

## Spatial distribution of physical attributes of a clayey Latosol under different management systems

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**Supplementary Table 1.** Particle size composition<sup>1</sup> of the layers 0-0.1, 0.1-0.2 and 0.2-0.3m of the IAPAR/Santa Tereza experimental area (mean values of 3 repetitions)

Layer (m)	Granulometry		
	Sand	Clay	Silt
0-0.1	44.9	561.1	394.1
0.1-0.2	38.7	641.9	319.4
0.2-0.3	24.7	706.2	269.1
Mean	36.1	636.4	327.5

<sup>1</sup>Pipette method, according to USDA-Soil Conservation Service.

**Supplementary Table 2.** Descriptive statistics for soil physical attributes of Treatment T1

Treatment T1									
Variable	Density			Macroporosity			Microporosity		
Layer	0-0.1	0.1-0.2	0.2-0.3	0-0.1	0.1-0.2	0.2-0.3	0-0.1	0.1-0.2	0.2-0.3
Mean	1.11	1.16	1.13	13.38	13.29	14.58	43.32	41.66	43.17
Minimum	0.91	1.05	1.01	7.27	9.03	9.81	39.29	39.57	38.87
Median	1.10	1.16	1.12	14.54	13.63	14.12	43.04	41.53	42.75
Maximum	1.37	1.28	1.26	17.83	17.67	18.68	50.17	44.17	48.36
S	0.113	0.078	0.072	3.247	3.042	2.359	2.892	1.206	2.445
S <sup>2</sup>	0.013	0.006	0.005	10.539	9.254	5.567	8.364	1.454	5.979
CV	10.14	6.68	6.36	24.26	22.88	16.19	6.68	2.89	5.66
Asymmetry	0.372	0.001	0.549	-0.550	-0.023	-0.074	0.579	0.321	0.379
Kurtosis	3.20	1.57	2.60	2.24	1.53	2.59	3.15	2.74	2.66
p-value*	0.957	0.265	0.353	0.233	0.201	0.942	0.368	0.987	0.715

S: standard deviation; S<sup>2</sup>: variance; CV: Coefficient of variation; p-value\* for the Shapiro-Wilk normality test, if p-value <0.05 the data have no normal probability distribution.

**Supplementary Table 3.** Descriptive statistics for soil physical attributes of Treatment T2

Treatment T2									
Variable	Density			Macroporosity			Microporosity		
Layer	0-0.1	0.1-0.2	0.2-0.3	0.0-0.1	0.1-0.2	0.2-0.3	0.0-0.1	0.1-0.2	0.2-0.3
Mean	1.07	1.12	1.07	14.68	15.17	16.13	43.54	41.49	43.71
Minimum	0.86	0.90	0.96	9.26	11.43	11.35	35.08	39.11	39.74
Median	1.05	1.15	1.09	14.78	13.81	16.36	43.43	41.79	43.14
Maximum	1.26	1.27	1.24	23.15	23.49	20.40	50.37	43.06	49.68
S	0.108	0.102	0.088	3.998	3.539	2.494	3.403	1.084	2.510
S <sup>2</sup>	0.012	0.010	0.008	15.989	12.525	6.223	11.582	1.175	6.301
CV	10.08	9.13	8.22	27.23	23.33	15.47	7.817	2.612	5.743
Asymmetry	0.065	-	0.306	0.410	1.055	0.090	-0.510	-	0.633
Kurtosis	2.45	2.63	2.02	2.28	3.06	2.38	4.42	3.33	3.34
p-value*	0.816	0.275	0.459	0.283	0.023	0.658	0.213	0.032	0.666

S: standard deviation; S<sup>2</sup>: variance; CV: Coefficient of variation; p-value\* for the Shapiro-Wilk normality test, if p-value <0.05 the data have no normal probability distribution.

**Supplementary Table 4.** Descriptive statistics for soil physical attributes of Treatment T3

Treatment T3									
Variable	Density			Macroporosity			Microporosity		
Layer	0-0.1	0.1-0.2	0.2-0.3	0.0-0.1	0.1-0.2	0.2-0.3	0.0-0.1	0.1-0.2	0.2-0.3
Mean	1.02	1.05	1.09	16.43	18.09	18.03	43.91	41.29	41.19
Minimum	1.01	1.06	1.08	16.93	17.37	17.92	44.58	40.68	41.35
Median	0.95	0.84	1.02	13.77	15.34	14.98	39.45	37.96	39.20
Maximum	1.12	1.13	1.17	19.38	21.29	20.38	46.52	51.19	43.83
S	0.053	0.073	0.042	1.845	1.886	1.845	2.375	3.006	1.518
S <sup>2</sup>	0.003	0.005	0.002	3.408	3.556	3.418	5.641	9.039	2.304
CV	5.21	6.92	3.84	11.24	10.42	10.26	5.41	7.28	3.68
Asymmetry	0.580	-	0.273	0.080	0.389	-	-	2.533	0.239
		1.602				0.205	0.516		
Kurtosis	2.61	5.72	2.42	1.59	1.86	1.58	1.90	9.16	1.83
p-value*	0.278	0.009	0.938	0.305	0.218	0.128	0.082	9.2x10 <sup>-5</sup>	0.269

S: standard deviation; S<sup>2</sup>: variance; CV: Coefficient of variation; p-value\* for the Shapiro-Wilk normality test, if p-value <0.05 the data have no normal probability distribution.

**Supplementary Table 5.** Spatial statistics of soil physical attributes in the three analyzed layers using geostatistical analysis to generate the maps

Trat.	Layer	Model	C <sub>0</sub>	C <sub>0</sub> +C <sub>1</sub>	$\alpha$	GD	FD
<b>Density</b>							
T1	0-0.1 m	Gaussian	0.007	0.01	14	30.00	Moderate
	0.1-0.2 m	Spherical	0.0019	0.0055	12	65.45	Moderate
	0.2-0.3 m	Spherical	0.0005	0.0052	14	90.38	High
T2	0-0.1 m	Exponential	0.0039	0.011	14	64.55	Moderate
	0.1-0.2 m	Exponential	0.0025	0.011	14	77.27	High
	0.2-0.3 m	Exponential	0.004	0.007	14	42.86	Moderate
T3	0-0.1 m	Gaussian	0.0023	0.0029	14	20.69	Weak
	0.1-0.2 m	Spherical	0	0.0059	12	100	High
	0.2-0.3 m	Spherical	0.0005	0.0019	10.1	73.68	High
<b>Macroporosity</b>							
T1	0-0.1 m	Spherical	1.0	9	8	88.89	High
	0.1-0.2 m	Spherical	3	8.1	10	62.96	Moderate
	0.2-0.3 m	Spherical	4.1	6.2	6	33.87	Moderate
T2	0-0.1 m	Exponential	0	15.1	14	100	High
	0.1-0.2 m	Exponential	4.9	11.9	14	58.82	Moderate
	0.2-0.3 m	Gaussiano	4.1	5.9	14	30.51	Moderate
T3	0-0.1 m	Gaussian	2.4	4.01	14	40.15	Moderate
	0.1-0.2 m	Spherical	2	4	9	50.00	Moderate
	0.2-0.3 m	Gaussian	0	4.1	12	100	High
<b>Microporosity</b>							
T1	0-0.1 m	EPP	5.6	-	-	-	-
	0.1-0.2 m	Spherical	0	1.25	6	100	High
	0.2-0.3 m	EPP	5,6	-	-	-	-
T2	0-0.1 m	Gaussian	0	11	14	100	High
	0.1-0.2 m	Exponential	0	1.8	14	100	High
	0.2-0.3 m	Spherical	0	6.9	7	100	High
T3	0-0.1 m	Spherical	0.5	5.1	7.8	90.20	High
	0.1-0.2 m	Spherical	5.25	6.9	6	23.91	Weak
	0.2-0.3 m	Gaussian	0.4	3.2	14	87.50	Weak

CV: Coefficient of variation; C<sub>0</sub>: Nugget effect; C<sub>0</sub>+C<sub>1</sub>: landing;  $\alpha$ : range; GD: degree of dependence; FD: Dependency Range; Ds: density; Ma: Macroporosity; Mi: Microporosity; EPP: Pure nugget effect.