

Phosphorus removal and carbon dioxide capture in a pilot conventional septic system upgraded with a sidestream steel slag filter

Supplementary Materials

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This file contains 6 pages, 7 figures and 2 tables.

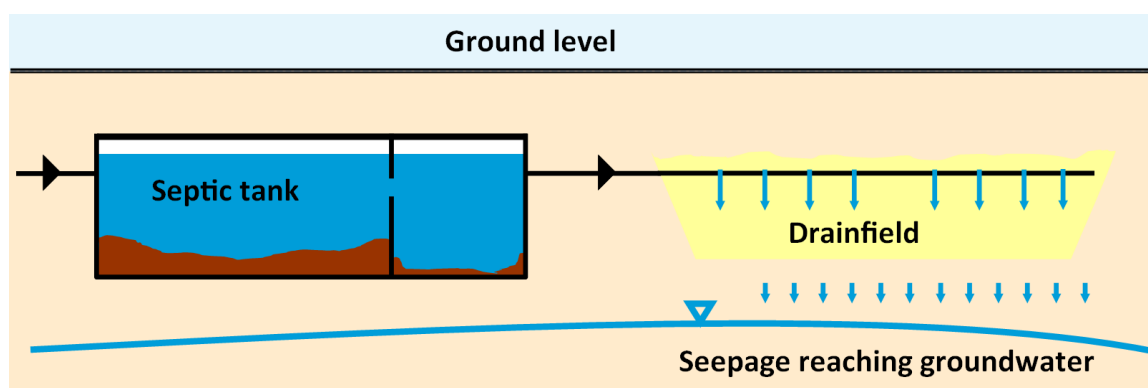


Figure S1: Schematic of a conventional septic system used in decentralized domestic wastewater treatment

Table S1: Drainfield sand properties

Parameter	Units	Silica sand	Limestone sand
D_{10}	mm	0.5	0.55
C_u	-	2.0	3.1
Fraction < 80 μm	%	0.58	0.16
Fraction > 2.5 mm	%	1.4	8.4

D_{10} : sieve mesh that lets 10% of soil particles pass through the mesh

C_u : uniformity coefficient, defined as D_{60}/D_{10}

D_{60} : sieve mesh that lets 60% of soil particles pass through the mesh

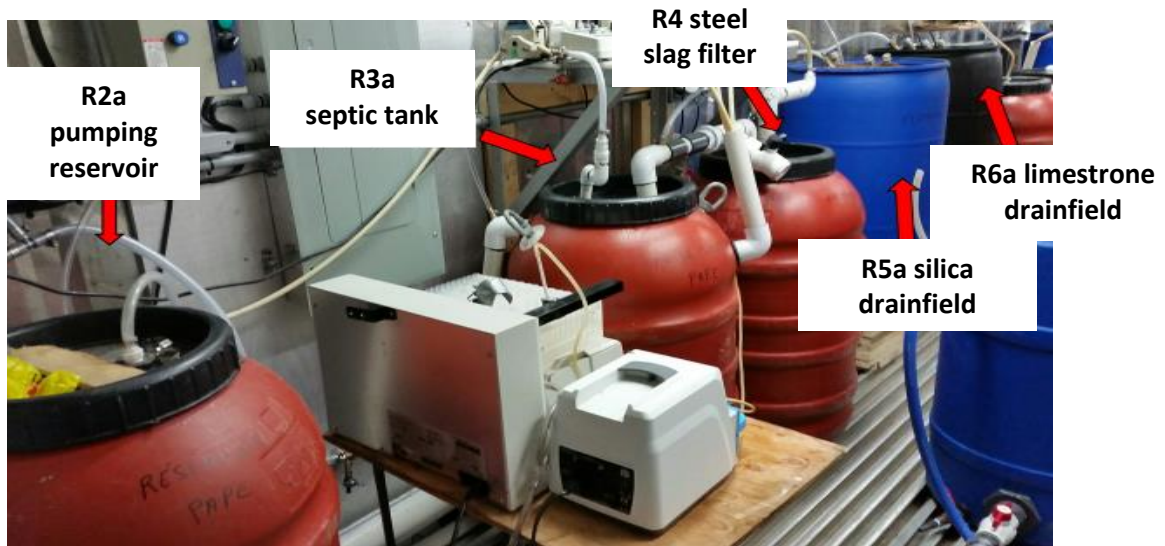


Figure S2: Picture of the septic system with slag filter

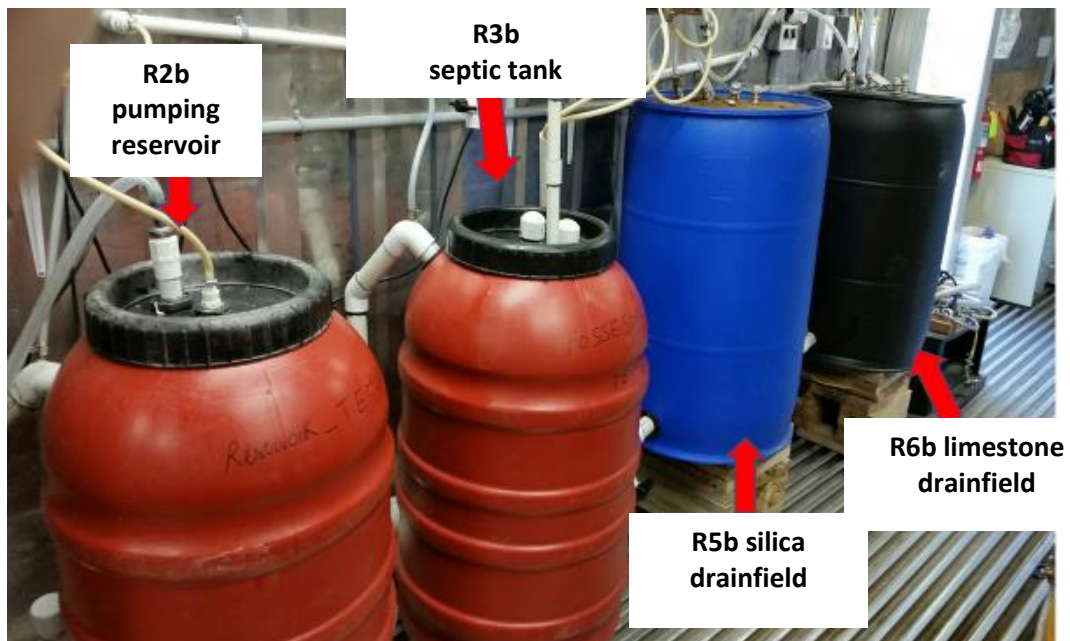


Figure S3: Picture of the control septic system

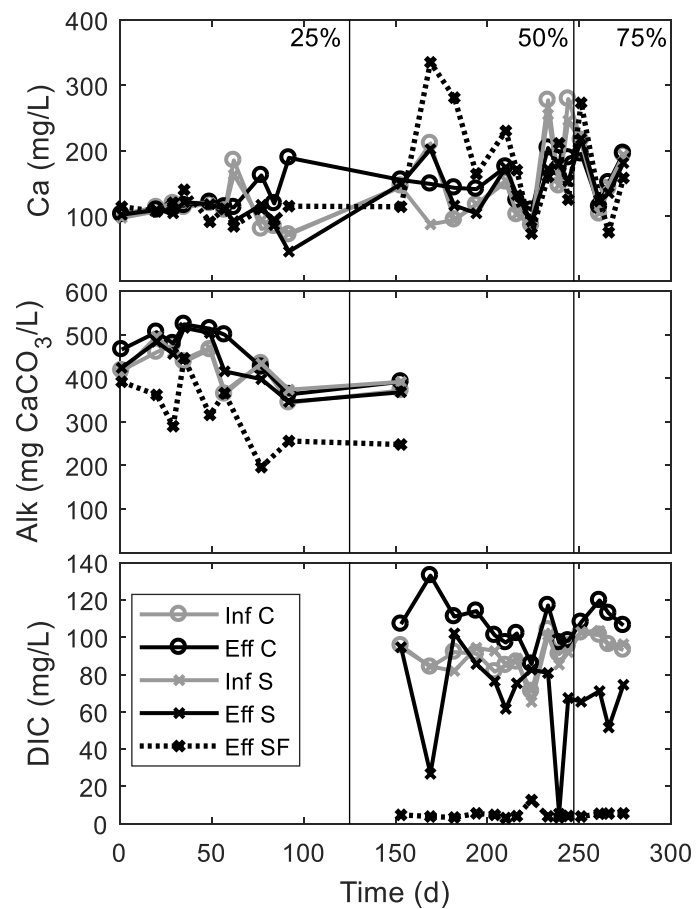


Figure S4: Calcium, alkalinity and dissolved inorganic carbon monitoring in septic tanks without (C) or with (S) slag filter. Inf: influent, Eff: effluent; SF: slag filter. Recirculation ratios are indicated at the top of the Figure and delineated by vertical lines.

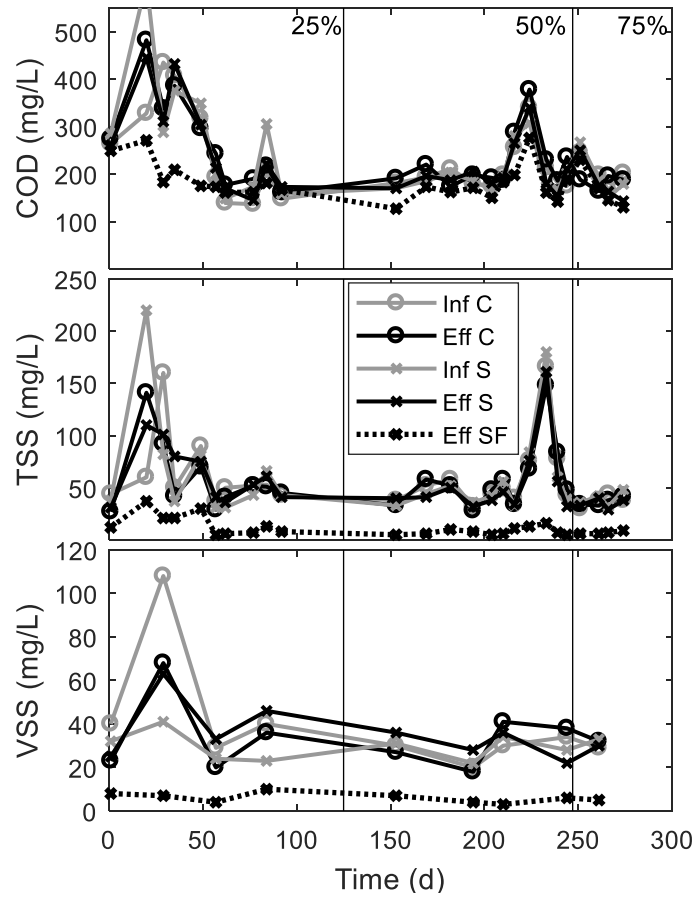


Figure S5: COD, TSS and VSS monitoring in septic tanks without (C) or with (S) slag filter. Inf: influent, Eff: effluent; SF: slag filter. Recirculation ratios are indicated at the top of the Figure and delineated by vertical lines.

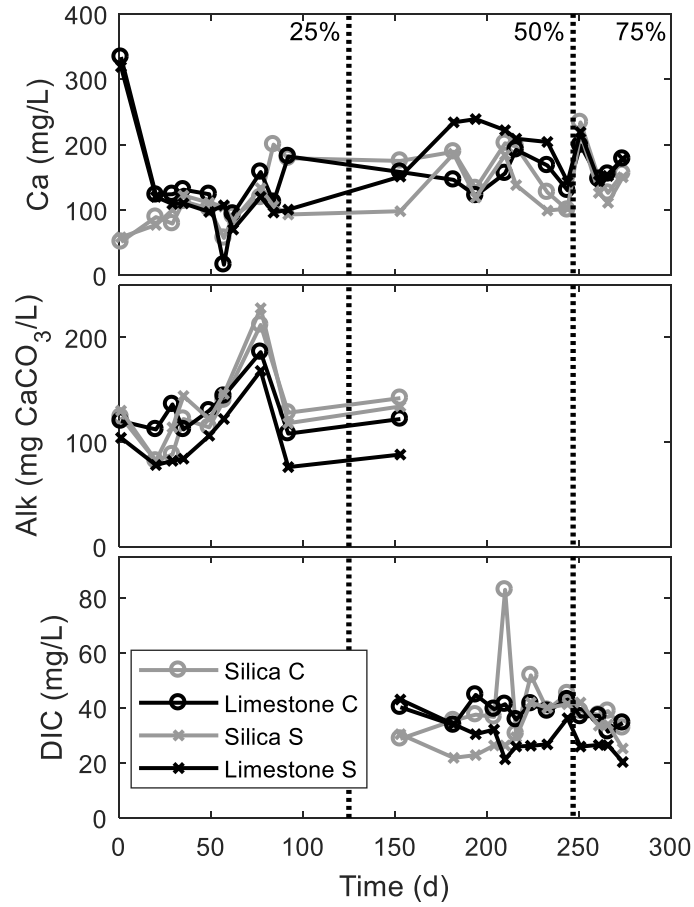


Figure S6: Calcium, alkalinity and dissolved inorganic carbon (DIC) in the effluent of drainfields following septic tanks without (C) or with (S) slag filter. Recirculation ratios are indicated at the top of the Figure and delineated by vertical lines.

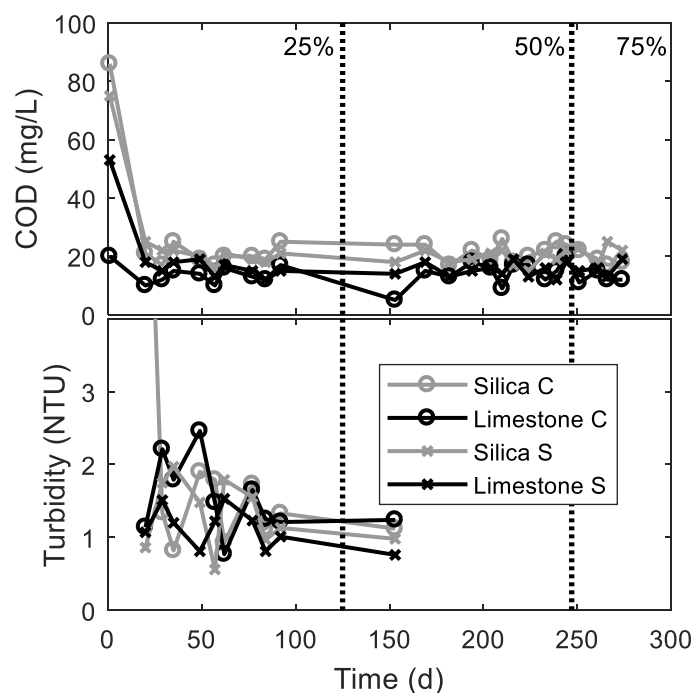


Figure S7: COD and turbidity monitoring at the effluent of drainfields following septic tanks without (C) or with (S) slag filter. Recirculation ratios are indicated at the top of the Figure and delineated by vertical lines.

Table S2: Calibration of the septic tank effluent and the slag filter effluent (mean values in the 50 and 75% recirculation ratio periods)

Parameter		Septic tank influent		Slag filter effluent	
		Exp	Sim	Exp	Sim
pH	-	7.24	7.24	11.22	11.22
o-PO ₄	mg P/L	3.25	3.25	0.07	0.02
Ca	mg/L	165	165	196	223
DIC	mg/L	100	100	4.9	2.1