**Reducing US Biofuels Requirements Mitigates Short-term Impacts of Global Population and Income Growth on Agricultural Environmental Outcomes**

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Biofuels are an important component of United States energy policy. Forty-one states have adopted Renewable Portfolio Standards mandating minimal levels of electricity production from renewable sources for which at least one form of biomass qualifies (NC Clean Energy Technology Center, 2020). At the federal level, a Renewable Fuel Standard (RFS2) was first legislated in the Energy Policy Act of 2005 (P.L. 109-58, 2005) and expanded in the Energy Independence and Security Act of 2007 (H.R. 6, 2007). While these policies typically mention energy security and economic development as motivators, the primary incentive is to reduce greenhouse gas (GHG) emissions from energy production. To this end, corn starch-based ethanol and other conventional biofuels are expected to comprise well over half of RFS2’s 20 billion gallons of ethanol-equivalents mandated for 2020; however, analyses conclude that corn ethanol has comparable greenhouse gas emissions over the life cycle to petroleum-based fuels.

Consequently, RFS2 requires production of corn ethanol which contributes relatively little to climate change mitigation objectives, comes from a heavily subsidized feedstock, and imposes other environmental costs such as nitrogen leaching. In this paper, we examine the potential for reductions in the RFS2 mandate for conventional biofuels to mitigate the short-term environmental stressors of agricultural demand growth imposed by population and income growth. We run various reductions in the conventional biofuels target through SIMPLE-G-US-CS in conjunction with projected changes in population, income, and productivity over a range of years from 2020 to 2040. This allows us to analyze the changes in global GHG emissions, nitrogen leaching in the Mississippi River basin, land use change (domestic and global), corn prices, corn production, and yields associated with altering the RFS2 policy. Running the results from the SIMPLE model through the ENVISAGE model will capture second-order effects on GHG emissions and other crop production.