Supplementary

Tables

Type of substrates	Substrates	Type of solutions used for the experiment	Type of reactors*	Added *M. Aeruginosa* (g_{wet}/L)	Number of replicates	Time of experiment
vegetation	lichen	leachate	ER	1	2	16
			CR	none	1	
	moss	leachate	ER	1	2	14
			CR	none	1	
peat	active layer peat	leachate	ER	1	2	29
			CR	none	1	
	permafrost peat	leachate	ER	1	2	16
			CR	none	1	
	lake water		ER	1	2	13
			CR	none	1	

Tab. S 1: *General information on the experiment. All those reactors were submitted to the same incubation's conditions, i.e. continuous light exposure, aeration trough a porous stopper, a constant temperature of 25 °C and continuous stirring by a magnetic bar. * ER = Experimental Reactor; CR = Control Reactor.*

Substrate		moss	lichen	active layer peat	permafrost peat	lake water
p_value (from student test)	pH	0.1097	0.2658	0.0006981**	0.07038*	0.01883**
	$SUVA_{254}$	0.01565**	0.3924	0.03103**	0.002041**	0.9499
	DOC	0.4009	0.2352	0.03318**	0.003663**	0.07593*

Table S 2: *p_value of student test run between values of pH, $SUVA_{254}$ and DOC of experimental and control reactors for each organic substrate. *The difference is significant with a confidence interval of 90%. **The difference is significant with a confidence interval of 95%.*

11 *Figures*

Z8 broth solution fabrication:

Step1: Stock solution Z8I

Stock solution Z8II	Mass (g) for 1L*
$NaNO_3$	46.70
$Ca(NO_3)_2,4H_2O$ Or $Ca(NO_3)_2$	5.90 4.10
$MgSO_4,3H_2O$	2.50

Step2: Stock solution Z8I

Stock solution Z8II	Mass (g) for 1L*
K_2HPO_4 Or $K_2HPO_4,3H_2O$	3.10 4.10
Na_2CO_3	2.10

**add autoclaved MilliQ water (20min at 121 °C) to reach 1L*

Step3: Stock solution Z8III

Solution A	Mass (g) to dissolve in 100 ml of HCl (0.1 M)
Iron solution: $FeCl_3,6H_2O$	2.80

Solution B	Mass (g) to dissolve in 100 ml of HCl (0.1 M)
EDTA solution: $EDTANa_2,2H_2O$	3.70

For **1L of stock solution Z8III** mix 10 mL of solution A (iron solution), 10 mL of solution B (EDTA solution) and 980 mL of MilliQ water (pre-autoclaved at 121 °C for 20min)

Step4: Trace solution

N°	Stock solution for trace solution	Mass (g) for 100 ml
1	$Na_2WO_4,2H_2O$	0.33
2	$(NH_4)_6MO_7O_{24},4H_2O$	0.88
3	KBr	1.20
4	KI	0.83
5	$ZnSO_4,7H_2O$	2.87
6	$Cd(NO_3)_2,4H_2O$	1.55
7	$CO(NO_3)_2,6H_2O$	1.46
8	$CuSO_4,5H_2O$	1.25
9	$(NH_4)Ni(SO_4)_2,6H_2O$	1.98
10	$Cr(NO_3)_3,9H_2O$	0.41
11	$KAl(SO_4),12H_2O$	4.74
12	$VOSO_4$	0.080
13	H_3BO_3 $MnSO_4,H_2O$	3.1 1.6

For **1L of Trace solution**, mix stock solutions as follow:

N° stock solution	Volume (ml) for 1L*
1	1
2	1
3	1
4	1
5	1
6	1
7	1
8	1
9	1
10	1
11	1
12	1
13	10

**add autoclaved MilliQ water (20min at 121 °C) to reach 1L*

Step5: Final Z8 solution

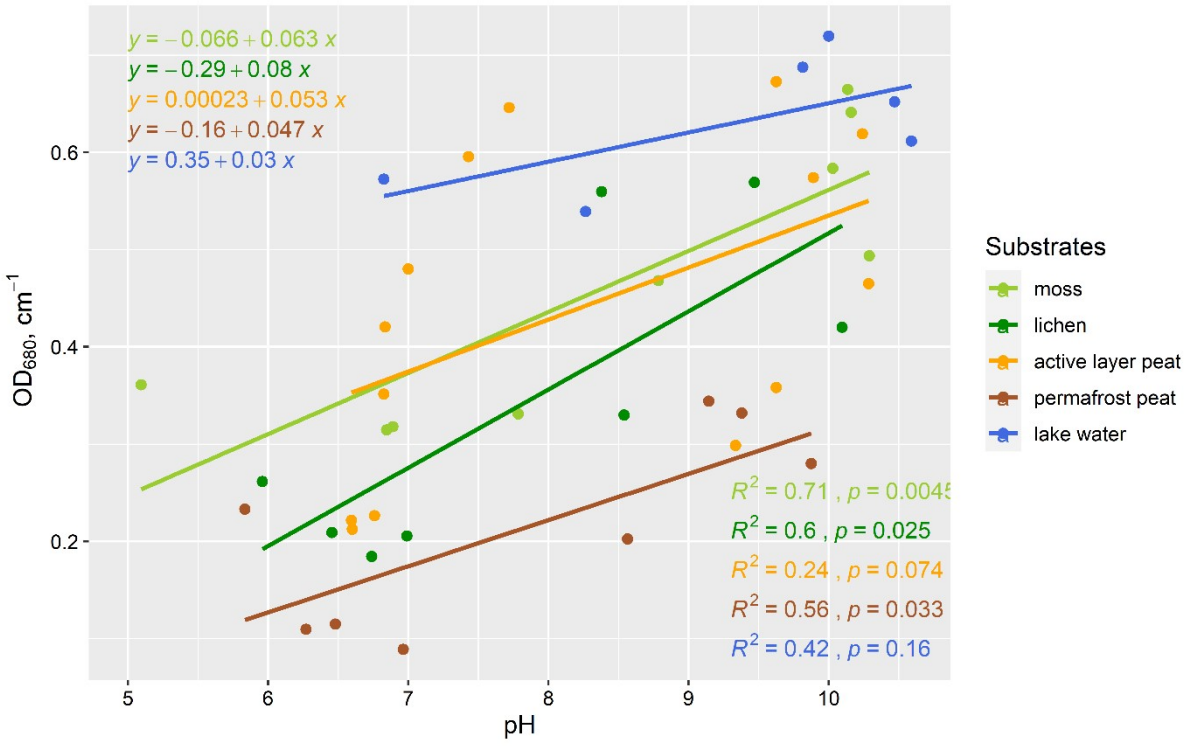
**add autoclaved MilliQ water (20min at 121 °C) to reach 1L*

N° stock solution	Z8I solution	Z8II solution	Z8III solution	Trace solution
Volume (ml) for 1L*	10	10	10	1

optimal pH~7.5-7.6, can be adjusted before sterilization (autoclaved at 121 °C for 20 min)

12

13 ***Fig. S 1:*** *Z8 broth solution fabrication*



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15 ***Fig. S 2:*** *Correlation between pH and optical density at 680nm (biomass' proxy) for each*
16 *substrate.*

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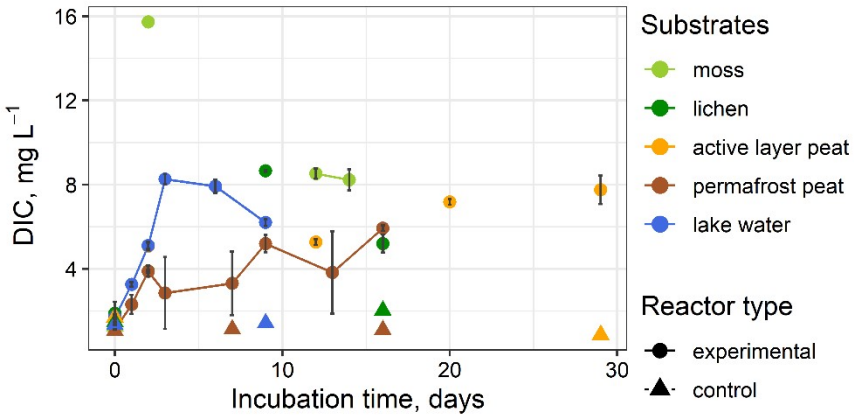

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20 ***Fig. S 3:*** *Dissolved inorganic (DIC) carbon concentrations over the experiments. The absence*
21 *of data indicates a non-detectable amount of DIC (i.e. < 1mg.L-1).*

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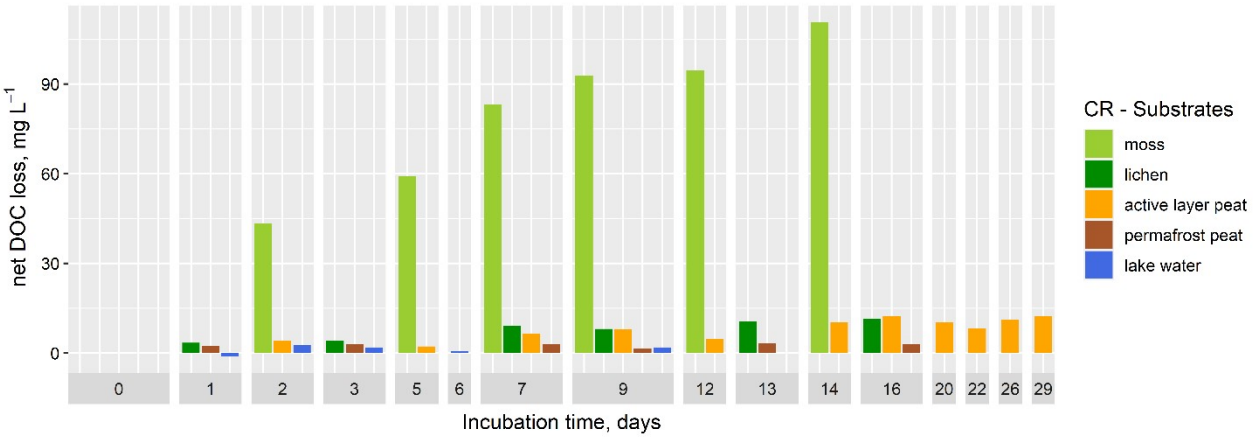

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25 ***Fig. S 4:*** *Net DOC loss for all CR during the incubation relative to DOC at day 0 of incubation.*