

Michigan State University's

Base Scenario for Boone County, IN

US Cropland Greenhouse Gas Calculator

CO2 equivalents ( Mt/ac/year ) Soil 6 Yield <sup>1</sup> N20 Fuel Fertilizer Crop 1 Fertilizer 1 Tillage <sup>1</sup> Year <del>\$</del> corn 129 139 conventional lb N/ac 0.10 0.47 0.05 0.03 0.65 1 bu/ac conventional 2 corn 92 135 0.05 0.03 bu/ac lb N/ac 0.19 0.41 0.68 Remove 147 0.65 Remove 3 corn conventional 💠 143 lb N/ac 0.07 0.50 0.05 0.03 bu/ac \* corn 132 conventional 134 0.09 0.05 0.03 0.63 Remove 4 bu/ac lb N/ac 0.46 corn 144 147 0.65 Remove 5 bu/ac conventional 💠 lb N/ac 0.06 0.51 0.05 0.03 conventional 💠 6 corn **\$** 113 132 0.13 0.43 0.05 0.03 0.64 Remove bu/ac lb N/ac  $\Rightarrow$ corn 123 conventional 7 138 0.10 0.05 0.03 0.64 Remove bu/ac lb N/ac 0.46 **4**) conventional 💠 8 corn 122 bu/ac 146 lb N/ac 0.10 0.48 0.05 0.03 0.66 Remove conventional 💠 corn **†** 137 146 9 lb N/ac 0.07 0.50 0.05 0.03 0.64 Remove bu/ac \* corn conventional 10 132 bu/ac 154 lb N/ac 80.0 0.51 0.05 0.03 0.67 Remove corn 146 0.65 Remove 11 bu/ac conventional 💠 153 lb N/ac 0.05 0.52 0.05 0.03 corn **\$** 156 conventional 12 bu/ac 140 lb N/ac 0.03 0.51 0.05 0.03 0.61 Remove  $\Rightarrow$ corn 121 conventional 148 0.10 0.48 0.05 0.03 0.66 Remove 13 bu/ac lb N/ac **4** corn 146 conventional 0.66 Remove 14 bu/ac 154 lb N/ac 0.05 0.53 0.05 0.03 corn **\$** 168 conventional 💠 146 15 lb N/ac 0.00 0.54 0.05 0.03 0.62 Remove bu/ac \* corn conventional 154 147 0.04 0.52 0.05 0.03 0.64 Remove 16 bu/ac lb N/ac corn 0.64 Remove 17 157 bu/ac conventional 💠 148 lb N/ac 0.03 0.53 0.05 0.03 corn **\$** 18 154 conventional 💠 149 0.04 0.53 0.05 0.03 0.65 Remove bu/ac lb N/ac  $\Rightarrow$ corn 160 conventional 149 0.03 0.03 19 bu/ac lb N/ac 0.53 0.05 0.65 Remove 171 20 corn conventional 💠 148 0.01 0.55 0.05 0.03 0.64 Remove bu/ac lb N/ac corn conventional \$ 21 157 bu/ac 178 lb N/ac 0.05 0.05 0.72 Remove 0.59 **4** corn 146 conventional 22 bu/ac 157 lb N/ac 0.07 0.53 0.05 0.03 0.69 Remove **(4)** 23 corn 99 bu/ac conventional 💠 160 lb N/ac 0.17 0.47 0.05 0.03 0.73 Remove <del>\$</del> corn conventional 162 24 177 bu/ac lb N/ac 0.00 0.59 0.05 0.03 0.67 Remove **4** conventional \$ 188 corn bu/ac 156 lb N/ac -0.03 0.05 0.03 25 0.59 0.65 Remove corn 150 conventional 26 bu/ac 167 lb N/ac 0.06 0.56 0.05 0.03 0.70 Remove <del>\$</del> corn conventional 💠 27 173 bu/ac 163 lb N/ac 0.01 0.03 0.68 Remove

conventional 💠

Recalculate

Tillage

**4** 

139

reduced

166

Reset

**Annual Average:** 

**Fertilizer** 

lb N/ac

lb N/ac

-0.00

0.06

Year Crop Yield

**\$**)

129

Scenario 1 for Boone County, IN Delete

**4** 

180

bu/ac

Remove last year

bu/ac

corn

corn

Add another year to the rotation

28

1

## Soil **N20 Fertilizer** Fuel 0.01 0.47 0.04 0.03

0.05

0.05

0.05

**Greenhouse Gas Costs** 

CO2 equivalents ( Mt/ac/year )

**Greenhouse Gas Costs** 

CO2 equivalents ( Mt/ac/year )

0.03

**Fertilizer** 

0.03

Total

0.33

**Fuel** 

Soil

-0.20

lb N/ac

**N20** 

0.47

0.03

0.03

0.68 Remove

0.66

Total

0.55

0.58

0.60

0.52

Greenhouse Gas Costs

•	COIII	123	Durac	Treaticed 4	100	10 14/40	0.01	0.47	0.04	0.00	0.00	
2	corn 💠	92	bu/ac	reduced	135	lb N/ac	0.12	0.41	0.04	0.03	0.60	Remove
3	corn 💠	147	bu/ac	reduced	143	lb N/ac	-0.04	0.50	0.04	0.03	0.53	Remove
4	corn 💠	132	bu/ac	reduced \$	134	lb N/ac	0.00	0.46	0.04	0.03	0.53	Remove
5	corn 💠	144	bu/ac	reduced \$	147	lb N/ac	-0.03	0.51	0.04	0.03	0.54	Remove
6	corn 💠	113	bu/ac	reduced \$	132	lb N/ac	0.06	0.43	0.04	0.03	0.55	Remove
7	corn 💠	123	bu/ac	reduced \$	138	lb N/ac	0.03	0.46	0.04	0.03	0.55	Remove
8	corn 💠	122	bu/ac	reduced \$	146	lb N/ac	0.03	0.48	0.04	0.03	0.57	Remove
9	corn 💠	137	bu/ac	reduced \$	146	lb N/ac	-0.02	0.50	0.04	0.03	0.54	Remove
10	corn 💠	132	bu/ac	reduced \$	154	lb N/ac	-0.01	0.51	0.04	0.03	0.57	Remove
11	corn 💠	146	bu/ac	reduced \$	153	lb N/ac	-0.05	0.52	0.04	0.03	0.54	Remove
12	corn 💠	156	bu/ac	reduced \$	140	lb N/ac	-0.08	0.51	0.04	0.03	0.50	Remove
13	corn 💠	121	bu/ac	reduced \$	148	lb N/ac	0.02	0.48	0.04	0.03	0.57	Remove
14	corn 💠	146	bu/ac	reduced \$	154	lb N/ac	-0.05	0.53	0.04	0.03	0.55	Remove
15	corn 💠	168	bu/ac	reduced \$	146	lb N/ac	-0.11	0.54	0.04	0.03	0.49	Remove
16	corn 💠	154	bu/ac	reduced	147	lb N/ac	-0.07	0.52	0.04	0.03	0.52	Remove
17	corn 💠	157	bu/ac	reduced \$	148	lb N/ac	-0.07	0.53	0.04	0.03	0.52	Remove
18	corn 💠	154	bu/ac	reduced \$	149	lb N/ac	-0.06	0.53	0.04	0.03	0.53	Remove
19	corn 💠	160	bu/ac	reduced \$	149	lb N/ac	-0.08	0.53	0.04	0.03	0.52	Remove
20	corn 💠	171	bu/ac	reduced \$	148	lb N/ac	-0.11	0.55	0.04	0.03	0.50	Remove
21	corn \$	157	bu/ac	reduced \$	178	lb N/ac	-0.07	0.59	0.04	0.04	0.59	Remove
22	corn 💠	146	bu/ac	reduced \$	157	lb N/ac	-0.04	0.53	0.04	0.03	0.56	Remove
23	corn 💠	99	bu/ac	reduced \$	160	lb N/ac	0.10	0.47	0.04	0.03	0.64	Remove
24	corn \$	177	bu/ac	reduced \$	162	lb N/ac	-0.13	0.59	0.04	0.03	0.52	Remove
25	corn 💠	188	bu/ac	reduced \$	156	lb N/ac	-0.17	0.59	0.04	0.03	0.48	Remove
26	corn 💲	150	bu/ac	reduced \$	167	lb N/ac	-0.06	0.56	0.04	0.03	0.57	Remove
27	corn 💠	173	bu/ac	reduced \$	163	lb N/ac	-0.13	0.58	0.04	0.03	0.53	Remove
28	corn 💲	180	bu/ac	reduced \$	166	lb N/ac	-0.14	0.60	0.04	0.03	0.52	Remove
					Annual Av	erage:	-0.04	0.52	0.04	0.03	0.54	
Add another year to the rotation Remove last year Recalculate Reset												

Crop **Fertilizer** Yield Tillage Year corn **\$**) 129 no-till 139 bu/ac 1

Scenario 2 for Boone County, IN Delete

2	corn	92	bu/ac	no-till \$	135	lb N/ac	-0.03	0.41	0.03	0.03	0.43	Remove
3	corn 💠	147	bu/ac	no-till 💠	143	lb N/ac	-0.28	0.50	0.03	0.03	0.29	Remove
4	corn 💠	132	bu/ac	no-till 💠	134	lb N/ac	-0.21	0.46	0.03	0.03	0.31	Remove
5	corn 💠	144	bu/ac	no-till \$	147	lb N/ac	-0.25	0.51	0.03	0.03	0.32	Remove
6	corn 💠	113	bu/ac	no-till \$	132	lb N/ac	-0.10	0.43	0.03	0.03	0.38	Remove
7	corn 💠	123	bu/ac	no-till \$	138	lb N/ac	-0.14	0.46	0.03	0.03	0.37	Remove
8	corn 💠	122	bu/ac	no-till \$	146	lb N/ac	-0.14	0.48	0.03	0.03	0.39	Remove
9	corn 💠	137	bu/ac	no-till \$	146	lb N/ac	-0.21	0.50	0.03	0.03	0.35	Remove
10	corn 💠	132	bu/ac	no-till \$	154	lb N/ac	-0.19	0.51	0.03	0.03	0.38	Remove
11	corn 💠	146	bu/ac	no-till \$	153	lb N/ac	-0.25	0.52	0.03	0.03	0.33	Remove
12	corn 💠	156	bu/ac	no-till \$	140	lb N/ac	-0.29	0.51	0.03	0.03	0.28	Remove
13	corn 💠	121	bu/ac	no-till \$	148	lb N/ac	-0.13	0.48	0.03	0.03	0.40	Remove
14	corn 💠	146	bu/ac	no-till \$	154	lb N/ac	-0.24	0.53	0.03	0.03	0.34	Remove
15	corn 💠	168	bu/ac	no-till \$	146	lb N/ac	-0.34	0.54	0.03	0.03	0.26	Remove
16	corn 💠	154	bu/ac	no-till \$	147	lb N/ac	-0.27	0.52	0.03	0.03	0.31	Remove
17	corn 💠	157	bu/ac	no-till \$	148	lb N/ac	-0.28	0.53	0.03	0.03	0.31	Remove
18	corn 💠	154	bu/ac	no-till \$	149	lb N/ac	-0.26	0.53	0.03	0.03	0.32	Remove
19	corn 💠	160	bu/ac	no-till \$	149	lb N/ac	-0.29	0.53	0.03	0.03	0.31	Remove
20	corn 💠	171	bu/ac	no-till \$	148	lb N/ac	-0.33	0.55	0.03	0.03	0.27	Remove
21	corn 💠	157	bu/ac	no-till \$	178	lb N/ac	-0.27	0.59	0.03	0.04	0.39	Remove
22	corn 💠	146	bu/ac	no-till \$	157	lb N/ac	-0.21	0.53	0.03	0.03	0.38	Remove
23	corn 💠	99	bu/ac	no-till 💲	160	lb N/ac	-0.01	0.47	0.03	0.03	0.53	Remove
24	corn 💠	177	bu/ac	no-till 💲	162	lb N/ac	-0.36	0.59	0.03	0.03	0.29	Remove
25	corn 💠	188	bu/ac	no-till \$	156	lb N/ac	-0.42	0.59	0.03	0.03	0.23	Remove
26	corn 🕏	150	bu/ac	no-till 💲	167	lb N/ac	-0.24	0.56	0.03	0.03	0.38	Remove
27	corn 🕏	173	bu/ac	no-till \$	163	lb N/ac	-0.34	0.58	0.03	0.03	0.30	Remove
28	corn 🕏	180	bu/ac	no-till \$	166	lb N/ac	-0.37	0.60	0.03	0.03	0.29	Remove
	Ann				Annual Av	erage:	-0.24	0.52	0.03	0.03	0.34	

**Environmental Conditions** 

Remove last year

61.5 F

Air Temperature Precipitation 41.2 to 40.79 in

Add another year to the rotation

Add Scenario

Units: metric imperial N<sub>2</sub>O Method: Tier 1 Percent Clay

Reset

Recalculate

Bulk Density 1.4 g/cm 1.5 %