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Effects of Ethanol Plant Proximity and Crop Prices on LUC in the US

Expansion of ethanol production in the US has raised concerns regarding its land-use change effects. However, little is known about the extent to which observed land use change in the US can be attributed to ethanol plant proximity or is caused by changes in crop prices. The study aims to examine the determinants of changes in corn acreage and aggregate crop acreage by identifying the effects of establishment of ethanol plants and the effects of changes in crop prices between 2003 and 2014. The results show that corn acreage and total acreage are fairly inelastic with respect to both changes in ethanol capacity, as well as changes in crop prices. The estimates of elasticity are smaller than those obtained by previous studies. The authors found that the increase in ethanol capacity alone led to a modest 3% increase in corn acreage and less than a 1% increase in total crop acreage by 2012 when compared to 2008. The effect of corn price and aggregate crop price on acreage change from 2008 to 2012 was more than twice larger than that of effective ethanol production capacity over this period; but this price effect was largely reversed by the downturn in crop prices after 2012. This study shows that land-use change is not a static phenomenon and that it is important to examine how it evolves in response to various factors that may change over time.

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<https://academic.oup.com/ajae/advance-article-abstract/doi/10.1093/ajae/aay080/5231793>