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Abstract LEARN-03

The Economic Determinants of Adoption Rates of Conservation Tillage in the Prairie Region in Canada

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Conservation tillage is an excellent example of success agricultural innovative on the Canadian Prairies. Since its introduction in the 1970s, the rate of adoption of conservation tillage has grown at an impressive rate. Yet the rate of adoption has varied considerably across the different regions in the Prairies. My research project (May to August, 2012), which was funded by LEARN, examined the bio-economic determinants of the rate of adoption of conservation tillage in western Canada. Specifically, I analyzed the factors which best explain the growth in the number of acres under conservation tillage over the past twenty years. The explanatory variables in my regression equation include farm size, farm profitability, farm capital value, soil type, and rainfall. Panel data on farm characteristics were gathered at Census Agriculture Region level from the 1991, 1996, 2001, 2006, and 2011 Census of Agriculture. Data on geographical characteristics were collected from Environment Canada. The dependent variable in my regression is the percentage of acres under conservation tillage.

My analysis establishes that the average farm size, soil type in the region, and the amount of rainfall are important factors explaining the conservation tillage adoption rate. The larger the average farm size, the higher the rate of conservation tillage. And a region with brown and dark brown soil has a higher rate of adoption than a region with black soil. The constructed regression model includes a rainfall variable and a rainfall – time interaction variable. The most important finding of my research is that the rate of adoption of conservation tillage is inversely related to the average level of rainfall for a region, and this relationship has become increasingly more prominent over time. In the early 1990s there was a similar rate of adoption of conservation tillage across all regions, but in recent years low rainfall regions are adopting conservation tillage at a much higher rate than high rainfall regions.

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