Table 1. Characteristics of soils collected from fields A, B, C, and D at 0-5 cm and 0-20 cm depths (site D was sampled from only 0-20 cm).

		—————Field A—————		—————Field B————		—————Field C—————		—Field D—
		0–5 cm	0–20 cm	0–5 cm	0–20 cm	0–5 cm	0–20 cm	0–20 cm
	Soil Map Unit	QuA	QuA	QuA	QuA	AoA	AoA	UoB
	Soil Texture	Sandy Loam	Sandy Loam	Loam	Loam	Sandy Loam	Sandy Loam	Sandy Loam
	US Soil Classification	Fine-loamy, mixed, active, mesic Typic Endoaquults	Fine-loamy, mixed, active, mesic Typic Endoaquults	Fine-loamy, mixed, active, mesic Typic Endoaquults	Fine-loamy, mixed, active, mesic Typic Endoaquults	Coarse-loamy, siliceous, semiactive, mesic Aquic Hapludults	Coarse-loamy, siliceous, semiactive, mesic Aquic Hapludults	Fine-loamy, mixed, semiactive, mesic Typic Hapludults
	Type of Operation	Organic Vegetable Conventional Till	Organic Vegetable Conventional Till	Commodity crop No-Till	Commodity crop No-Till	Commodity crop No-Till	Commodity crop No-Till	Commodity crop No-Till
	pH	7.25	7.25	6.36	6.46	6.22	6.1	5.97
	Total P	2235	1882	1401	1304	1405	1281	1328
—Mehlich 3 (mg kg^{-1})—	P	1127	1139	692	764	785	807	765
	K	137	120	122	99	201	195	158
	Mg	167	169	162	157	104	82	120
	Ca	2662	2608	1605	1560	1204	1016	831
	Fe	271	261	317	341	183	189	348
	Al	586	666	587	624	1006	1092	1061
	Zn	36.6	32.9	28.7	26.5	21.5	17.6	41.2
	Cu	26.7	24.9	11.8	11.2	18.5	17.8	7.7
	[a]M3-Ca/M3-P	0.423	0.437	0.431	0.490	0.652	0.794	0.920
	[b]OM (%)	1.87	1.67	2.11	1.32	2.08	1.63	1.36
	[c]M3-PSR	1.37	1.25	0.81	0.84	0.62	0.59	0.54
	[a]M3-P/Total P	0.50	0.60	0.49	0.59	0.56	0.63	0.58
	[d]WEPt (1:10) mg kg^{-1}	54.1	20.6	34.7	30.4	29.1	27.7	30.6
	[d]WEPt (1:100) mg kg^{-1}	132.2	117.5	63.0	59.5	52.7	52.8	66.3

Table 2. Percent of various phosphorus groups and minerals quantified in four legacy phosphorus soils using X-ray absorption near edge structure linear combination fitting.

P group	P mineral	——Field A——		——Field B——		——Field C——		–Field D–
		0-5 cm	0-20 cm	0-5 cm	0-20 cm	0-5 cm	0-20 cm	0-20 cm
					—Percent—			
Organic P	Phytic Acid	15.5	14.9	21.0	13.0	24.4	nd[a]	16.6
Calcium Phosphates	Fluorapatite	33.5	41	nd	nd	nd	nd	nd
	Beta-Tricalcium Phosphate	7.0	nd	33.8	22.9	18.7	13.5	56.9
	Brushite	nd	nd	nd	28.3	nd	nd	0.5
Aluminum Phosphates	Wavellite	nd	nd	nd	nd	nd	18.3	nd
	Phosphate sorbed to Aluminum hydroxide	26.6	32.7	19.3	nd	17.8	nd	26.1
Iron Phosphates	Ludlamite	nd	nd	nd	nd	nd	18.6	nd
	Heterosite	nd	nd	nd	nd	nd	24.4	nd
	P sorbed to ferrihydrite	nd	nd	9.1	nd	nd	nd	nd
	Amorphous Fe Phosphates	nd	nd	nd	31.1	nd	nd	nd
Other Phosphates	Cornetite	17.5	11.4	16.8	4.7	nd	nd	nd
	Hureaulite	nd	nd	nd	nd	39.0	25.2	nd
[b]LCF R-factor		0.00117	0.00263	0.00304	0.00379	0.01032	0.0019	0.02549

[a]nd: not detected. [b]The R-factor of Linear Combination Fitting (LCF) of standard spectra is a measure of the mean square sum of the misfit (between the standard and the sample) at each data point

Fig 1. Percent of phosphate mineral groups in various fields and depths determined using X-ray absorption near edge structure linear combination fitting.