

## INREC 2017-2023 Crop Year Surveys Data Extrapolation

Corn & Soy Acreages	2017	2018	2019	2020	2021	2022	2023	Average
Corn acreage (CDL)	13,212,913	13,012,207	13,648,497	13,793,805	12,826,886	12,686,886	12,805,034	13,140,890
Soy acreage (CDL)	9,782,215	9,956,734	9,275,193	9,553,928	10,150,325	10,046,351	9,850,104	9,802,121
Corn & soy acreage total (CDL)	22,995,128	22,968,941	22,923,690	23,347,733	22,977,211	22,733,237	22,655,138	22,943,011

CDL = USDA NASS Cropland Data Layer

Commercial Only Nitrogen Rates (lb/ac)	2017	2018	2019	2020	2021	2022	2023	Average
Average commercial N rate on corn in rotation	170.0	172.3	177.5	183.4	170.9	173.4	166.6	173.4
Average commercial N rate on continuous corn	200.4	201.9	200.4	208.9	199.9	192.6	185.7	198.6

Crop Rotation	2022	2023	Average	2022	2023	Average	Extrapolated Using
Continuous Corn	10.6%	12.7%	11.7%	2,413,327	2,879,862	2,646,594	All corn & soy acres
Corn-Soy	85.3%	84.6%	85.0%	19,400,889	19,170,541	19,285,715	All corn & soy acres
Extended Rotation	2.0%	1.4%	1.7%	444,620	311,891	378,255	All corn & soy acres
Corn-Small Grain-Soy	0.2%	0.1%	0.1%	44,155	17,846	31,000	All corn & soy acres
Other	1.9%	1.2%	1.6%	430,247	274,998	352,623	All corn & soy acres

Cover Crop Practices:	2017	2018	2019	2020	2021	2022	2023	Average	2017	2018	2019	2020	2021	2022	2023	Average	Extrapolated Using
Cover crop planted	6.9%	8.8%	9.5%	13.3%	12.1%	16.6%	17.0%	12.0%	1,597,614	2,015,688	2,180,043	3,107,063	2,768,754	3,773,717	3,841,525	2,754,915	Corn & soy acres
Rye cover crop	69.4%	82.8%	81.3%	90.9%	80.8%	81.8%	86.6%	81.9%	1,108,954	1,669,641	1,771,503	2,823,418	2,236,599	3,086,901	3,327,999	2,289,288	Cover crop acres
Oat cover crop	9.1%	9.8%	2.8%	1.3%	5.5%	4.4%	6.1%	5.6%	144,610	197,070	61,041	41,452	151,174	166,044	234,047	142,205	Cover crop acres
Species mix	NA	NA	11.2%	6.7%	12.3%	8.5%	5.5%	8.8%	NA	NA	243,293	207,104	339,449	320,766	213,057	264,734	Cover crop acres
Other cover crop	21.5%	7.4%	4.8%	1.1%	1.5%	5.3%	1.7%	6.2%	344,051	148,977	104,206	35,089	40,978	200,007	66,422	134,247	Cover crop acres

Commercial Nitrogen Application Practices:	2017	2018	2019	2020	2021	2022	2023	Average	2017	2018	2019	2020	2021	2022	2023	Average	Extrapolated Using
Fall anhydrous ammonia applied	38.9%	24.1%	23.5%	28.9%	43.1%	50.3%	49.5%	36.9%	5,136,775	3,135,808	3,210,126	3,980,920	5,532,236	6,381,504	6,342,262	4,817,090	Corn acres
EPA-Labeled Inhibitor with fall anhydrous ammonia							63.1%								3,999,546		Fall anhydrous ammonia acres
Nitrapyrin inhibitor with fall anhydrous ammonia	72.6%	73.9%	84.8%	83.8%	86.0%	64.7%		77.7%	3,731,524	2,318,399	2,722,508	3,337,435	4,759,936	4,128,833		3,499,773	Fall anhydrous ammonia acres
Fall only	NA	NA	14.0%	17.4%	22.4%	27.8%	34.7%	23.3%	NA	NA	1,916,249	2,396,375	2,871,940	3,526,954	4,440,985	3,030,501	Corn acres
Spring pre-plant only	42.1%	56.3%	50.9%	46.7%	40.3%	33.8%	36.5%	43.8%	5,563,671	7,331,631	6,949,814	6,443,443	5,165,387	4,288,167	4,668,057	5,772,882	Corn acres
Spring pre-plant & in-season	9.9%	15.4%	16.9%	13.8%	13.2%	14.5%	10.5%	13.5%	1,307,086	2,004,263	2,299,772	1,907,536	1,691,866	1,839,598	1,343,120	1,770,463	Corn acres
In-season only	2.1%	1.1%	1.1%	3.8%	1.7%	1.0%	2.5%	1.9%	281,723	137,166	147,404	529,108	219,340	126,869	318,438	251,435	Corn acres
Fall & spring pre-plant	NA	NA	11.6%	9.7%	14.3%	14.4%	10.2%	12.0%	NA	NA	1,581,861	1,335,708	1,835,527	1,826,912	1,310,425	1,578,087	Corn acres
Fall & in-season	NA	NA	3.2%	5.4%	4.7%	6.1%	3.7%	4.6%	NA	NA	434,022	738,667	596,450	773,900	470,882	602,784	Corn acres
Fall & spring & in-season	NA	NA	2.3%	3.2%	3.4%	2.3%	2.0%	2.7%	NA	NA	319,375	442,967	441,245	291,798	253,127	349,702	Corn acres
Variable rate applied	NA	NA	8.7%	10.1%	16.1%	9.8%	15.2%	12.0%	NA	NA	1,180,595	1,386,830	2,058,715	1,243,315	1,950,131	1,563,917	Corn acres

Manure Practices:	2017	2018	2019	2020	2021	2022	2023	Average	2017	2018	2019	2020	2021	2022	2023	Average	Extrapolated Using
No manure used	81.5%	81.4%	80.8%	82.0%	79.7%	78.8%	76.5%	80.1%	10,765,242	10,590,004	11,030,715	11,310,374	10,223,669	9,997,266	9,791,557	10,529,832	Corn acres
Beef manure used	6.8%	10.3%	8.8%	6.3%	9.5%	9.0%	11.8%	8.9%	900,069	1,343,993	1,194,243	864,553	1,212,141	1,141,820	1,505,522	1,166,049	Corn acres
Beef & poultry manure used	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0	0	0	12,388	0	0	0	1,770	Corn acres
Beef & liquid swine manure used	0.0%	0.0%	0.3%	0.1%	0.1%	0.2%	0.4%	0.2%	0	0	38,216	19,715	11,416	25,374	46,339	20,151	Corn acres
Liquid swine manure used	7.6%	5.4%	7.4%	8.1%	8.1%	8.9%	8.3%	7.7%	998,307	700,854	1,011,354	1,123,205	1,035,130	1,129,133	1,058,156	1,008,020	Corn acres
Liquid swine & dairy manure used	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0	0	0	8,585	0	0	0	1,226	Corn acres
Poultry manure used	1.6%	1.7%	1.9%	1.2%	1.6%	1.4%	1.7%	1.6%	207,798	215,760	262,051	159,361	202,665	177,616	213,102	205,479	Corn acres
Dairy manure used	2.5%	1.1%	0.8%	2.1%	1.1%	1.7%	1.5%	1.5%	324,858	141,833	111,918	295,623	138,530	215,677	190,358	202,685	Corn acres
Dairy & beef manure used	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	16,638	19,763	0	0	0	0	0	5,200	Corn acres
Liquid swine manure fall applied	94.7%	84.2%	78.5%	87.3%	82.4%	91.8%	83.1%	86.0%	945,796	590,008	823,597	1,004,791	862,040	1,059,837	918,133	886,315	Swine manure acres
Liquid swine manure spring applied	1.8%	2.5%	11.7%	3.4%	7.0%	4.7%	5.6%	5.2%	17,504	17,446	122,590	38,639	73,447	54,262	61,629	55,074	Swine manure acres
Liquid swine manure fall & spring applied	3.5%	13.3%	9.9%	9.4%	10.6%	3.6%	11.3%	8.8%	35,007	93,400	103,488	108,076	111,028	41,562	124,732	88,185	Swine manure acres

Phosphorus Application Practices:	2017	2018	2019	2020	2021	2022	2023	Average	2017	2018	2019	2020	2021	2022	2023	Average	Extrapolated Using
Commercial P incorporated with planter	11.0%	3.8%	1.2%	2.7%	0.6%	0.7%	1.6%	3.1%	2,523,799	862,841	270,500	639,271	144,756	159,133	361,439	708,820	Corn & soy acres
Commercial P applied in knifed bands	2.9%	2.7%	2.7%	3.0%	2.7%	1.1%	4.0%	2.7%	656,919	627,900	618,940	692,078	625,440	250,066	915,394	626,677	Corn & soy acres
Commercial P broadcast & incorporated in 1 week	47.0%	70.3%	69.1%	40.4%	43.2%	37.9%	31.4%	48.5%	10,807,030	16,143,905	15,847,147	9,440,934	9,916,964	8,615,897	7,110,864	11,126,106	Corn & soy acres
Liquid P (commercial/manure) injected	1.8%	3.8%	8.9%	7.8%	5.0%	6.8%	5.6%	5.7%	416,049	865,364	2,049,378	1,825,232	1,155,754	1,545,860	1,258,882	1,302,360	Corn & soy acres
Other P application type (unincorporated)	37.4%	19.5%	18.1%	46.0%	48.4%	53.5%	57.4%	40.0%	8,591,331	4,468,931	4,137,726	10,750,218	11,130,161	12,162,282	13,008,560	9,178,458	Corn & soy acres
Variable rate applied	NA	NA	49.6%	45.7%	57.0%	52.8%	61.5%	53.3%	NA	NA	11,358,688	10,677,472	13,106,201	12,003,149	13,937,564	12,216,615	Corn & soy acres
Soil testing for P	81.2%	72.1%	85.5%	80.6%	81.2%	79.6%	82.2%	80.4%	18,682,577	16,563,845	19,602,047	18,818,176	18,662,091	18,095,657	18,625,588	18,435,712	Corn & soy acres
P application only when at or below optimum levels	74.3%	94.4%	94.3%	99.1%	98.2%	95.4%	91.0%	92.4%	13,875,230	15,636,269	18,482,770	18,653,889	18,329,906	17,263,256	16,947,816	17,027,019	Soil test phosphorus acres

Soil Test P Levels	2022	2023	Average
Average Bray-P1 (ppm)	31.2	34.4	32.8
Average Olsen (ppm)			20.9
Average Melich-3 (ppm)	36.1	34.1	35.1

Tillage Practices:	2017	2018	2019	2020	2021	2022	2023	Average	2017	2018	2019	2020	2021	2022	2023	Average	Extrapolated Using
Conservation tillage before corn	56.3%	52.3%	46.5%	23.0%	25.4%	29.7%	23.3%	36.6%	7,441,970	6,805,748	6,341,092	3,171,203	3,260,594	3,768,005	2,977,177	4,823,684	Corn acres
No-till before corn	26.4%	22.2%	29.4%	29.5%	31.6%	29.6%	32.7%	28.8%	3,486,345	2,890,908	4,018,117	4,071,389	4,052,013	3,755,318	4,188,876	3,780,424	Corn acres
Conventional tillage before corn	NA	25.4%	24.1%	47.5%	43.0%	40.6%	44.0%	37.4%	NA	3,299,680	3,289,288	6,551,214	5,512,867	5,150,876	5,638,982	4,907,151	Corn acres
Conservation tillage before soy	42.6%	34.6%	33.8%	18.5%	19.6%	27.7%	22.1%	28.4%	4,169,316	3,441,481	3,134,088	1,764,290	1,993,219	2,782,839	2,173,803	2,779,863	Soy acres
No-till before soy	43.2%	41.0%	44.6%	47.3%	53.3%	46.9%	49.7%	46.6%	4,221,350	4,081,526	4,134,881	4,517,853	5,409,108	4,711,739	4,892,801	4,567,037	Soy acres
Conventional tillage before soy	NA	24.4%	21.6%	34.2%	27.1%	25.5%	28.3%	26.9%	NA	2,433,727	2,006,224	3,271,784	2,746,678	2,561,820	2,783,500	2,633,956	Soy acres
Combined corn & soy conservation tillage acreage	50.5%	44.6%	41.3%	21.1%	22.9%	28.8%	22.7%	33.1%	11,611,287	10,247,229	9,475,179	4,935,493	5,253,814	6,550,844	5,150,980	7,603,547	Corn & soy conservation tillage acres
Combined corn & soy no-till acreage	33.5%	30.4%	35.6%	36.8%	41.2%	37.2%	40.1%	36.4%	7,707,695	6,972,434	8,152,999	8,589,242	9,461,121	8,467,057	9,081,676	8,347,461	Corn & soy no-till acres
Combined corn & soy conventional tillage acreage	NA</																