

IRMP Tillage Survey Summary, 1999-2000

A 1999 survey of 340 corn and soybean producers in 18 Iowa counties indicates tillage preferences among those farmers have remained stable over the past three years. The amount of no-till acres and the proportion of farmers using no-till has remained the same from 1997 to 1999 for those farmers sampled.

Results showed three approximately equal groups using the three main tillage systems on corn and soybeans, including: one-third of the respondents using conventional tillage; one-third using conservation tillage; and one-third using no-till.

These survey results do not substantiate other reports of significant changes in the use of no-till or other tillage systems. Although there was a small amount of annual fluctuation, the survey indicated no significant change in the use of tillage systems over the three year period from 1997 to 1999. This result was unexpected, as a perceived decline in the use of no-till was the catalyst for this survey.

These unexpected results took the survey report in another direction. The remainder of the report and this summary focus on why tillage decisions appear to be fairly stable; and how the three groups of farmers perceive problems and opportunities in relation to tillage and their farming operations.

These results may also be useful to those developing approaches to increase the amount of conservation tillage, including no-till.

Why the survey was done

A physical field survey of crop residue levels in each Iowa county is conducted by the Natural Resources Conservation Service (NRCS) and the local conservation partnership on a regular basis. This information is then forwarded to the Conservation Technology Information Center

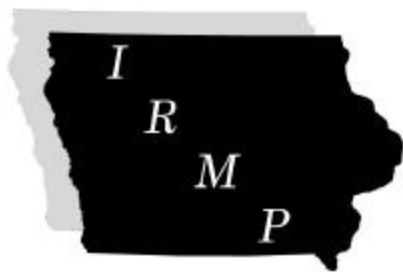
(CTIC) for processing into national tillage data.

Results from the NRCS/CTIC survey conducted in 1997 revealed a continuing trend of an increase in no-till acres. However, in 1998 no-till acres decreased dramatically (by 1.2 million acres), and the use of all conservation tillage methods dropped by 12 percent. In 1999, when CTIC did not conduct a survey, a less extensive inventory funded by Monsanto, Inc., revealed no statistically significant change in the use of conservation tillage practices from 1998 to 1999.

In the first half of 1999, conservation officials received a series of informal observations and reports indicating a potential decline in the use of conservation tillage and no-till in the state. These reports, combined with the survey results described above, prompted the Iowa Residue Management Partnership (IRMP) to form and further investigate the tillage trend in Iowa.

The IRMP

The Iowa Resources Management Partnership (IRMP), which was established in the fall of 1999, is an informal partnership of private and public organizations promoting and addressing issues related to conservation tillage in Iowa. IRMP members include: Conservation Districts of Iowa, Inc.; Conservation Technology Information Center; IDALS, Division of Soil Conservation; Iowa Chapter, Soil and Water Conservation Society; Iowa Department of Natural Resources; Iowa Farm Bureau Federation; Iowa State University; Monsanto, Inc.; Novartis Crop Protection, Inc.; Agren, Inc.; Iowa Chapter, American Society of Farm Managers and Rural Appraisers; Soil and Water Conservation Society, Inc.; USDA, Natural Resources Conservation Service.



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Survey procedure

In the fall of 1999, the IRMP commissioned a survey questionnaire of Iowa farmers' tillage practices and attitudes. IRMP contracted with AgInforomatics, an agricultural research company, to research perceived tillage changes and to determine if no-till was decreasing in Iowa. The survey focused on measuring tillage trends and identifying possible causes of any trend changes among a sample of Iowa farmers. AgInforomatics and the IRMP worked together to develop the farmer survey questionnaire.

AgInforomatics designed a stratified sample frame based on the number of commercial-sized farms and estimated number of no-till acres in each county. This process focused the survey sample selection in areas of the state where there was a greater probability of finding commercial-sized farms using no-till, and thus, a greater probability of finding changes in tillage systems. The survey was random within the stratified sample group.

The Iowa Agricultural Statistical Services, an affiliate of the USDA National Agricultural Statistical Services, applied the stratified sample frame to Census information (yielding the 18 counties used in the survey) and conducted the mail survey. A total of 722 questionnaires were mailed to corn and soybean producers in the selected 18 Iowa counties in the fall of 1999. A total of 340 surveys with viable information were received, which is a 51.2 percent response rate.

Survey highlights

Rate of adoption of different tillage systems

- Of the responding farmers, 40 percent have never tried no-till; 21 percent tried but quit no-till, and 36 percent currently use no-till on at least part of their corn and soybeans (in 1999).
- 63 percent of the respondents cited the perception of lower yields as a factor keeping producers from trying no-till.
- No-till farmers reported somewhat lower corn yields but similar soybean yields, and the differences were statistically insignificant.
- No-till farmers operated considerably more acres of corn and soybeans than those with other tillage preferences.
- No-till was more likely to be found on the larger cash grain farms.
- No-till farmers rented a higher percentage of their corn and soybean acres than farmers not practicing no-till. Approximately 50 percent of no-till farmers rented more than 75 percent of their land and owned just 14 percent of the land they farmed.
- Respondents who rent land indicated that their landlords do not influence their tillage decisions.
- Farms relying on no-till appeared to be larger, with a higher portion on sloping and erosive lands.
- Farms relying on conventional tillage generally showed smaller farms where a higher proportion of the cropland was more flat.

Although survey respondents cited perceived lower yields as a reason other farmers do not adopt no-till, yields reported by respondents in all three tillage groups were quite comparable.

Average Yield of Corn and Soybeans by Tillage Preference (bushels/acre)

Year	CORN			SOYBEANS		
	Never Tried NT*	Tried but Quit NT	Currently Use NT	Never Tried NT	Tried but Quit NT	Currently Use NT
1997	157	154	151	51	51	52
1998	163	158	159	52	54	54
1999	166	165	162	50	50	51

*NT—no-till

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Equipment and no-till system adoption

- Producers cited perceived lower yields and equipment conversion costs as the most important reasons that other farmers do not adopt no-till.
- More than half of all the respondents said machinery costs are one of the three main reasons why more farmers do not use no-till.
- No-till farmers were more likely to use drills for soybeans, while conventional or conservation tillage farmers were more likely to use standard planters.
- 13.6 percent of the farmers who have never tried no-till used drills to plant soybeans.

Other factors influencing tillage decisions

- *Open falls*—57 percent of all the respondents indicated that favorable fall tillage conditions did not influence their tillage decisions.
- *Spring planting “window of opportunity”*— All respondents perceived this window to have decreased in the last five years: 58 percent of the no-till farmers; 46 percent of the “tried but quit” group; 36.9 percent of the “never tried” group.
- *Local equipment dealers views on no-till*— Nearly 20 percent of the two groups not practicing no-till perceived their dealers as opposing no-till in various degrees; approximately 40 percent of the no-till farmers perceived their local dealers as supporting no-till.
- *Herbicide effectiveness*—68 percent of the no-till farmers felt herbicide effectiveness had increased in the last 5 years; 56 percent of the “tried but quit” group felt it had increased; 34 percent of the “never tried no-till” group felt it had increased.

Farmers’ perceptions of problems related to no-till

- Farmers perceived soil pH as a moderate problem, with no till farmers viewing it as more of a problem than the other groups.
- Seedbed condition was perceived to be a larger problem than pH. No-till farmers view seedbed condition as less of a concern than farmers in the other two categories.
- Soil fertility was considered a relatively moderate problem shared equally by all survey respondents.
- The majority of respondents are concerned about drainage. No-till farmers thought drainage was less significant of a problem than the other groups.
- Soil compaction was viewed as a major concern for farmers in all tillage groups.
- Manure management was perceived to be a moderate problem for most farmers, but less so for those using no-till.
- Cold, wet soils was cited as the highest or next to highest problem rating by more than two thirds of all the respondents. It was the major perceived problem indicated by farmers with no-till corn and beans.
- 65 percent of the “never tried no-till” group perceived an increase in production costs in the last five years; 51 percent of the “tried no-till but quit” group perceived an increase; 64 percent of the no-till farmers perceived an increase in production costs.
- 40 percent of the no-till farmers viewed biotechnology innovations positively. Only 2.2 percent viewed them as negative.



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Based on the respondents’ perceptions of what’s keeping other producers from adopting no-till and conservation tillage, conservationists may need to use varied approaches when promoting the different tillage systems.

Reasons Others Don’t Adopt No-till (in percent of survey respondents)

Issue	Most Important Reason
Lower Yields	31.0%
Equipment Conversion Costs	24.1%
Plant Emergence, Spring	21.1%
Weed Problems in Corn	11.2%
Soil Compaction	9.1%
Don’t Want to Learn New System	7.8%
Insect, Disease Control	4.3%

Reasons Others Don’t Adopt Conservation Tillage (in percent of survey respondents)

Issue	Most Important Reason
Plant Emergence in Spring	25.7%
Lower Yields	23.0%
Weed Problems in Corn	11.8%
Not Required for Compliance	15.0%
Need to Smooth Rills or Gullies	10.7%
Soil Compaction	7.5%
Don’t Want to Learn New System	7.2%



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Producers' future plans

Based on the following responses, there may be opportunities to increase the use of conservation tillage and no-till as land managers change in the future.

- 19 percent of all of the respondents plan to retire or get out of farming within the next 5 years.
- 20.4 percent of the "never tried no-till" group plan to retire or get out of business within the next 5 years.
- 8.3 percent of the no-till farmers plan to retire or get out of business within the next 5 years.

IRMP in the future

The results of this survey of 340 farmers in 18 Iowa counties showed that the acreage and the number of farmers practicing no-till has remained constant from 1997 to 1999. The results of this 1999-2000 survey cannot be extrapolated as a definitive trend in tillage patterns across the state of Iowa, but may be an indication of which direction conservation tillage and no-till are going in Iowa.

Valuable information collected in this survey will help the IRMP and others that support conservation tillage and no-till plan future activities. Areas the IRMP may further explore in the future include:

- Process of converting to no-till and the machinery issues associated with this process.
- Farmer perceptions of equipment dealers' beliefs about no-till.
- Farmer perceptions of increased equipment conversion costs associated with no-till.
- Farmer perceptions of lower yields associated with no-till.
- Differences in the problems conventional and conservation tillage farmers perceive with no-till.
- Opportunities to increase the use of no-till as land managers change in the future.

Plans for the Future (in percent of survey respondents)

<u>Plans</u>	<u>Farmers</u>
Retire/get out within 5 yrs.	19.0
Reduce number acres within 5 yrs.	5.9
Keep farm same size	44.4
Obtain land in immediate area	29.7
Expand as much as possible	8.3
Rely more on off-farm income	23.3
Contract more of operation	5.3

For more information

To receive a copy of the full report or information on joining the IRMP please contact:

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