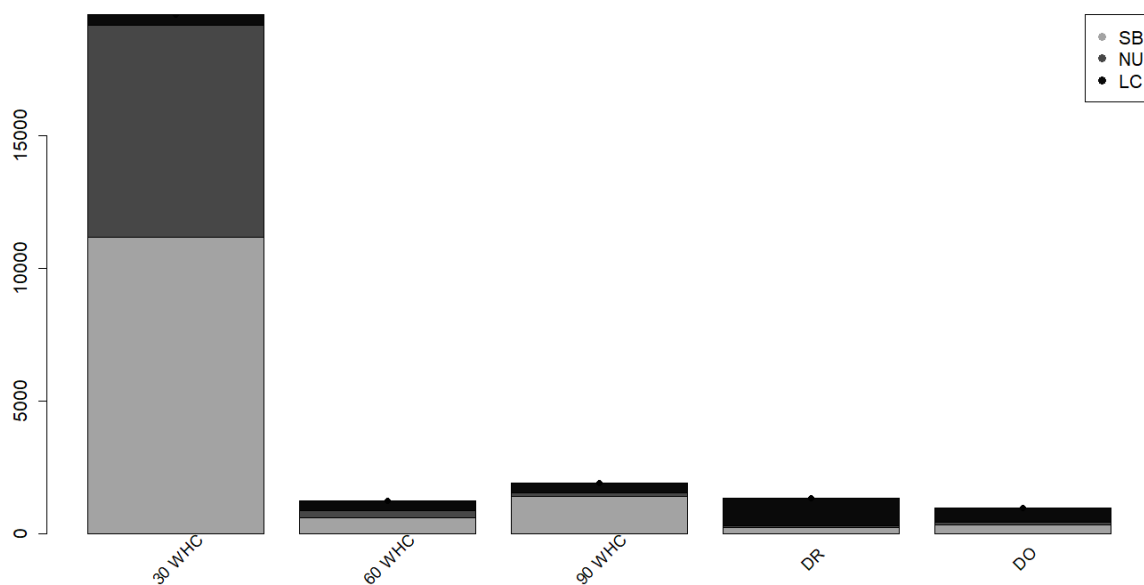
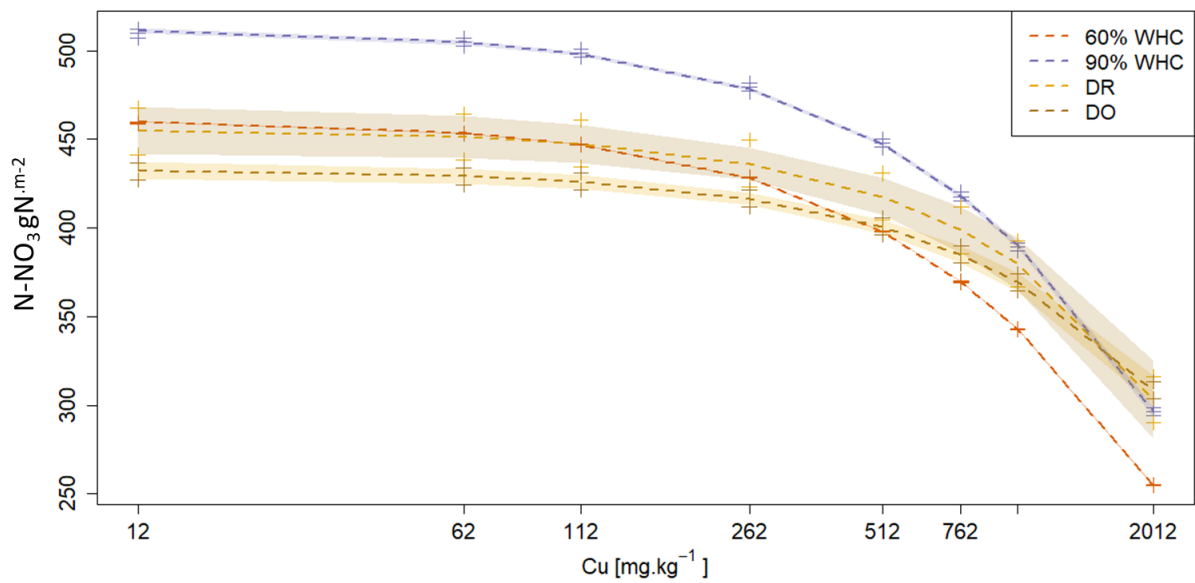
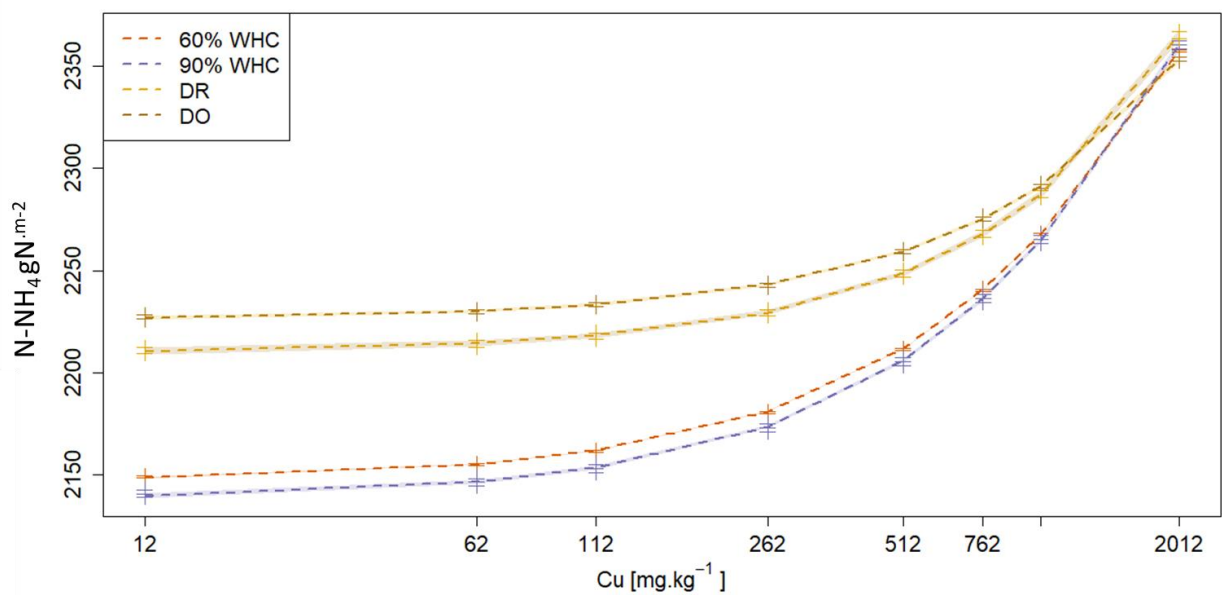
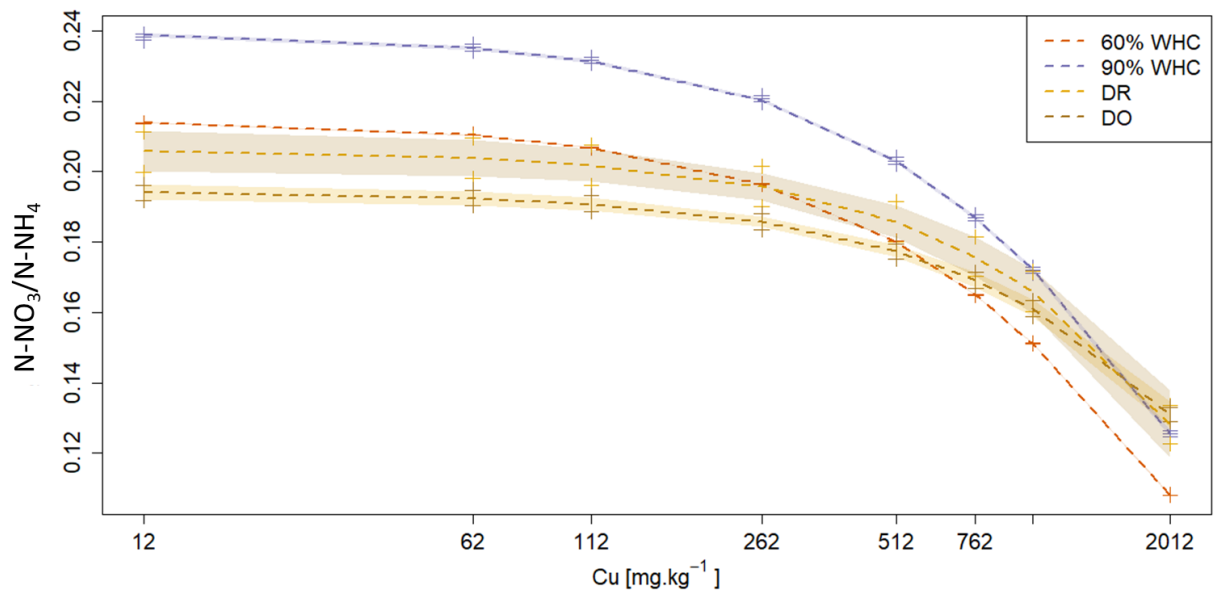
Supplementary Table 1(a) Adjusted rsquared and AIC (Awaike Criteria information) values for linear, quadratic and cubic regression of PNA against added Cu during incubation for the various moisture condition. 30, 60 and 90 are for 30,60 and 90% WHC, DR for dry rewet and DO for dry only

Linear		Quadratic		Cubic		mositure
Adj.R2	AIC	Adj.R2	AIC	Adj.R2	AIC	
0.9206	-71.4824	**0.9655**	**-90.6062**	0.9645	-89.0669	30
0.9271	-72.9706	**0.9476**	**-79.9895**	0.9452	-78.0966	60
0.9348	-80.4546	0.9339	-79.2689	**0.9409**	**-81.1044**	90
0.9303	**-101.5814**	0.9276	-99.7848	0.9253	-98.1974	DR
0.9238	-89.7099	0.9202	-87.7364	**0.9514**	**-98.8169**	DO

Suppl. Table 1(b): p.value of ANOVA between models providing the lowest AIC (table 1a. in bold) for each moisture condition. 30, 60 and 90 are for 30, 60 and 90% WHC, DR for dry rewet and DO for dry only. For DO incubation we compare quadratic to cubic and quadratic to linear because in all other cases quadratic model were selected.

moisture condition	ANOVA	
	Compared models	p.value
30	Quadratique |cubic	0.541
60	Quadratique |cubic	0.768
90	Quadratique |cubic	0.077
DR	Linear|quadratic	0.6767
DO	Cubic|quadratic *	0.001

Supplementary table 2: Fitted function for PNA evolution against soil Cu contamination. Results are given for the equations in the form of PNA $=c+bCu+aCu^2$ with the estimated values of a. b. c and their associated standard errors for all moisture conditions as well as adjusted r squared. The "60_90" condition represents the single model fitted both conditions further used in the DNDC chosen model.

Moisture condition	c	Std_error_c	b	Std_error_b	a	Std_error_a	Adj_r2
30	0.777	1.14E-02	-4.49E-04	3.53E-05	9.49E-08	1.74E-08	0.97
60	0.811	1.42E-02	-4.00E-04	4.40E-05	6.73E-08	2.17E-08	0.95
90	0.779	1.44E-02	-2.82E-04	4.47E-05	1.88E-08	2.21E-08	0.93
	0.795	1.21E-02	-3.41E-04	3.21E-05	4.30E-08	1.59E-08	
		Intercept shift for 90% WHC compared to 60% WHC	Std Error for intercept shift for 90% WHC compared to 60% WHC		Pv of intercept shift for 90% WHC compared to 60%WHC		
60_90		1.29 E-03		1.23 E-2		0.99	0.94
DR	0.550	9.41E-03	-1.64E-04	2.91E-05	6.09E-09	1.44E-08	0.93
DO	0.623	1.21E-02	-1.92E-04	3.75E-05	2.82E-09	1.85E-08	0.92

Supplementary Fig. 1: Mean Standard deviation decomposition in standard bias (SB). Non-Unity slope (NU) and Lack of Correlation (LC) components for the comparison of soils $N-NO_3$ modelled and measured. Results are shown for the different moisture incubations conditions (30, 60 and 90% WHC, DR for dry rewet, DO for dry only)

Supplementary Fig. 2: Predicted soil N-NO$_3$ stocks (gN.m^{-2}) modelled after 3 days in the 4 tested soil moisture conditions. Purple is for 90% WHC, red for 60% WHC, brown for dry-rewetting (DR) and yellow for dry only (DO). Stocks were modelled for 12, 62, 112, 262, 512, 762, 1012 and 2012 mg Cu.kg soil $^{-1}$ as represented by cross and quadratic fit was used for representation.

Supplementary Fig. 3.: Soil N-NH4 stocks ($gN.m^{-2}$) modelled after 3 days in the 4 tested soil moisture conditions. Purple is for 90% WHC, red for 60% WHC, yellow for dry-rewetting (DR) and brown for dry only (DO). Stocks were modelled for 12, 62, 112, 262, 512, 762, 1012 and 2012 mg Cu.kg soil $^{-1}$ as represented by cross and quadratic fits were used for representation.

Supplementary Fig 4: N-NO$_3$/N-NH$_4$ soils concentration modeled after 3 days for the different moisture condition. Red is for 60 % WHC, purple is for 90% WHC, yellow for the dry-rewetting (DR) and brown for dry only (DO). Red, yellow and brown curves are superposed. Soils stocks were modelled for 12, 62, 112, 262, 512, 762, 1012 and 2012 mg Cu.kg soil $^{-1}$ as represented by cross. Quadratic fits were used for representation.