

A Sample of Kansas Farm Management Association Members Use and Effects of Continuous No-Tillage¹

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No-Tillage is a common conservation practice on many farms in Kansas and likely one of the first in-field conservation practices to be adopted by farmers. An intensification of this practice would be to move from using no-tillage for a specific crop to continuous no-tillage, where no-till is used for all crops in a rotation. Adoption and intensification of tillage practices is based on the perceived benefits and costs from the practice. This article examines the use of no-tillage practices by farmers in Kansas.

A study was conducted examining farm conservation practice adoption, development and experience in Kansas in 2013-2014. Part of this study surveyed a sample of farms from the Kansas Farm Management Association (KFMA). The KFMA has approximately 2,300 farms across Kansas in their database that produce crops and livestock. Approximately 76% of these farms are primarily crop producers and 16% identified as crop/livestock producers. A total of 1,513 farmers from the KFMA were mailed letters inviting them to attend a one-day workshop concerning conservation practices. Of the farmers contacted, 40 no longer farmed, were deceased or could not be located; and

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432 responded to the letter. In total, 250 of the 432 farmers who responded attended the workshops. Of the 250 surveys filled out at the workshops, 248 were useable. The remaining farmers who responded were interested, but could not attend the workshops on the dates they were held, resulting in an adjusted response rate of approximately 30%, and an attendance rate of 17%. Workshop attendees were compensated for their time and travel expenses. Many of the farmers who attended had established conservation practices on their farms already and the workshops conducted were to assess the potential for intensifying conservation practice efforts on-farm in Kansas.

The workshops consisted of an introductory presentation covering the basic aspects of the conservation practices under study, a time for farmers to answer a survey questionnaire, a set of stated-choice experiments, and a focus group to discuss farmers' views on conservation. This report summarizes aspects of the survey with questions to elicit their farming history, farm operation, their conservation practices, and the results of the focus group discussions related to no-tillage practices.

Two hundred and forty eight members of the Kansas Farm Management Association responded to questions about a number of on-farm conservation practices. One of these was whether or not they had adopted continuous no-tillage, which is defined as use of no-tillage on all crops in a crop rotation on a given field. Of the 248 members in attendance, 242 responded to the question, with 63% indicating they had adopted continuous no-till and 37% indicating they had not. The average percent of cropland devoted to this practice was 84% with 99 of the 152 no-tillage adopters farming 100% of their crop acreage in no-tillage. Only 35 (23%) of the continuous no-till users received cost-share or an incentive payment for adopting no-tillage. These producers received cost-share primarily from the Conservation Stewardship (CSP) Program, followed by the Environmental Quality Incentives Program (EQIP).

Table 1 indicates that 88.8% of continuous no-tillage users adopted the practice on their wheat acreage, while only 59.9% adopted it on their grain sorghum acres. Approximately three quarters of no-tillage users adopted it on their corn (77%) and soybean (78.9%) acreage. The majority of adopters reported an increase in yields of corn, soybean, and grain sorghum, with the highest percentage for sorghum. A small percentage of respondents (12.6%)



reported a decrease in yields. Approximately 23% to 33% reported no change in yield depending upon the crop (Table 1).

Table 2 reports the respondents' observed changes associated with continuous no-tillage adoption. Ninety-five percent of the no-till users reported a decrease in soil erosion, and 65.8% reported lower weed pressure. The percent reporting an increase in soil fertility was 55.9%. No-tillage did require more intensive management as 66.4% reported an increase in management intensity. However, 34.9% reported no change or less time (23.7%) required to manage the crop. For off-farm environmental benefits, 67.8% reported greater off-site environmental impact (Table 2). The greater the environmental impact, the more off-farm environmental benefits occurred due to reduced soil erosion, nutrient leaching, and carbon emissions. Further, 65.8% reported higher yields, 40.1% reported lower production costs and 69.7% reported higher net returns.

A focus group questionnaire was used by a moderator to facilitate conversation among the same individuals who completed the survey. We had a total of 22 groups, with the size of the focus groups ranging from 6 to 16 with an average of 10 participants. In this report, we concentrate on whether or not the participants had experienced any unintended or unexpected benefits from adopting no-tillage practices. Focus group participants were pleased with no-tillage practices overall and many saw unintended benefits from adopting no-tillage. Ninety-three total responses from the focus groups were related to unintended benefits, with common answers arising between focus groups to the aforementioned question.

Less time in the field and using less labor were the two most common responses shared among focus groups participants. Of the 93 unintended benefits responses, less time and less labor were mentioned in 15 out of the 22 groups or 68%. The ability to expand and farm more acres resulted in seven responses or 7.5%. Another unintended benefit that also had seven responses was the combination of higher and more consistent crop yield. In addition to unintended benefits being shared across different focus groups, there was almost always some agreement among the individual groups when an unintended benefit was mentioned. Expanding and farming more acres was a response shared in seven of the 22 groups or nearly 32%.



Some of the other responses included: being able to take vacations, a wife being happier that she does not have to clean the house of dust as much, seeing more quail and pheasants out in the fields, and being able to spend more time with the family. It was evident that all of the focus group participants were happy to have received unintended benefits, regardless of how simple or how outlandish they may seem. This study showed that unintended benefits of no-tillage not only positively impacted profitability of the farm, but also the personal lives of the farmers who implemented no-tillage.

The increase in yield in corn, soybean, wheat, and grain sorghum of no-tillage adopters may be reason enough to begin practicing no-tillage or move to continuous no-tillage. Government incentives and thinking about the future of agriculture are reasons to begin no-tilling crop acres, but the adoption of no-tillage practices also rewards farmers with unintended benefits. Those unintended benefits are reduced labor inputs, farm expansion, seeing more wildlife out in fields, or being able to spend more time with family. Whatever their reason to practice no-tillage, a strong passion for agriculture was consistent throughout the focus group participants and their happiness with their decision to adopt no-tillage was evident.



Table 1. Adoption Percentage of Continuous No-tillage and Impact on Yield by Crop in Kansas.

| | Adoption % | Yield Increase | Yield Decrease | Yield No Effect | No Response |
|---------|------------|----------------|----------------|-----------------|-------------|
| Corn | 77.0 | 59.0 | 6.0 | 32.5 | 2.6 |
| Soybean | 78.9 | 70.8 | 2.5 | 25.0 | 1.7 |
| Wheat | 88.8 | 45.9 | 12.6 | 29.3 | 2.2 |
| Sorghum | 59.9 | 75.8 | 1.1 | 23.1 | 0.0 |

Table 2. Observed Changes Associated with Continuous No-tillage Adoption (%)

| Effect | Impact | | | |
|-------------------------------|--------|-----------|--------|-------------|
| | Lower | No Change | Higher | No Response |
| Weed Pressures | 65.8 | 17.8 | 13.2 | 3.3 |
| Insect and Disease Pressures | 20.4 | 46.7 | 28.3 | 4.6 |
| Soil Erosion | 95.4 | 1.3 | 0.7 | 2.6 |
| Soil Fertility | 12.5 | 27.6 | 55.9 | 3.9 |
| Management Intensity | 12.5 | 17.8 | 66.4 | 3.3 |
| Time Managing Crop | 23.7 | 34.9 | 37.5 | 3.9 |
| Off-Site Environmental Impact | 11.8 | 14.5 | 67.8 | 5.9 |
| Crop Yields | 3.9 | 26.3 | 65.8 | 3.9 |
| Production Costs | 40.1 | 29.6 | 27.0 | 3.3 |
| Net Returns | 3.3 | 23.0 | 69.7 | 3.9 |

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