



NITROGEN FERTILIZER MANAGEMENT

The PCM nitrogen fertilizer management analysis demonstrated that corn fields receiving more than 40% of the total N rate in the fall produced lower corn yields, higher nitrogen fertilizer application rates, and higher total non-land costs (direct costs, power costs, and overhead) than most in-season nitrogen fertilizer application systems, resulting in reduced operator net financial return. As seen in Table Y, the most profitable N application system applied less than 40% of the total N rate in the fall with the balance approximately halved between pre-plant and side-dress applications (referred to as the “3-way split” in Table Y).

(more)



Table Y. Economic returns resulting from various nitrogen fertilizer management strategies for corn production in central Illinois from 2015-2018. All soil types combined.

PCM N MANAGEMENT PROGRAM	>40% FALL	MOSTLY PRE-PLANT	MOSTLY SIDEDRESS	50% PRE/50%SIDEDRESS	3-WAY SPLIT
<i>AVG NUE (lb N/bu grain)</i>	1.00	1.00	0.94	0.94	0.96
<i>Yield per acre</i>	218	212	218	221	234
<i># Fields</i>	585	497	488	209	43
GROSS REVENUE	\$766	\$742	\$760	\$762	\$814
N fertilizer	\$76	\$67	\$67	\$78	\$72
Other direct costs*	\$296	\$274	\$299	\$296	\$297
TOTAL DIRECT COSTS	\$372	\$341	\$366	\$374	\$369
Field Work	\$15	\$16	\$16	\$19	\$15
Other power costs**	\$96	\$88	\$93	\$92	\$95
TOTAL POWER COSTS	\$111	\$104	\$109	\$111	\$110
OVERHEAD COSTS	\$36	\$36	\$36	\$36	\$36
TOTAL NON-LAND COSTS	\$520	\$482	\$512	\$521	\$516
OPERATOR & LAND RETURN	\$246	\$260	\$248	\$240	\$298

*Direct Costs = fertilizers, pesticides, seed, cover crop seed, drying, storage, and crop insurance

**Other power Costs = fall fertilizer application, spraying, planting, cover crop planting, spring/in-season fertilizer application, harvesting, and grain hauling



Table Z. Nitrogen Rates, Yields, and Returns. This table demonstrates that the greatest non-land net income is generated from the 151 to 175 lb N/a rate range when averaged over all years and soils. For reference, corn following soybean rate recommended from the Maximum Return to Nitrogen rate calculator would be about 183 lb N/a.

N amount (lbs per acre)	No of fields*	SPR	Yield				Opr and Land Return*
			2015	2016	2017	Average*	
			Bushels per acre				
Less than 150	30	133	142	213	218	191	241
151 to 175	61	135	196	209	212	206	277
176 to 200	224	132	182	211	214	202	248
201 to 225	375	135	196	216	214	208	253
Over 225	244	134	187	209	218	204	223

*Over three years (weighted by fields)