ADOPTION OF NITROGEN EFFICIENT ECO-INNOVATIONS BY US CORN FARMERS

Catharine Weber

Dr. Laura McCann, Thesis Supervisor

ABSTRACT

Anthropogenically introduced nitrogen has compromised environmental quality, but is an essential element for crop production, particularly corn production. Increasing nitrogen use efficiency by adopting eco-innovations such as nitrogen soil testing, plant tissue testing and nitrogen transformation inhibitors can ameliorate this problem. Data from the 2010 USDA Agricultural Resource Management Survey of corn producers was used to examine the factors affecting adoption of these practices. Twenty-one percent of the 1840 corn farmers had adopted nitrogen soil testing, three percent had adopted plant tissue testing and ten percent had adopted nitrogen inhibitors. A multivariate probit regression found significant results for each category of explanatory variable that was examined. Older farmers were less likely to adopt nitrogen soil testing and nitrogen inhibitors. Farmers who did not obtain external nitrogen recommendations were less likely to adopt all three practices than farmers who received recommendations from a crop consultant. Those who received recommendations from fertilizer dealers were less likely to adopt nitrogen soil testing. All regions were more likely to adopt nitrogen soil testing than the Midwest. Those who adopted conservation tillage were more likely to adopt nitrogen inhibitors and those who received conservation payments were more likely to adopt nitrogen soil testing and plant tissue testing. Adoption was also associated with the adoption of several other technologies, but there are still many factors outside the model which are driving the decision to use these three innovations. Lack of precise geospatial dummies and personality characteristics such as innovativeness may have played a role in the low R2 values observed in this study.