

Table S1. Distribution of P pools in the soil profile after 18 successive application (2004-2016) cattle slurry (CS), pig slurry (PS), pig deep-litter (PD) and mineral fertilizer (MF) additions. Data presented are means (n = 4).

Treatments	Depht (cm)					
	0-10	10-20	20-30	30-40	40-50	0-50
Labile P (kg ha ⁻¹)						
Control	49.13D*a**	42.21Ca	19.63Bb	16.51Bb	20.67Ab	148.15
CS	163.74Ba	73.33Bb	58.15Bc	33.49Bc	37.30Ac	366.01
PS	161.24Aa	81.43Bb	55.81Bc	60.11Ac	35.22Ac	394.15
PD	219.18Aa	245.71Aa	109.42Ab	61.56Ac	32.40Ac	668.35
MF	111.65Ba	49.51cb	40.45Bc	20.65Bc	16.27Ac	238.52
Moderately P (kg ha ⁻¹)						
Control	158.40Ca	119.74Db	107.04Cc	102.43Cc	79.98Ac	567.58
CS	251.38Ba	175.200Bb	131.60Bc	131.60Bc	82.55Ad	772.38
PS	264.02Ba	204.11Bb	168.86Bc	127.99Bc	89.93Ad	854.91
PD	303.96Aa	276.63Ab	171.23Ac	161.75Ac	94.22Ad	1007.79
MF	234.98Ca	148.85Cb	86.17Cc	106.70Cc	91.28ac	667.99
Stable P (kg ha ⁻¹)						
Control	64.45Da	53.34Ba	38.30Ba	53.20Ab	21.26Ab	230.54
CS	235.07Ba	74.51Ab	42.19Bc	35.25Ac	34.50Ac	421.53
PS	210.21Ba	51.74Bb	41.19Bb	22.26Ab	42.10Ab	367.50
PD	354.53Aa	80.22Ab	67.22Ab	46.73Ac	36.47Ac	585.17
MF	171.09Ca	42.58Bb	26.79Bb	40.18Ab	29.59Ab	310.23
Residual P (kg ha ⁻¹)						
Control	219.85Ca	95.07Ab	100.84Ab	12.43Ac	13.80Ac	442.00
CS	135.08Ba	57.96Bb	102.29Aa	18.56Ab	36.02Ab	349.91
PS	132.32Ba	76.32Ab	95.21Ab	25.58Ac	15.11Ac	344.54

PD	56.65Aa	83.65Ab	38.43Bb	26.58Ab	11.68Ab	216.98
MF	188.65Ca	105.28Ab	64.63Cc	32.90Ad	12.71Ad	404.17

(*) Means within columns at the same depth followed the same capital letter, and (**) means within rows at different depths followed the same lower case letter, are not significantly different according to the Scott-Knott test ($p < 0.05$)

Table S2. Quantities of inorganic, organic and total P (kg P ha⁻¹) accumulated in the soil profile after 18 successive application (2004-2016) cattle slurry (CS), pig slurry (PS), pig deep-litter (PD) and mineral fertilizer (MF) additions. Data presented are means (n = 4).

Tratamentos	Depht (cm)					
	0-10	10-20	20-30	30-40	40-50	0-50
Inorganic P (kg ha ⁻¹)						
Control	124.43D9*a**	78.02Cb	75.89Bb	62.23Bb	29.65Ab	370.23
CS	396.24Ba	145.16Bb	86.01Bc	50.37Bc	64.82Ac	742.61
PS	355.00Ba	177.07Bb	133.10Bc	64.66Bd	75.15Ad	805.32
PD	583.27Aa	378.15Ab	201.60Ac	124.79Ad	67.72Ae	1355.52
MF	256.62Ca	132.71Bb	90.61Bc	64.90Bc	62.11Ac	606.94
Organic P (kg ha ⁻¹)						
Control	147.55Ca	137.26Ca	89.07Cb	109.91Bb	92.25Ab	576.04
CS	253.94Ba	177.88Bb	145.93Ac	150.04Ac	89.52Ab	817.31
PS	280.47Aa	160.20Cb	132.76Bc	145.70Ac	92.11Ac	811.25
PD	294.40Aa	224.4Ab	146.27Ac	145.33Ac	99.37Ad	905.78
MF	261.11Ba	108.23Db	62.80Cb	102.64Bc	75.03Ac	609.80
Total P (kg ha ⁻¹)						
Control	491.83Da	310.36Cb	265.81Cb	184.57Bc	135.70Ad	1388.26
CS	785.26Ba	381.00Bb	334.23Ac	218.97Bd	176.10Ad	1895.55
PS	767.79Ba	413.94Bb	361.07Ac	235.94Bd	182.37Ac	1961.11
PD	934.31Aa	686.11Ab	386.30Ac	296.70Ad	175.97Ac	2479.49
MF	706.38Ca	346.22Cb	218.04Bc	197.52Bc	149.85Ad	1613.78

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Table S3. P contents in the different forms of Hedley fractionation and sum of the P contents extracted from the soil profile after 18 successive application (2004-2016) cattle slurry (CS), pig slurry (PS), pig deep-litter (PD) and mineral fertilizer (MF) additions. Data presented are means (n = 4).

Tratamentos	Depht (cm)					
	0-4	4-10	10-20	20-30	30-40	40-50
NH ₄ Cl (Pi) (mg kg ⁻¹)						
Control	0.90D*a**	1.15Ca	0.61Ba	1.18Aa	0.95Aa	1.18Aa
CS	4.85Ba	2.16Bb	0.41Bc	1.07Ac	0.99Ac	1.18Ac
PS	3.73Ca	2.21Bb	0.47Bc	0.72Ac	0.72Ac	1.18Ac
PD	9.66Aa	6.97Ab	3.43Ac	1.13Ad	0.05Ac	0.92Ad
MF	4.57Ba	0.80Cb	0.66Bb	1.06Ab	1.08Ab	1.18Ab
NaHCO ₃ (Pi) (mg kg ⁻¹)						
Control	26.01Ca	12.56Cb	19.82Ca	5.51Bb	4.43Bb	1.95Ab
CS	59.84Bb	83.35Aa	42.56Bc	6.68Bd	5.71Bd	9.34Ad
PS	41.18Ba	88.15Ab	45.44Bb	31.46Ab	14.34Ac	13.52Ac
PD	101.49Ab	91.28Ab	113.89Aa	41.17Ac	36.37Ac	13.84Ad
MF	60.29Ba	35.41Bc	27.40Cc	22.06Bc	10.63Bc	8.25Ac
NaOH I (Pi) (mg kg ⁻¹)						
Control	24.56Ca	15.38Ca	8.46Cb	14.43Ba	3.58Ab	2.30Ab
CS	45.20Ba	33.80Bb	16.50Cc	13.56Bc	3.83Ad	5.24Ad
PS	52.44Ba	28.03Bb	29.91Bb	21.36Bb	4.79Ac	5.74Ac
PD	85.03Aa	59.82Ab	51.50Ab	36.73Ac	11.02Ad	4.29Ad
MF	32.32Ca	23.91Ba	25.07Ba	16.04Bb	5.02Ab	10.47Ab
HCl (Pi) (mg kg ⁻¹)						
Control	7.50Ea	2.91Da	1.47Aa	0.44Aa	0.15Aa	0.11Aa
CS	185.26Ba	96.28Bb	3.35Ac	0.99Ac	0.11Ac	0.11Ac
PS	137.55Ca	89.69Bb	3.99Ac	1.37Ac	0.14Ac	0.27Ac
PD	277.82Aa	180.24Ab	8.69Ac	0.73Ac	0.92Ac	1.21Ac

MF	90.84Da	67.77Cb	1.70Ac	0.27Ac	0.27Ac	0.27Ac
NaOH II (Pi) (mg kg-1)						
Control	19.82Ba	44.52Ac	12.78Bc	17.56Bc	30.88Ab	12.21Ac
CS	21.76Ba	22.38Ba	24.06Ba	15.50Ba	13.66Ba	14.84Aa
PS	18.47Ba	8.93Bb	23.14Ba	18.39Bb	18.36Bb	24.29Aa
PD	41.84Aa	11.57Bb	37.35Aa	38.14Aa	26.31Ab	22.80Ab
MF	7.17Ca	9.83Ba	21.88Ba	13.25Ba	18.90Aa	22.02Aa
NaHCO3 (Po) (mg kg-1)						
Control	14.44Da	10.22Ba	3.98Ba	4.73Ca	6.80Aa	9.24Aa
CS	63.90Ba	14.22Bb	1.66Bc	18.76Bb	10.88Ab	8.70Ac
PS	71.14Aa	7.61Bb	1.43Bb	0.66Cb	13.09Ab	6.39Ab
PD	57.32Ba	47.06Ab	20.54Ac	31.69Ac	0.45Bd	4.64Ad
MF	41.07Ca	10.80Bb	0.56Bb	0.40Cb	0.51Bb	0.31Ab
NaOH I (Po) (mg kg-1)						
Control	88.94Ba	73.91Db	62.26Cc	42.80Cd	57.78Cc	45.59Ad
CS	143.24Aa	124.66Bb	96.56Bc	63.40Bd	77.72Bd	35.19Ae
PS	144.35Aa	128.26Bb	88.76Bc	65.47Ad	73.44Bd	48.11Ae
PD	136.92Aa	148.08Aa	109.33Ab	63.41Bd	80.84Ac	54.63Ad
MF	133.97Aa	109.84Cb	60.97Cc	34.07Cd	60.62Cc	44.19Ad
NaOH II (Po) (mg kg-1)						
Control	0.52Bb	0.17Ab	19.61Aa	1.76Ab	0.45Ab	0.41Ab
CS	7.85Bb	6.57Ab	13.91Aa	3.18Ab	3.64Ab	0.71Ab
PS	13.03Aa	18.24Ba	2.95Ab	1.96Ab	2.18Ab	0.49Ab
PD	1.15Bb	16.89Ba	0.60Ab	0.44Ab	0.74Ab	0.34Ab
MF	19.83Aa	21.77Ba	1.03Ab	2.05Ab	2.10Ab	0.43Ab
Residual P (mg kg-1)						
Control	162.22Aa	121.05Ab	54.96Ac	58.63Ac	7.35Ad	8.26Ad

CS	142.71Aa	60.54Bb	34.09Ac	59.82Ab	10.79Ac	13.02Ac
PS	138.42Aa	53.97Bb	44.37Ab	56.01Ab	15.14Ad	9.05Ad
PD	48.31Ba	34.96Ba	48.63Aa	22.47Bb	15.92Ab	7.71Ab
MF	136.00Aa	105.84Ab	60.86Ac	37.58Bc	15.24Ad	7.61Ad
Total P (mg kg ⁻¹)						
Control	344.92Ea	281.86Db	176.90Cc	154.54Cc	109.21Bd	81.26Ae
CS	674.61Ba	443.95Bb	224.12Bc	195.45Ad	124.81Be	107.95Ae
PS	620.29Ca	425.10Bb	240.66Bc	212.39Ad	139.61Be	109.20Af
PD	759.54Aa	596.87Ab	406.46Ac	223.40Ad	190.66Ae	102.87Af
MF	526.06Da	385.97Cb	200.13Cc	126.77Bd	116.88Bd	89.73Ae

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