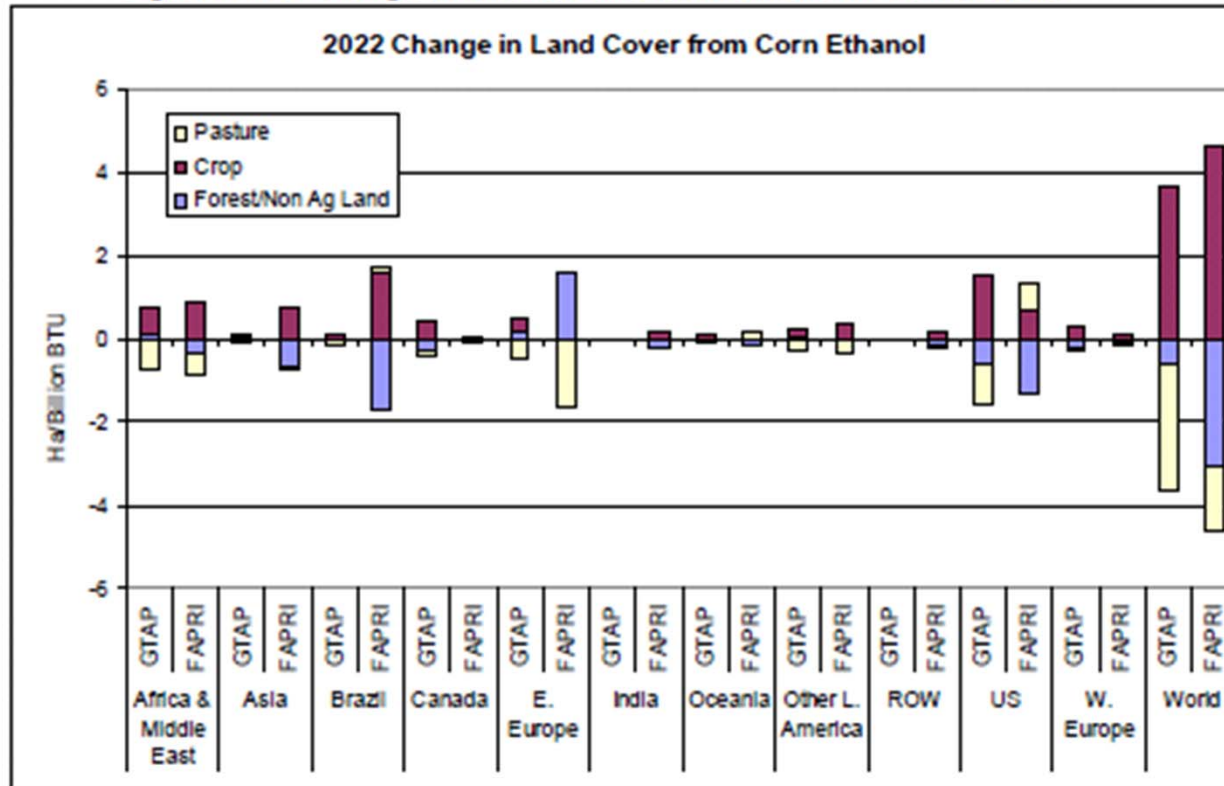
# Biofuels Extensions Experiments with GTAP-BIO

18<sup>th</sup> Annual Short Course in Global  
Trade Analysis  
Purdue University

# Background

- Biofuels (read ethanol) policy continues to be an area of robust debate and research
  - Net GHG balance of biofuels
  - Cost of biofuels made from subsidized crops
  - Land Use Change: Food vs Fuel (vs C sequestration)
    - Searchinger (*Science*, 2008) found huge international land use changes associated with US Ethanol mandates
    - US Energy Independence and Security Act mandated that EPA study international land use change associated with Renewable Fuels Standards

Figure 2.4-46. Changes in Land Cover from an increase in Corn Ethanol



Comparison of results from FAPRI-CARD Agricultural Model and GTAP  
 Source: EPA RFS2 Regulatory Impact Analysis

- Hertel, Golub et. al. Effects of US Maize Ethanol on Global Land Use and Greenhouse Gas Emissions: Estimating Market-mediated Responses (BioScience, March 2010)
  - Net cropland conversion estimate of 3.8 Mha – 60% less than Searchinger reported
- GTAP-BIO model extends GTAP-E by incorporating ethanol from grains, sugarcane and biodiesel from oilseeds, as well as byproducts
  - Ethanol competes with gasoline
  - Byproducts compete with grains as animal feed

# Presentations

1. Biofuels Extensions: Effects of Trade Assumptions on Land Use Change (Jared Creason and Medina Taylor)
2. Market-mediated Impacts of Brazilian Sugarcane Ethanol Expansion (Ben Henderson and Anand Gopal)
3. Food Implications of US biofuels mandate (Kamran Adili and Jevgenijs Steinbuks)
4. Implications of productivity decreases of land in the Coarse Grains under a US Ethanol Mandate (Vicki Duscha)

