

Supplementary Material

Soil microbial biomass and oxy-hydroxides contribute to aggregate stability and size distribution under different land uses in the Central Andes

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S1. Results of regression analyses conducted between microbial biomass C (MBC), dithionite-extractable iron (Fe_{DCB}), and oxalate-extractable iron and manganese (Fe_{Ox} , Mn_{Ox}) with the aggregate stability indexes mean weight diameter (MWD), water stable aggregates (WSA) and aggregate sizes. For all relationships the intercept (α), slope (β), and the regression coefficients (R^2) are presented. *= p -value<0.05.

	MBC			Fe_{DCB}			Fe_{Ox}			Mn_{Ox}		
	α	β	R^2	α	β	R^2	α	β	R^2	α	β	R^2
MWD	0.64	0.001*	0.49	0.83	0.02*	0.20	1.44	-0.13*	0.15	1.35	-0.49*	0.27
WSA	75.0	0.02*	0.32	80.6	0.29	0.06	99.2	-5.03*	0.28	93.45	-14.27*	0.29
Megaaggregates	-36.6	0.57*	0.57	84.6	8.33*	0.20	349.1	-50.75	0.05	361.42	-257.17*	0.25
Macroaggregates	532.2	-0.25*	0.21	468.2	-2.78	0.02	441.8	-4.48	0.00	328.30	162.74*	0.22
Free Microaggregates	168.6	-0.15*	0.32	155.0	-3.48*	0.33	37.9	23.47	0.12	75.29	49.14	0.05

Free Silt+clay fraction	220.8	-0.21*	0.34	171.1	-2.60	0.07	4.24	45.03*	0.29	50.22	136.14*	0.35
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S2. Results of linear regression analyses conducted between potential respiration and net N mineralization with the aggregates quantity in the soil (g kg^{-1}). For all relationships the intercept (α), slope (β), and the regression coefficients (R^2) are presented. *= p -value<0.05, **= p -value<0.01.

Aggregate size classes	Potential respiration			net N mineralization		
	α	β	R^2	α	β	R^2
Megaaggregates	0.12	0.001**	0.75	1.14	-0.001	0.07
Macroaggregates	0.86	-0.001**	0.27	-0.22	0.002	0.04
Free Microaggregates	0.67	-0.003**	0.48	-0.02	0.007*	0.17
Free Silt+clay	0.64	-0.002**	0.40	0.42	0.003	0.00
Occluded microaggregates	0.66	-0.003**	0.32	0.07	0.007	0.08
Occluded silt+clay	0.54	-0.00	0.04	0.13	0.003	0.03

S3. Results of linear regression analyses conducted between potential respiration and net N mineralization with TOC and TN content of aggregate sizes. For all relationships the intercept (α), slope (β), and the regression coefficients (R^2) are presented. *= p -value<0.05, **= p -value<0.01.

Aggregate size classes		Potential respiration			net N mineralization		
		α	β	R^2	α	β	R^2
TOC (g C kg ⁻¹ soil)	Megaaggregates	0.20	0.03**	0.77	0.85	-0.01	0.03
	Macroaggregates	0.33	0.00	0.04	-0.24	0.09*	0.14
	Free Microaggregates	0.47	-0.05	0.02	-0.27	0.49**	0.42
	Free Silt+clay	0.52	-0.05	0.06	0.07	0.21	0.08
	Occluded microaggregates	0.47	-0.04	0.04	0.04	0.30*	0.22
	Occluded Silt+clay	0.15	0.04	0.12	-0.07	0.15	0.10
TN (g N kg ⁻¹ soil)	Megaaggregates	0.16	0.43**	0.89	0.83	-0.15	0.04
	Macroaggregates	0.41	-0.04	0.04	-0.39	1.19*	0.16
	Free Microaggregates	0.52	-0.78	0.12	-0.27	5.27**	0.43
	Free Silt+clay	0.57	-0.55	0.10	-0.13	2.44*	0.15
	Occluded	0.51	-0.66	0.13	0.03	3.31**	0.24

microaggregates

Occluded Silt+clay	0.18	0.28	0.07	-0.14	1.39*	0.13
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