

## Supplementary materials

**Table 1S.** Mean soil macronutrient contents for the primary land uses studied in Santarém-Belterra region, eastern Brazilian Amazon.

Soil depth (cm)	Land use <sup>§</sup>						
	UF	LF	BF	LBF	SF	PA	CP
	Phosphorus (mg dm <sup>-3</sup> )						
0 - 10	5.35 ± 1.76	5.46 ± 2.16	4.53 ± 2.11	5.76 ± 3.63	5.09 ± 3.48	40.45 ± 18.34	10.77 ± 5.95
10 - 20	3.18 ± 1.68	3.90 ± 1.59	3.23 ± 1.43	3.76 ± 1.94	3.39 ± 2.36	35.92 ± 12.07	5.20 ± 3.00
20 - 30	2.67 ± 2.03	2.72 ± 1.37	2.46 ± 1.15	2.59 ± 1.52	2.32 ± 1.14	30.36 ± 12.34	4.05 ± 2.39
	Potassium (mg dm <sup>-3</sup> )						
0 - 10	33.29 ± 10.65	34.49 ± 12.27	30.77 ± 11.35	36.12 ± 14.01	38.87 ± 21.81	50.44 ± 19.35	77.80 ± 39.02
10 - 20	25.07 ± 7.12	26.25 ± 7.63	24.57 ± 8.94	26.69 ± 9.22	30.09 ± 16.06	33.16 ± 12.78	44.10 ± 20.07
20 - 30	22.54 ± 9.36	21.35 ± 6.86	20.27 ± 6.12	21.24 ± 8.02	22.41 ± 12.34	26.13 ± 8.54	35.57 ± 14.22
	Calcium (mmolc dm <sup>-3</sup> )						
0 - 10	4.81 ± 1.72	6.08 ± 4.79	11.06 ± 6.74	9.06 ± 5.89	17.60 ± 15.90	21.21 ± 8.42	35.70 ± 14.15
10 - 20	4.00 ± 0.89	4.65 ± 2.60	8.14 ± 3.27	6.78 ± 3.51	11.34 ± 10.53	16.11 ± 8.76	21.12 ± 12.26
20 - 30	4.16 ± 1.66	4.14 ± 1.54	6.93 ± 3.35	5.15 ± 4.02	8.50 ± 8.08	13.56 ± 5.37	16.40 ± 9.32
	Magnesium (mmolc dm <sup>-3</sup> )						
0 - 10	3.74 ± 1.01	4.33 ± 3.04	5.46 ± 2.88	4.32 ± 2.36	6.34 ± 3.50	6.33 ± 1.77	9.07 ± 2.26
10 - 20	3.07 ± 0.64	3.33 ± 2.06	4.38 ± 2.07	3.27 ± 1.57	4.80 ± 3.06	5.30 ± 1.60	6.37 ± 2.61
20 - 30	3.01 ± 0.79	2.63 ± 0.76	3.31 ± 0.51	2.87 ± 1.17	3.86 ± 1.83	4.68 ± 1.35	5.45 ± 1.56

<sup>§</sup>UF: undisturbed forest (n=255), LF: logged forest (n=390), BF: burnt forest (n=120), LBF: logged and burnt forest (n=420); SF: secondary forest (n=630), PA: pasture (n=374), CP: croplands (n=224). The analysis followed the methodologies described in Embrapa et al. (1997).

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**Table 2S.** Mean soil acidity attribute values and effective and potential cation exchange capacity (CEC<sub>pH7</sub> and CEC<sub>effective</sub>) values for the primary land uses studied in Santarém-Belterra region, eastern Brazilian Amazon.

Soil depth (cm)	Land use <sup>§</sup>						
	UF	LF	BF	LBF	SF	PA	CP
	pH water (unitless)						
0 - 10	3.71 ± 0.12	3.74 ± 0.24	4.18 ± 0.49	3.9 ± 0.25	4.33 ± 0.57	4.73 ± 0.48	5.33 ± 0.58
10 - 20	3.80 ± 0.15	3.82 ± 0.21	4.21 ± 0.44	4.00 ± 0.25	4.37 ± 0.50	4.70 ± 0.48	5.00 ± 0.64
20 - 30	3.93 ± 0.15	3.95 ± 0.17	4.25 ± 0.30	4.11 ± 0.25	4.38 ± 0.44	4.69 ± 0.39	4.9 ± 0.56
	Al (mmolc dm <sup>-3</sup> )						
0 - 10	24.87 ± 7.22	24.58 ± 6.49	15.21 ± 6.84	21.56 ± 9.16	13.80 ± 8.84	7.67 ± 7.16	2.90 ± 2.60
10 - 20	22.63 ± 5.84	22.97 ± 5.39	15.87 ± 5.66	20.16 ± 7.72	14.10 ± 7.30	8.80 ± 6.98	7.65 ± 4.04
20 - 30	20.34 ± 5.57	20.43 ± 4.62	15.40 ± 5.06	18.50 ± 5.71	14.21 ± 6.13	9.35 ± 6.24	9.02 ± 4.07
	H+Al (mmolc dm <sup>-3</sup> )						
0 - 10	99.29 ± 46.19	129.06 ± 26.62	88.32 ± 22.58	107.05 ± 27.29	71.04 ± 32.58	47.26 ± 25.39	55.85 ± 18.63
10 - 20	80.76 ± 32.82	99.51 ± 21.71	73.80 ± 18.47	86.15 ± 21.13	61.34 ± 31.49	43.34 ± 21.31	62.71 ± 20.46
20 - 30	68.81 ± 27.10	78.72 ± 10.92	66.26 ± 17.41	74.38 ± 15.64	53.28 ± 19.80	41.69 ± 19.37	58.82 ± 19.57
	Base saturation (%)						
0 - 10	28.69 ± 9.94	30.35 ± 13.17	47.68 ± 23.62	36.91 ± 21.41	59.18 ± 24.66	73.92 ± 22.29	92.87 ± 8.13
10 - 20	26.46 ± 8.32	27.14 ± 10.64	42.22 ± 20.79	33.69 ± 19.52	51.35 ± 22.72	66.59 ± 23.06	75.91 ± 14.25
20 - 30	28.34 ± 9.87	26.68 ± 7.89	39.84 ± 17.76	31.44 ± 15.07	45.58 ± 20.66	61.44 ± 22.85	69.00 ± 15.65
	Al saturation (%)						
0 - 10	14.88 ± 2.59	12.97 ± 1.91	12.33 ± 4.47	12.29 ± 5.00	9.96 ± 4.29	6.06 ± 5.29	1.96 ± 1.21
10 - 20	16.39 ± 2.63	14.37 ± 1.88	14.54 ± 4.64	13.72 ± 4.35	11.28 ± 4.35	7.71 ± 5.61	7.10 ± 3.63
20 - 30	16.03 ± 3.13	14.68 ± 1.47	15.01 ± 4.32	14.71 ± 3.78	12.18 ± 3.81	8.70 ± 5.51	9.30 ± 4.17
	CEC <sub>effective</sub> (mmolc dm <sup>-3</sup> )						
0 - 10	34.27 ± 7.23	35.88 ± 8.85	32.52 ± 11.57	35.87 ± 10.34	38.74 ± 15.73	36.51 ± 19.01	49.67 ± 15.49
10 - 20	30.35 ± 5.56	31.63 ± 6.14	29.03 ± 7.16	30.90 ± 7.00	31.02 ± 10.85	31.06 ± 15.74	36.28 ± 12.64
20 - 30	28.09 ± 5.82	27.76 ± 4.84	26.16 ± 4.87	27.08 ± 5.28	27.14 ± 7.73	28.26 ± 14.05	31.78 ± 8.51
	CEC <sub>pH7</sub> (mmolc dm <sup>-3</sup> )						
0 - 10	132.89 ± 51.52	173.76 ± 30.54	130.12 ± 26.12	158.25 ± 30.56	111.48 ± 44.31	111.88 ± 45.32	136.37 ± 25.53
10 - 20	110.89 ± 36.53	136.81 ± 24.45	110.83 ± 23.76	127.42 ± 19.25	96.14 ± 38.52	98.14 ± 37.89	116.39 ± 36.48
20 - 30	96.85 ± 29.57	109.32 ± 12.00	99.35 ± 21.79	108.71 ± 14.96	84.52 ± 26.26	90.94 ± 33.22	103.94 ± 29.86

<sup>§</sup>UF: undisturbed forest (n=255), LF: logged forest (n=390), BF: burnt forest (n=120), LBF: logged and burnt forest (n=420); SF: secondary forest (n=630), PA: pasture (n=374), CP: croplands (n=224). The analysis followed the methodologies described in Embrapa et al. (1997).

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**Table 3S.** Mean soil clay, silt and sand contents for the primary land uses studied in Santarém-Belterra region, eastern Brazilian Amazon.

Soil depth (cm)	Land use <sup>§</sup>						
	UF	LF	BF	LBF	SF	PA	CP
	Clay (g kg <sup>-1</sup> )						
0 - 10	654	679	603	566	566	388	677
10 - 20	672	688	656	620	623	438	732
20 - 30	702	700	700	649	665	465	737
	Silt (g kg <sup>-1</sup> )						
0 - 10	133	119	174	171	178	149	218
10 - 20	135	129	162	139	154	133	178
20 - 30	130	129	139	138	126	126	167
	Sand (g kg <sup>-1</sup> )						
0 - 10	214	202	223	263	256	466	105
10 - 20	193	186	182	242	224	429	105
20 - 30	168	171	161	222	209	409	97

<sup>§</sup>UF: undisturbed forest (n=255), LF: logged forest (n=390), BF: burnt forest (n=120), LBF: logged and burnt forest (n=420); SF: secondary forest (n=630), PA: pasture (n=374), CP: croplands (n=224). The soil particle-size analysis followed methodology of Camargo et al. (1986).

Camargo, O.A.; Moniz, A.C.; Jorge, J.A.; Valadares, J.M.A.S. *Métodos de análise química, mineralógica e física do Instituto Agrônomo de Campinas*. Campinas: Instituto Agrônomo, **1986**. 94p.