

	Practice	Comments	% P Load Reduction ^a	% Corn Yield Change ^b
			Average (SD ^c)	Average (SD ^c)
Phosphorus Management Practices	Phosphorus Application	Applying P based on crop removal – Assuming optimal STP level and P incorporation	0.6 ^d	0
		Soil-Test P – No P applied until STP drops to optimum or, when manure is applied, to levels indicated by the P Index ^f	17 ^e	0
	Source of Phosphorus	Liquid swine, dairy, and poultry manure compared to commercial fertilizer – Runoff shortly after application	46 (45)	-1 (13)
		Beef manure compared to commercial fertilizer – Runoff shortly after application	46 (96)	
	Placement of Phosphorus	Broadcast incorporated within 1 week compared to no incorporation, same tillage	36 (27)	0
		With seed or knifed bands compared to surface application, no incorporation	24 (46)	0
	Cover Crops	Winter rye	29 (37)	-6 (7)
	Tillage	Conservation till – chisel plowing compared to moldboard plowing	33 (49)	0 (6)
		No till compared to chisel plowing	90 (17)	-6 (8)
	Land Use Change	Perennial Vegetation	Energy Crops	34 (34)
Land Retirement (CRP)			75	
Grazed pastures			59 (42)	
Erosion Control and Edge-of-Field Practices	Terraces		77 (19)	
	Buffers		58 (32)	
	Control	Sedimentation basins or ponds	85	

^a A positive number is P load reduction and a negative number is increased P load.

^b A positive corn yield change is increased yield and a negative number is decreased yield. Practices are not expected to affect soybean yield.

^c SD = standard deviation. Large SD relative to the average indicates highly variable results.

^d Maximum and average estimated by comparing application of 200 and 125 kg P₂O₅/ha, respectively, to 58 kg P₂O₅/ha (corn-soybean rotation requirements) (Mallarino et al., 2002).

^e Maximum and average estimates based on reducing the average STP (Bray-1) of the two highest counties in Iowa and the statewide average STP (Mallarino et al., 2011a), respectively, to an optimum level of 20 ppm (Mallarino et al., 2002). Minimum value assumes soil is at the optimum level.

^f ISU Extension and Outreach publication (PM 1688).