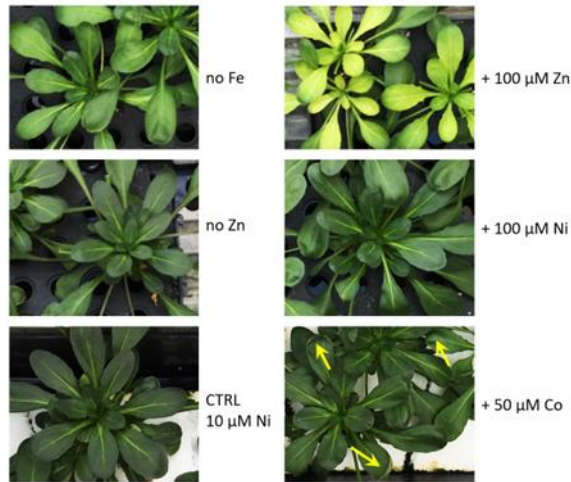


Supplementary information

A



B

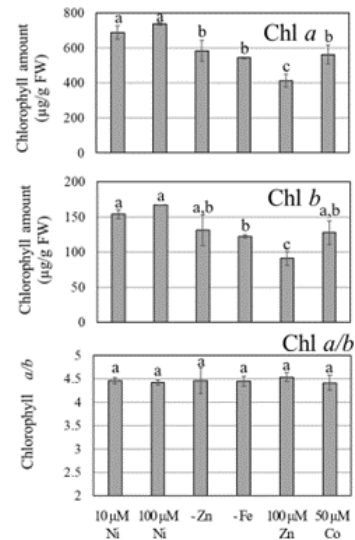


Figure S1. (A) Close-up photograph of the phenotype for plants treated as indicated on the right side of each panel. Wilting and rolling of leaf margins due to excess Co is marked by yellow arrows. (B) Chlorophyll analysis of grounded aerial tissues of plants treated as indicated. Values reported are the means \pm SD of three technical replicates of each biological replicate. Chlorophylls were extracted in buffered aqueous acetone is 80% aqueous acetone containing 2.5 mM sodium phosphate buffer pH 7.8 to minimize conversion of chlorophylls to pheophytins and chl *a* and chl *b* concentrations were spectrophotometrically as described in [21].

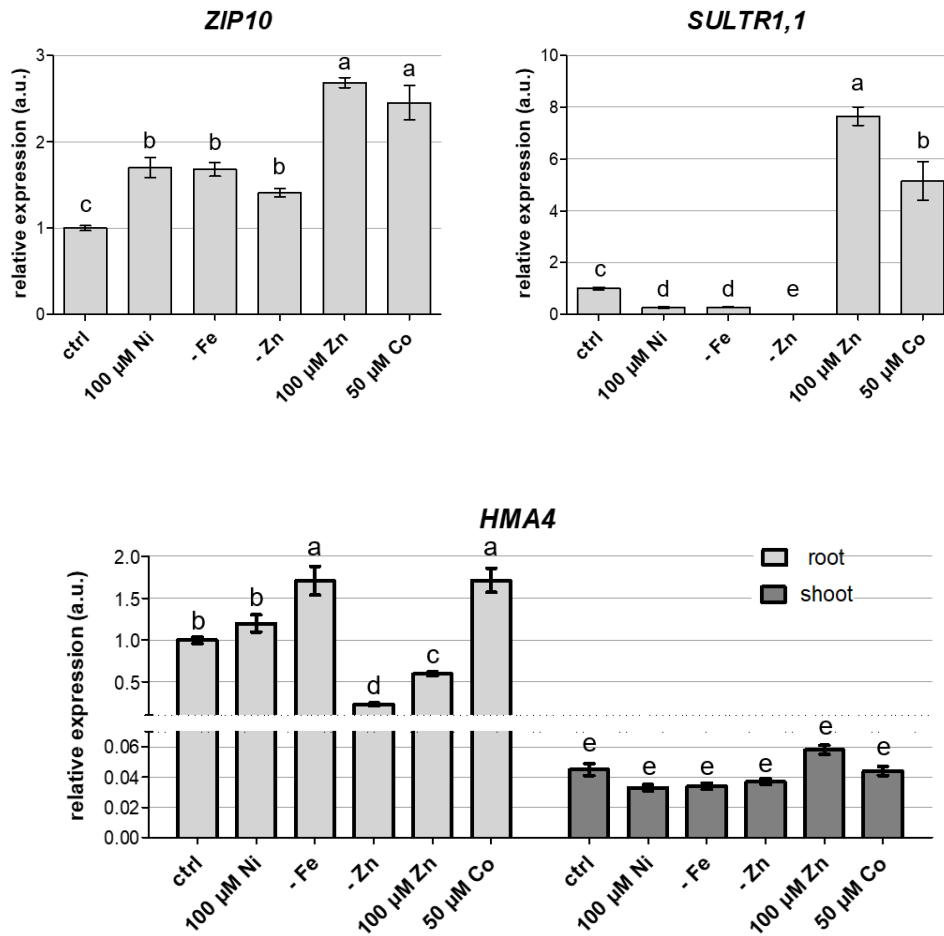


Figure S2. Real Time RT-PCR analysis of *ZIP10* and *SULTR1* expression in roots and *HMA4* in roots and shoots of *N. caerulescens* MP treated as indicated. Values are relative to the expression level of the gene in plants treated with 10 μM Ni, set as 1. Different letters above the histograms indicate statistical significance, evaluated by on-way ANOVA followed by a *post hoc* Tukey's test ($p < 0.05$).

Table S1. Pearson correlation coefficients for metal concentrations in roots, as compared to metal concentration in the growth substrate. Statistically significant coefficients are in bold and marked with asterisks. P-values (in italics) are reported under the coefficient.

		Metal in roots					
Metal in the growth medium		Mn	Fe	Ni	Cu	Zn	Co
	Ni	0.399 <i>0.199</i>	0.337 <i>0.284</i>	0.995 *** <i>< 0.001</i>	-0.092 <i>0.776</i>	-0.191 <i>0.551</i>	-0.199 <i>0.536</i>
	Fe	0.482 <i>0.112</i>	0.771 ** <i>0.003</i>	0.216 <i>0.501</i>	0.412 <i>0.183</i>	0.207 <i>0.518</i>	0.197 <i>0.540</i>
	Zn	-0.418 <i>0.177</i>	0.504 <i>0.095</i>	-0.187 <i>0.561</i>	-0.121 <i>0.708</i>	1.000 *** <i>< 0.001</i>	-0.195 <i>0.543</i>
	Co	0.348 <i>0.267</i>	0.359 <i>0.252</i>	-0.192 <i>0.550</i>	0.204 <i>0.524</i>	-0.205 <i>0.523</i>	0.993 *** <i>< 0.001</i>

Table S2. Pearson correlation coefficients for metal concentrations in shoots, as compared to metal concentration in the growth substrate. Statistically significant coefficients are in bold and marked with asterisks. P-values (in italics) are reported under the coefficient.

		Metal in shoots					
		Mn	Fe	Ni	Cu	Zn	Co
Metal in the growth medium	Ni	-0.275	-0.202	0.982 ***	-0.305	-0.230	-0.200
		<i>0.387</i>	<i>0.528</i>	<i>< 0.001</i>	<i>0.336</i>	<i>0.472</i>	<i>0.533</i>
	Fe	-0.376	0.303	0.158	-0.687 *	0.185	0.200
		<i>0.229</i>	<i>0.338</i>	<i>0.624</i>	<i>0.014</i>	<i>0.565</i>	<i>0.533</i>
	Zn	-0.424	-0.472	-0.262	0.350	0.997 ***	-0.195
		<i>0.170</i>	<i>0.121</i>	<i>0.411</i>	<i>0.265</i>	<i>< 0.001</i>	<i>0.544</i>
	Co	-0.129	-0.136	-0.189	-0.492	-0.199	1.000 ***
		<i>0.689</i>	<i>0.674</i>	<i>0.557</i>	<i>0.105</i>	<i>0.535</i>	<i>< 0.001</i>

Table S3. Pearson correlation coefficients for metal concentrations in shoots and roots. Statistically significant coefficients are in bold and marked with asterisks. P-values (in italics) are reported under the coefficient.

		Metal in shoots					
		Mn	Fe	Ni	Cu	Zn	Co
Metal in shoot	Mn	1					
	Fe	0.667 <i>0.147</i>	1				
	Ni	-0.221 <i>0.673</i>	-0.140 <i>0.791</i>	1			
	Cu	0.166 <i>0.754</i>	-0.387 <i>0.449</i>	-0.350 <i>0.497</i>	1		
	Zn	-0.438 <i>0.385</i>	-0.430 <i>0.395</i>	-0.294 <i>0.571</i>	0.399 <i>0.433</i>	1	
	Co	-0.152 <i>-0.152</i>	-0.136 <i>0.797</i>	-0.191 <i>0.717</i>	-0.549 <i>0.260</i>	-0.199 <i>0.705</i>	1
		Metal in roots					
		Mn	Fe	Ni	Cu	Zn	Co
Metal in root	Mn	1					
	Fe	0.245 <i>0.640</i>	1				
	Ni	0.409 <i>0.421</i>	0.352 <i>0.493</i>	1			
	Cu	-0.193 <i>0.714</i>	0.308 <i>0.552</i>	-0.106 <i>0.842</i>	1		
	Zn	-0.413 <i>0.415</i>	0.507 <i>0.304</i>	-0.184 <i>0.727</i>	-0.139 <i>0.793</i>	1	
	Co	0.347 <i>0.501</i>	0.357 <i>0.487</i>	-0.193 <i>0.714</i>	0.246 <i>0.639</i>	-0.206 <i>0.695</i>	1
		Metal in roots					
		Mn	Fe	Ni	Cu	Zn	Co
Metal in shoot	Mn	0.292 <i>0.575</i>	-0.799 <i>0.056</i>	-0.329 <i>0.524</i>	-0.519 <i>0.292</i>	-0.497 <i>0.315</i>	-0.152 <i>0.774</i>
	Fe	0.521 <i>0.289</i>	-0.346 <i>0.502</i>	-0.200 <i>0.704</i>	0.070 <i>0.896</i>	-0.462 <i>0.356</i>	-0.137 <i>0.796</i>
	Ni	0.462 <i>0.357</i>	0.269 <i>0.607</i>	0.993 *** <i>< 0.001</i>	-0.174 <i>0.742</i>	-0.262 <i>0.617</i>	-0.191 <i>0.717</i>
	Cu	-0.791 <i>0.061</i>	-0.531 <i>0.278</i>	-0.352 <i>0.494</i>	-0.426 <i>0.399</i>	0.384 <i>0.453</i>	-0.548 <i>0.261</i>
	Zn	-0.394 <i>0.440</i>	0.473 <i>0.343</i>	-0.222 <i>0.672</i>	-0.187 <i>0.723</i>	0.997 *** <i>< 0.001</i>	-0.201 <i>0.703</i>
	Co	0.348 <i>0.498</i>	0.359 <i>0.484</i>	-0.193 <i>0.714</i>	0.245 <i>0.640</i>	-0.205 <i>0.697</i>	1.000 *** <i>< 0.001</i>