UNDERSTANDING WHY FARMERS ADOPT OR DO NOT ADOPT PRECISION FARMING TECHNOLOGY OR INDIVIDUAL PRECISION AGRICULTURE TECHNOLOGY COMPONENTS

Krishna P. Paudel
Mahesh Pandit
Ashok K. Mishra
Louisiana State University (LSU) and LSU Agricultural Center
Baton Rouge, LA
Dayton Lambert
University of Tennessee
Knoxville, TN
Jeanne M. Reeves
Cotton Incorporated
Cary, NC

Abstract

We analyzed the variables affecting the adoption or nonadoption of precision farming technologies in cotton production using survey data collected from 14 U.S. states. Results from the nested logit model indicated age has a negative effect on adoption but household income, farm size, and perception that precision farming is profitable have a positive impact on precision farming adoption. We considered 13 information gathering technologies in this study: yield monitor with GPS; geo-referenced soil sampling – grid and zone; aerial photos; satellite images; soil survey maps; handheld GPS/PDA; COTMAN plant mapping; electrical conductivity; digitized mapping; automatic section control or auto-swath for planters; automatic section control or auto-swath for sprayers; and GPS guidance. We used tetrachoric correlation to identify the correlation among those individuals who have adopted/not adopted these 13 information gathering technologies. We identified three unique bundles of technologies -- two of these three bundles were analyzed in this study. In bundle 1, there were three technologies: Aerial photos, satellite images and soil maps. In bundle two, there were two technologies: zone soil sampling and electrical conductivity. A multivariate probit model was used to identify the factors affecting the adoption/nonadoption of these technologies within the bundle setting. We observe that variables commonly known to positively affect technology adoption are education, information, size, and computer use. Age of the farmer is only variable that causes a negative effect on technology adoption.