



2017-2024 Crop Year Survey Data Extrapolation

Corn & Soy Acres	2017	2018	2019	2020	2021	2022	2023	2024	Average
Corn acres (CDL)	13,212,913	13,012,207	13,648,497	13,793,805	12,826,886	12,686,886	12,805,034	13,082,234	13,133,558
Soy acres (CDL)	9,782,215	9,956,734	9,275,193	9,553,928	10,150,325	10,046,351	9,850,104	10,128,623	9,842,934
Corn & soy acres total (CDL)	22,995,128	22,968,941	22,923,690	23,347,733	22,977,211	22,733,237	22,655,138	23,210,857	22,976,492

CDL = USDA Cropland Data Layer

Commercial Only Nitrogen Rates (lb/ac)	2017	2018	2019	2020	2021	2022	2023	2024	Average
Average N rate on corn in rotation	170.0	172.3	177.5	183.4	170.9	173.4	166.6	179.2	174.2
Average N rate on continuous corn	200.4	201.9	200.4	208.9	199.9	192.6	185.7	205.0	199.4

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:	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%	1.3%	5.5%	4.4%	6.1%	4.3%	5.4%
Species mix	NA	NA	11.2%	6.7%	12.3%	8.5%	5.5%	5.5%	8.3%
Other cover crop	21.5%	7.4%	4.8%	1.1%	1.5%	5.3%	1.7%	0.6%	5.5%

Commercial Nitrogen Application Practices:	2017	2018	2019	2020	2021	2022	2023	2024	Average
Fall anhydrous ammonia applied	38.9%	24.1%	23.5%	28.9%	43.1%	50.3%	49.5%	42.0%	37.5%
EPA-labeled inhibitor with anhydrous ammonia							63.1%	62.0%	62.6%
Nitrapyrin inhibitor with anhydrous ammonia	72.6%	73.9%	84.8%	83.8%	86.0%	64.7%			77.7%
Fall only	NA	NA	14.0%	17.4%	22.4%	27.8%	34.7%	23.9%	23.4%
Spring pre-plant only	42.1%	56.3%	50.9%	46.7%	40.3%	33.8%	36.5%	41.9%	43.6%
Spring pre-plant & in-season	9.9%	15.4%	16.9%	13.8%	13.2%	14.5%	10.5%	12.3%	13.3%
In-season only	2.1%	1.1%	1.1%	3.8%	1.7%	1.0%	2.5%	1.8%	1.9%
Fall & spring pre-plant	NA	NA	11.6%	9.7%	14.3%	14.4%	10.2%	10.7%	11.8%
Fall & in-season	NA	NA	3.2%	5.4%	4.7%	6.1%	3.7%	8.0%	5.2%
Fall & spring & in-season	NA	NA	2.3%	3.2%	3.4%	2.3%	2.0%	1.4%	2.4%
Variable rate applied	NA	NA	8.7%	10.1%	16.1%	9.8%	15.2%	12.2%	12.0%

Manure Practices:	2017	2018	2019	2020	2021	2022	2023	2024	Average
No manure used	81.5%	81.4%	80.8%	82.0%	79.7%	78.8%	76.5%	77.5%	79.8%
Beef manure used	6.8%	10.3%	8.8%	6.3%	9.5%	9.0%	11.8%	10.2%	9.1%
Beef & liquid swine manure used	0.0%	0.0%	0.3%	0.1%	0.1%	0.2%	0.4%	0.1%	0.2%
Liquid swine manure used	7.6%	5.4%	7.4%	8.1%	8.1%	8.9%	8.3%	7.9%	7.7%
Poultry manure used	1.6%	1.7%	1.9%	1.2%	1.6%	1.4%	1.7%	0.9%	1.5%
Dairy manure used	2.5%	1.1%	0.8%	2.1%	1.1%	1.7%	1.5%	3.3%	1.8%
Liquid swine manure fall applied	94.7%	84.2%	78.5%	87.3%	82.4%	91.8%	83.1%	91.2%	86.6%
Liquid swine manure spring applied	1.8%	2.5%	11.7%	3.4%	7.0%	4.7%	5.6%	0.0%	4.6%
Liquid swine manure fall & spring applied	3.5%	13.3%	9.9%	9.4%	10.6%	3.6%	11.3%	8.8%	8.8%

Phosphorus Application Practices:	2017	2018	2019	2020	2021	2022	2023	2024	Average
Commercial P incorporated with planter	11.0%	3.8%	1.2%	2.7%	0.6%	0.7%	1.6%	0.9%	2.8%
Commercial P applied in knifed bands	2.9%	2.7%	2.7%	3.0%	2.7%	1.1%	4.0%	6.6%	3.2%
Commercial P broadcast & incorporated in 1 week	47.0%	70.3%	69.1%	40.4%	43.2%	37.9%	31.4%	31.6%	46.4%
Liquid P (commercial/manure) injected	1.8%	3.8%	8.9%	7.8%	5.0%	6.8%	5.6%	1.8%	5.2%
Other P application type (unincorporated)	37.4%	19.5%	18.1%	46.0%	48.4%	53.5%	57.4%	59.2%	42.4%
Variable rate applied	NA	NA	49.6%	45.7%	57.0%	52.8%	61.5%	58.3%	54.2%
Soil testing for P	81.2%	72.1%	85.5%	80.6%	81.2%	79.6%	82.2%	77.1%	79.9%
P application when at or below optimum levels	74.3%	94.4%	94.3%	99.1%	98.2%	95.4%	91.0%	94.9%	92.7%

Soil Test P Levels	2022	2023	2024	Average
Average Bray-P1 (ppm)	31.2	34.4	33.7	33.1
Average Olsen (ppm)		20.9	28.8	24.9
Average Melich-3 (ppm)	36.1	34.1	41.9	37.4

Tillage Practices:	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%	28.7%	27.1%
Combined corn & soy conservation tillage acreage	50.5%	44.6%	41.3%	21.1%	22.9%	28.8%	22.7%	19.9%	31.5%
Combined corn & soy no-till acreage	33.5%	30.4%	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%

2017	2018	2019	2020	2021	2022	2023	2024	Average	Extrapolated Using
7,441,970	6,805,748	6,341,092	3,171,203	3,260,594	3,768,005	2,977,177	2,995,644	4,595,179	Corn acres
3,486,345	2,890,908	4,018,117	4,071,389	4,052,013	3,755,318	4,188,876	3,805,549	3,783,564	Corn acres
NA	3,299,680	3,289,288	6,551,214	5,512,867	5,150,876	5,638,982	6,281,041	5,103,421	Corn acres
4,169,316	3,441,481	3,134,088	1,764,290	1,993,219	2,782,839	2,173,803	1,623,454	2,635,311	Soy acres
4,221,350	4,081,526	4,134,881	4,517,853	5,409,108	4,711,739	4,892,801	5,602,069	4,696,416	Soy acres
NA	2,433,727	2,006,224	3,271,784	2,746,678	2,561,820	2,783,500	2,903,099	2,672,405	Soy acres
11,611,287	10,247,229	9,475,179	4,935,493	5,253,814	6,550,844	5,150,980	4,619,099	7,230,491	Corn & soy conservation tillage acres
7,707,695	6,972,434	8,152,998	8,589,242	9,461,121	8,467,057	9,081,676	9,407,618	8,479,980	Corn & soy no-till acres
NA	5,733,407	5,295,512	9,822,998	8,259,545	7,712,696	8,422,482	9,184,140	7,775,826	Corn & soy conventional tillage acres



2017-2024 Crop Year Survey Data: Corn & Soy Acres

This part of the survey starts with statewide corn and soybean acre data from USDA. These numbers form the foundation for the rest of INREC's analysis because they help paint a picture of what's happening across Iowa farmland.

Acre trends matter because they drive almost everything else: fertility needs, crop rotations, cover crop opportunities, and conservation impact. When corn or soybean acres shift, it is usually due to a mix of factors such as crop prices, input costs, weather, or global markets. For example, a wet spring might push more acres into soybeans, while strong corn prices could pull them back the following year.

Changes in total acres also affect how we interpret conservation practice adoption. Tracking acre trends alongside management practices gives a clearer sense of what is really happening on the ground

Corn & Soy Acres	2017	2018	2019	2020	2021	2022	2023	2024	Average
Corn acres (CDL)	13,212,913	13,012,207	13,648,497	13,793,805	12,826,886	12,686,886	12,805,034	13,082,234	13,133,558
Soy acres (CDL)	9,782,215	9,956,734	9,275,193	9,553,928	10,150,325	10,046,351	9,850,104	10,128,623	9,842,934
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CDL = USDA Cropland Data Layer

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.



2017-2024 Crop Year Survey Data: Commercial Only Nitrogen Rates

When we look at commercial-only nitrogen rates, we’re talking about fertilizer that comes strictly from commercial sources—no manure inputs. Since 2017, those rates have stayed fairly steady. That tells us farmers are applying what the crop needs, not more, not less. It also shows a good balance between increasing yields and protecting water quality.

Commercial Only Nitrogen Rates (lb/ac)	2017	2018	2019	2020	2021	2022	2023	2024	Average
Average N rate on corn in rotation	170.0	172.3	177.5	183.4	170.9	173.4	166.6	179.2	174.2
Average N rate on continuous corn	200.4	201.9	200.4	208.9	199.9	192.6	185.7	205.0	199.4

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.



2017-2024 Crop Year Survey Data: 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%

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2017-2024 Crop Year Survey Data: 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	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%	1.3%	5.5%	4.4%	6.1%	4.3%	5.4%
Species mix	NA	NA	11.2%	6.7%	12.3%	8.5%	5.5%	5.5%	8.3%
Other cover crop	21.5%	7.4%	4.8%	1.1%	1.5%	5.3%	1.7%	0.6%	5.5%

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2017-2024 Crop Year Survey Data: Commercial Nitrogen Application Practices

Here, we are looking at how nitrogen from commercial fertilizer is being applied, how timing and methods are changing and how those adjustments tie into nutrient-loss goals. Managing nitrogen is a key part of the Nutrient Reduction Strategy since excess nitrogen contributes to water quality challenges. The “4Rs” approach (right rate, right source, right time, right place) guides this effort.

Survey data shows nitrogen rates holding steady, which suggests farmers are applying responsibly and following best practices. Even small year-to-year changes can point to larger factors, such as fertilizer price swings, yield expectations, soil nitrogen levels, or weather challenges like wet or dry springs. Nitrification inhibitor adoption is strong, protecting fall applied nitrogen from loss. Timing can vary with weather and fertilizer prices but spring is the most widely used application time with a variety of combinations of fall, spring, and in-season timing used.

Commercial Nitrogen Application Practices Percentage	2017	2018	2019	2020	2021	2022	2023	2024	Average
Fall anhydrous ammonia applied	38.9%	24.1%	23.5%	28.9%	43.1%	50.3%	49.5%	42.0%	37.5%
EPA labeled inhibitor with fall anhydrous ammonia							63.1%	62.0%	62.6%
Nitrapyrin inhibitor with fall anhydrous ammonia	72.6%	73.9%	84.8%	83.8%	86.0%	64.7%			77.70%
Fall only	NA	NA	14.0%	17.4%	22.4%	27.8%	34.7%	23.9%	23.4%
Spring pre-plant only	42.1%	56.3%	50.9%	46.7%	40.3%	33.8%	36.5%	41.9%	43.6%
Spring pre-plant & in-season	9.9%	15.4%	16.9%	13.8%	13.2%	14.5%	10.5%	12.3%	13.3%
In-season only	2.1%	1.1%	1.1%	3.8%	1.7%	1.0%	2.5%	1.8%	1.9%
Fall & spring pre-plant	NA	NA	11.6%	9.7%	14.3%	14.4%	10.2%	10.7%	11.8%
Fall & in-season	NA	NA	3.2%	5.4%	4.7%	6.1%	3.7%	8.0%	5.2%
Fall & spring & in-season	NA	NA	2.3%	3.2%	3.4%	2.3%	2.0%	1.4%	2.4%
Variable rate applied	NA	NA	8.7%	10.1%	16.1%	9.8%	15.2%	12.2%	12.0%

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2017-2024 Crop Year Survey Data: Manure Practices

These numbers reflect how manure is being used, including how many acres receive it, what types are applied and when applications occur. Manure remains a key nutrient source for Iowa farmers, providing nitrogen, phosphorus and organic matter that feed the soil.

Fall application is still the most common, although spring application is slowly increasing as farmers look to better match nutrient release with crop needs. While Iowa is a large producer of livestock, approximately 80% of the corn acres receive no manure.

Manure Practices	2017	2018	2019	2020	2021	2022	2023	2024	Average
No manure used	81.5%	81.4%	80.8%	82.0%	79.7%	78.8%	76.5%	77.5%	79.8%
Beef manure used	6.8%	10.3%	8.8%	6.3%	9.5%	9.0%	11.8%	10.2%	9.1%
Beef & liquid swine manure used	0.0%	0.0%	0.3%	0.1%	0.1%	0.2%	0.4%	0.1%	0.2%
Liquid swine manure used	7.6%	5.4%	7.4%	8.1%	8.1%	8.9%	8.3%	7.9%	7.7%
Poultry manure used	1.6%	1.7%	1.9%	1.2%	1.6%	1.4%	1.7%	0.9%	1.5%
Dairy manure used	2.5%	1.1%	0.8%	2.1%	1.1%	1.7%	1.5%	3.3%	1.8%
Liquid swine manure fall applied	94.7%	84.2%	78.5%	87.3%	82.4%	91.8%	83.1%	91.2%	86.6%
Liquid swine manure spring applied	1.8%	2.5%	11.7%	3.4%	7.0%	4.7%	5.6%	0.0%	4.6%
Liquid swine manure fall & spring applied	3.5%	13.3%	9.9%	9.4%	10.6%	3.6%	11.3%	8.8%	8.8%

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2017-2024 Crop Year Survey Data: Phosphorus Application Practices

When we look at this category, we see the methods of application, the use of soil testing and how practices have evolved over time.

Targeted applications, such as commercial phosphorus incorporated with the planter, knifed bands or liquid injection, are less common but show modest adoption, with variability by year and field conditions. Some type of incorporation is the best practice to reduce soil erosion and phosphorus loss. Soil testing remains central to phosphorus management, with nearly 80% of fields tested for phosphorus, and most applications occurring when soil-test levels are at or below optimum, ensuring efficient use of nutrients and minimizing environmental impact.

Phosphorus Application Practices Percentage	2017	2018	2019	2020	2021	2022	2023	2024	Average
Commercial P incorporated with planter	11.0%	3.8%	1.2%	2.7%	0.6%	0.7%	1.6%	0.90%	2.8%
Commercial P applied in knifed bands	2.9%	2.7%	2.7%	3.0%	2.7%	1.1%	4.0%	6.6%	3.2%
Commercial P broadcast & incorporated in 1 week	47.0%	70.3%	69.1%	40.4%	43.2%	37.9%	31.4%	31.6%	46.4%
Liquid P (commercial/manure) injected	1.8%	3.8%	8.9%	7.8%	5.0%	6.8%	5.6%	1.8%	5.2%
Other P application type (unincorporated)	37.4%	19.5%	18.1%	46.0%	48.4%	53.5%	57.4%	59.2%	42.4%
Variable rate applied	NA	NA	49.6%	45.7%	57.0%	52.8%	61.5%	58.3%	54.2%
Soil testing for P	81.2%	72.1%	85.5%	80.6%	81.2%	79.6%	82.2%	77.1%	79.9%
P application when at or below optimum levels	74.3%	94.4%	94.3%	99.1%	98.2%	95.4%	91.0%	94.9%	92.7%

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2017-2024 Crop Year Survey Data: Soil Test P Levels

This section shows the statewide average of soil test phosphorus levels across the three most common soil testing methods. Monitoring soil-test phosphorus helps ensure fertilizer is applied only where needed, supporting both yield and environmental goals.

Soil Test P Levels	2022	2023	2024	Average
Average Bray-P1 (ppm)	31.2	34.4	33.7	33.1
Average Olsen (ppm)		20.9	28.8	24.9
Average Melich-3 (ppm)	36.1	34.1	41.9	37.4

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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%	21.1%	22.9%	28.8%	22.7%	19.9%	31.5%
Combined corn & soy no-till acreage	33.5%	30.4%	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	7,441,970	6,805,748	6,341,092	3,171,203	3,260,594	3,768,005	2,977,177	2,995,644	4,595,179
No-till before corn	3,486,345	2,890,908	4,018,117	4,071,389	4,052,013	3,755,318	4,188,876	3,805,549	3,783,564
Conventional tillage before corn	NA	3,299,680	3,289,288	6,551,214	5,512,867	5,150,876	5,638,982	6,281,041	5,103,421
Conservation tillage before soy	4,169,316	3,441,481	3,134,088	1,764,290	1,993,219	2,782,839	2,173,803	1,623,454	2,635,311
No-till before soy	4,221,350	4,081,526	4,134,881	4,517,853	5,409,108	4,711,739	4,892,801	5,602,069	4,696,416
Conventional tillage before soy	NA	2,433,727	2,006,224	3,271,784	2,746,678	2,561,820	2,783,500	2,903,099	2,672,405
Combined corn & soy conservation tillage acreage	11,611,287	10,247,229	9,475,179	4,935,493	5,253,814	6,550,844	5,150,980	4,619,099	7,230,491
Combined corn & soy no-till acreage	7,707,695	6,972,434	8,152,999	8,589,242	9,461,121	8,467,057	9,081,676	9,407,618	8,479,980
Combined corn & soy conventional tillage acreage	NA	5,733,407	5,295,512	9,822,998	8,259,545	7,712,696	8,422,482	9,184,140	7,775,826

** 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.