Supplementary Online Material

Organic carbon dynamics after additions of pyrogenic organic matter and crop residues over seven years

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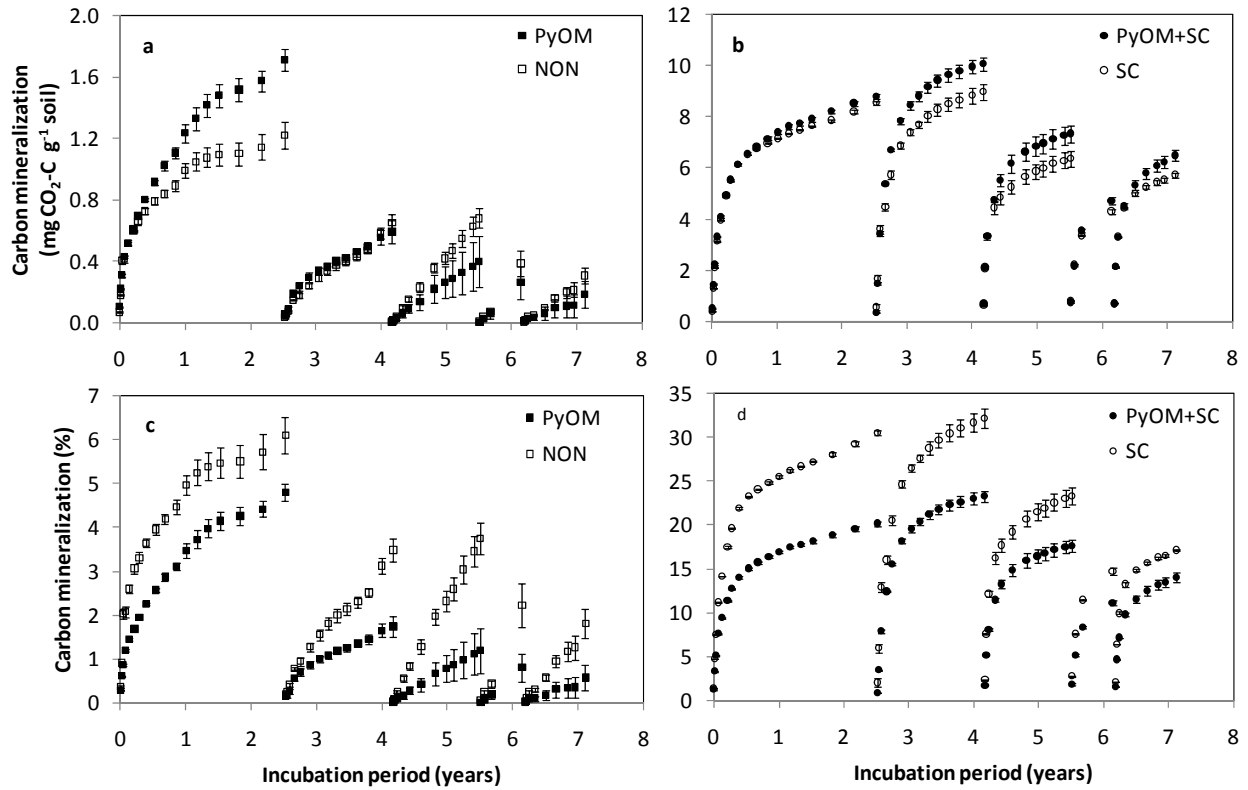*corresponding author; email: CL273@cornell.edu

Supplementary Online Table S1.

Pool sizes and their mineralization rate constants estimated after each sugarcane addition and/or disturbance during the incubation period (n=3). After the first disturbance, the shape of the cumulative CO_2 release curves without sugarcane additions did not follow an exponential trend (Supplementary Online Fig. S1). As a result, RMSE of the double-exponential regression models were very high and parameters were not estimated for those two treatments. The number of data points collected during the fourth sugarcane addition and/or disturbance was insufficient to fit a two-compartment model.

Constant	SC addition	Duration (days)	Easily mineralizable pool‡				Persistent pool‡			
			PyOM†	PyOM+SC	SC	NON	PyOM	PyOM+SC	SC	NON
Size (X)	1	920	0.33_B^c	3.96_B^b	4.76_A^a	0.40_B^c	1.49_A^c	4.78_A^a	4.01_B^b	0.84_A^d
$(mg\ g^{-1})$	2	602	ne	4.89_A^a	2.97_B^b	ne	ne	5.29_A^a	6.01_A^a	ne
	3	487	ne	3.05_A^a	3.63_A^a	ne	ne	4.31_A^a	2.95_A^a	ne
	5	340	ne	2.63_A^a	2.58_A^a	ne	ne	3.87_A^a	3.08_A^a	ne
Rate (k)	1	920	55.6_A^a	18.6_A^b	12.1_A^c	44.2_A^a	0.94_B^a	1.30_B^a	0.92_B^a	1.24_B^a
$(year^{-1})$	2	602	ne	13.6_A^b	34.5_A^a	ne	ne	2.12_B^a	2.62_B^a	ne
	3	487	ne	73.0_A^a	35.2_A^a	ne	ne	2.94_B^a	1.96_B^a	ne
	5	340	ne	70.4_A^a	90.7_A^a	ne	ne	3.88_B^a	5.45_B^a	ne

† ne – not estimated because data did not follow exponential pattern.

‡ In a given row, values within one pool with the same superscript letters, and values within one treatment with the same subscript letters are not significantly different at $p<0.05$.

Supplementary Online Fig. S1. Cumulative C mineralized (a and b) after each sugarcane addition (or disturbance) and C mineralized as a proportion of initial OC present (c and d) at each addition of either PyOM (PyOM), sugarcane (SC), the combination of PyOM and sugarcane (PyOM+SC) and no additions (NON) during the incubation period. Note the differences in scales of the y-axes (means and standard errors; n=3).