2017-2024 Nutrient Reduction Survey

CROP ROTATION

This section highlights how farmers are rotating crops, whether it is the standard corn-soybean rotation or longer cycles that include small grains, hay or forage. Healthy rotations help break pest and disease cycles, improve soil structure and spread out weather and market risks. Rotation decisions depend on several factors, including weather, yield expectations, input costs and available markets.

Crop Rotation	2022	2023	2024	Average
Continuous Corn	10.6%	12.7%	11.6%	11.6%
Corn-Soy	85.3%	84.6%	81.7%	83.9%
Extended Rotation	2.0%	1.4%	3.3%	2.2%
Corn-Small Grain-Soy	0.2%	0.1%	0.3%	0.2%
Other	1.9%	1.2%	3.1%	2.1%

COVER CROP PRACTICES

Here you will find data on how many acres are planted with cover crops, the percentage of total acres that represents and how adoption has changed over time. Cover crops protect soil from erosion, hold nutrients such as nitrogen and build organic matter. They are one of the few practices that reduce both nitrogen and phosphorus loss. These benefits align with the goals of the Iowa Nutrient Reduction Strategy.

Research from Iowa State University shows that rye cover crops can reduce nitrate losses by around 30% compared to no cover crop in a corn-soybean rotation. Adoption usually grows gradually rather than all at once. Costs, weather and timing all play a role. A late fall or wet spring can make planting or terminating cover crops difficult. For some farmers, the uncertainty of short-term results also slows adoption.

Cover Crop Practices | Percentage	2017	2018	2019	2020	2021	2022	2023	2024	Average
Cover crop planted	6.9%	8.8%	9.5%	13.3%	12.1%	16.6%	17.0%	16.7%	12.6%
Rye cover crop	69.4%	82.8%	81.3%	90.9%	80.8%	81.8%	86.6%	89.6%	82.9%
Oat cover crop	9.1%	9.8%	2.8%	1.30%	5.50%	4.4%	6.1%	4.3%	5.4%
Species mix	NA	NA	11.20%	6.7%	12.30%	8.5%	5.5%	5.5%	8.3%
Other cover crop	21.5%	7.4%	4.80%	1.10%	1.5%	5.3%	1.7%	0.6%	5.5%

Cover Crop Practices | Acres*	2017	2018	2019	2020	2021	2022	2023	2024	Average
Cover crop planted	1,586,664	2,021,267	2,177,751	3,105,248	2,780,243	3,773,717	3,851,373	3,876,213	2,896,560
Rye cover crop	1,101,145	1,673,609	1,770,511	2,822,671	2,246,436	3,086,901	3,335,289	3,473,087	2,438,706
Oat cover crop	100,204	164,014	49,574	36,695	123,554	135,824	203,453	149,343	120,332
Species mix	NA	NA	243,908	208,052	341,970	320,766	211,826	213,192	256,619
Other cover crop	341,133	149,574	104,532	34,158	41,704	207,083	65,473	23,257	120,864

TILLAGE PRACTICES

This section breaks down the tillage methods used before corn and soybeans and how those patterns have shifted over time. Reducing tillage leaves more crop residue to protect the soil from erosion, which reduces phosphorus loss. Conservation tillage and no-till continue to play major roles in Iowa cropping systems. No-till is especially common before soybeans, while conservation tillage remains a popular choice before corn. Overall, the trend continues toward less intensive tillage as farmers look to improve soil health, protect water quality and support long-term productivity.

Tillage Practices | Percentage	2017	2018	2019	2020	2021	2022	2023	2024	Average
Conservation tillage before corn	56.3%	52.3%	46.5%	23.0%	25.4%	29.7%	23.3%	22.9%	34.9%
No-till before corn	26.4%	22.2%	29.4%	29.5%	31.6%	29.6%	32.7%	29.1%	28.8%
Conventional tillage before corn	NA	25.4%	24.1%	47.5%	43.0%	40.6%	44.0%	48.0%	38.9%
Conservation tillage before soy	42.6%	34.6%	33.8%	18.5%	19.6%	27.7%	22.1%	16.0%	26.9%
No-till before soy	43.2%	41.0%	44.6%	47.3%	53.3%	46.9%	49.7%	55.3%	47.7%
Conventional tillage before soy	NA	24.4%	21.6%	34.2%	27.1%	25.5%	28.3%	28.70%	27.1%
Combined corn & soy conservation tillage acreage	50.5%	44.6%	41.3%	21.2%	22.8%	28.8%	22.8%	19.9%	31.5%
Combined corn & soy no-till acreage	33.5%	30.3%	35.6%	36.8%	41.2%	37.2%	40.1%	40.5%	36.9%
Combined corn & soy conventional tillage acreage	NA	25.0%	23.1%	42.1%	35.9%	33.9%	37.2%	39.6%	33.8%

Tillage Practices | Acres*	2017	2018	2019	2020	2021	2022	2023	2024	Average
Conservation tillage before corn	7,438,870	6,805,748	6,341,092	3,171,203	3,260,594	3,768,005	2,983,573	2,995,832	4,595,615
No-till before corn	3,488,209	2,888,710	4,012,658	4,069,172	4,053,296	3,755,318	4,187,246	3,806,930	3,782,693
Conventional tillage before corn	NA	3,305,101	3,289,288	6,552,057	5,515,561	5,150,876	5,634,215	6,279,472	5,103,796
Conservation tillage before soy	4,167,224	3,445,030	3,135,015	1,767,477	1,989,464	2,782,839	2,176,873	1,620,580	2,635,563
No-till before soy	4,225,917	4,082,261	4,136,736	4,519,008	5,410,123	4,711,739	4,895,502	5,601,129	4,697,802
Conventional tillage before soy	NA	2,429,443	2,003,442	3,267,443	2,750,738	2,561,820	2,787,579	2,906,915	2,672,483
Combined corn & soy conservation tillage acreage	11,606,094	10,250,778	9,476,107	4,938,679	5,250,058	6,550,844	5,160,446	4,616,411	7,231,177
Combined corn & soy no-till acreage	7,714,126	6,970,971	8,149,394	8,588,180	9,463,419	8,467,057	9,082,748	9,408,059	8,480,494
Combined corn & soy conventional tillage acreage	NA	5,734,544	5,292,729	9,819,501	8,266,299	7,712,695	8,421,794	9,186,387	7,776,279

Data Notes:

** These numbers are extrapolated using USDA's corn and soybean acre numbers across Iowa.*

*** Years without data reflect how survey questions evolve with the NRS science assessment as practices are added or refined.*

Out of the 600+ agricultural retailers in Iowa, 150 retail locations are selected at random and stratified across eight major land resource areas based on the percentage of row crops each year. About 1,000 of the potential 1,500 surveys are completed, ensuring oversampling of Iowa State University's target of 500 surveys for statistical significance. INREC aggregates the data to ensure confidentiality, and the Iowa State University Center of Survey Statistics Methodology extrapolates the data for statewide adoption. Iowa State University models nutrient load reduction based on performances documented in the NRS science assessment.