Supplementary Material

Table S1 Basic properties of tested paddy soil

Physicochemical properties	Tested soil
pH	4.72
CEC (cmol kg^{-1})	11.7
OM (g kg^{-1})	42.3
Sand (%)	15.2
Silt (%)	68.5
Clay (%)	16.3
Total K (g kg^{-1})	17.2
Total P (g kg^{-1})	1.02
Total N (g kg^{-1})	2.64
Total Fe (g kg^{-1})	16.8
Total Mn (mg kg^{-1})	300
Total Cd (mg kg^{-1})	1.09
Available Cd (mg kg^{-1})[a]	0.36

[a] available Cd concentration in soil extracted with 0.01 mol/L $CaCl_2$

Table S2 Correlations among concentrations of Fe, Mn, and Cd in the Fe plaque at different growth stages of rice in the field experiment

		Tillering stage			Heading stage			Grouting stage			Maturity stage		
		Fe	Mn	Cd	Fe	Mn	Cd	Fe	Mn	Cd	Fe	Mn	Cd
XWX	Fe	1			1			1			1		
	Mn	0.686*	1		0.662*	1		0.798*	1		0.039	1	
	Cd	0.888*	0.521	1	0.865**	0.701*	1	0.443	0.105	1	0.077	0.636*	1
TYHZ	Fe	1			1			1			1		
	Mn	0.911**	1		0.858**	1		0.518	1		0.490	1	
	Cd	0.678*	0.563	1	0.660*	0.567	1	0.524	0.410	1	0.813*	0.697*	1

* 0.05 significance level; ** 0.01 significance level.

Table S3 Cd uptake percentages (%) at different growth stages of XWX rice plants in the field experiment

XWX	Growth stages	Iron plaque	Root	Straw	Panicle[a]	underground part	Aerial part
MT	Tillering	317	98.5	14.3	-	202	12.2
	Heading	-275	59.6	30.0	7.79	-99.2	27.9
	Grouting	27.7	-56.3	6.63	22.6	-16.3	9.31
	Maturity	30.7	-1.86	49.1	69.6	13.7	51.2
ST	Tillering	175	93.5	13.4	-	137	12.2
	Heading	-122	88.0	29.7	8.47	-24.4	27.8
	Grouting	4.66	-87.8	1.47	29.7	-38.2	4.05
	Maturity	42.3	6.33	55.4	61.9	25.6	56.0
DS	Tillering	152	106	15.5	-	131	14.4
	Heading	-90.0	62.5	38.2	11.0	-18.7	36.3
	Grouting	-11.7	-92.1	16.0	22.6	-49.3	16.5
	Maturity	49.5	23.7	30.3	66.4	37.4	32.8

[a] Panicle represent husk at heading stage, grain (husk and rice milk) at grouting stage and husk plus brown rice at maturity stage in the calculation process. Negative values represent the amount of Cd either released or transported that exceeded what was absorbed by rice plant tissues.

Fig. 1 Photograph of washed TYHZ rice roots collected from the field.

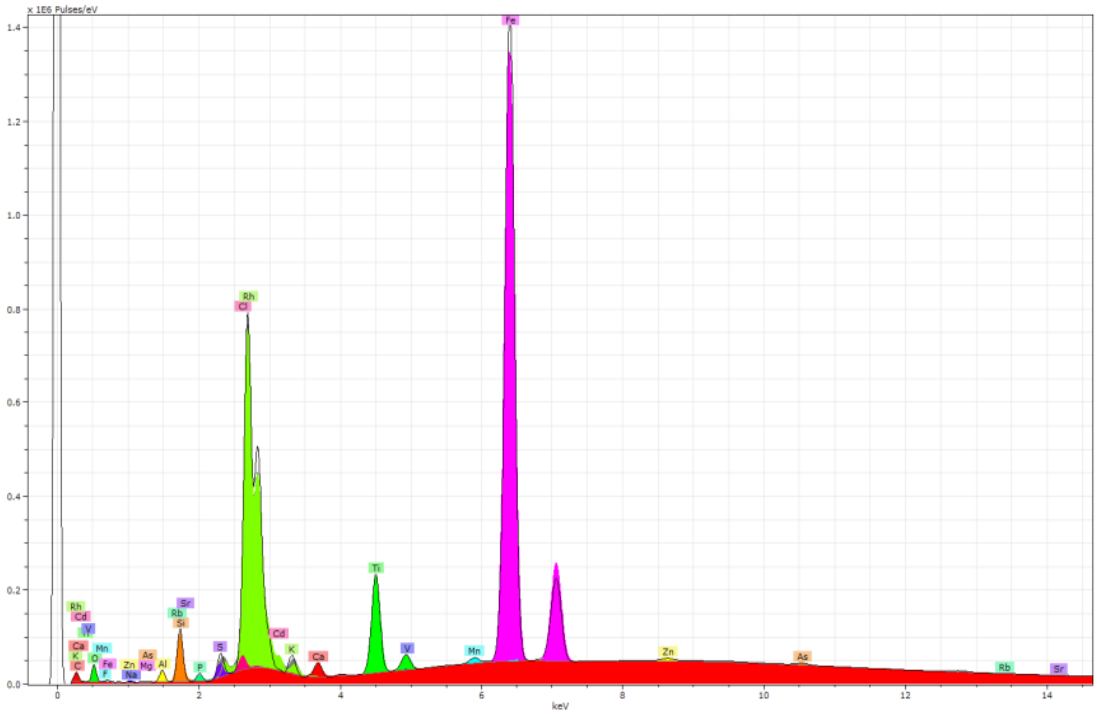
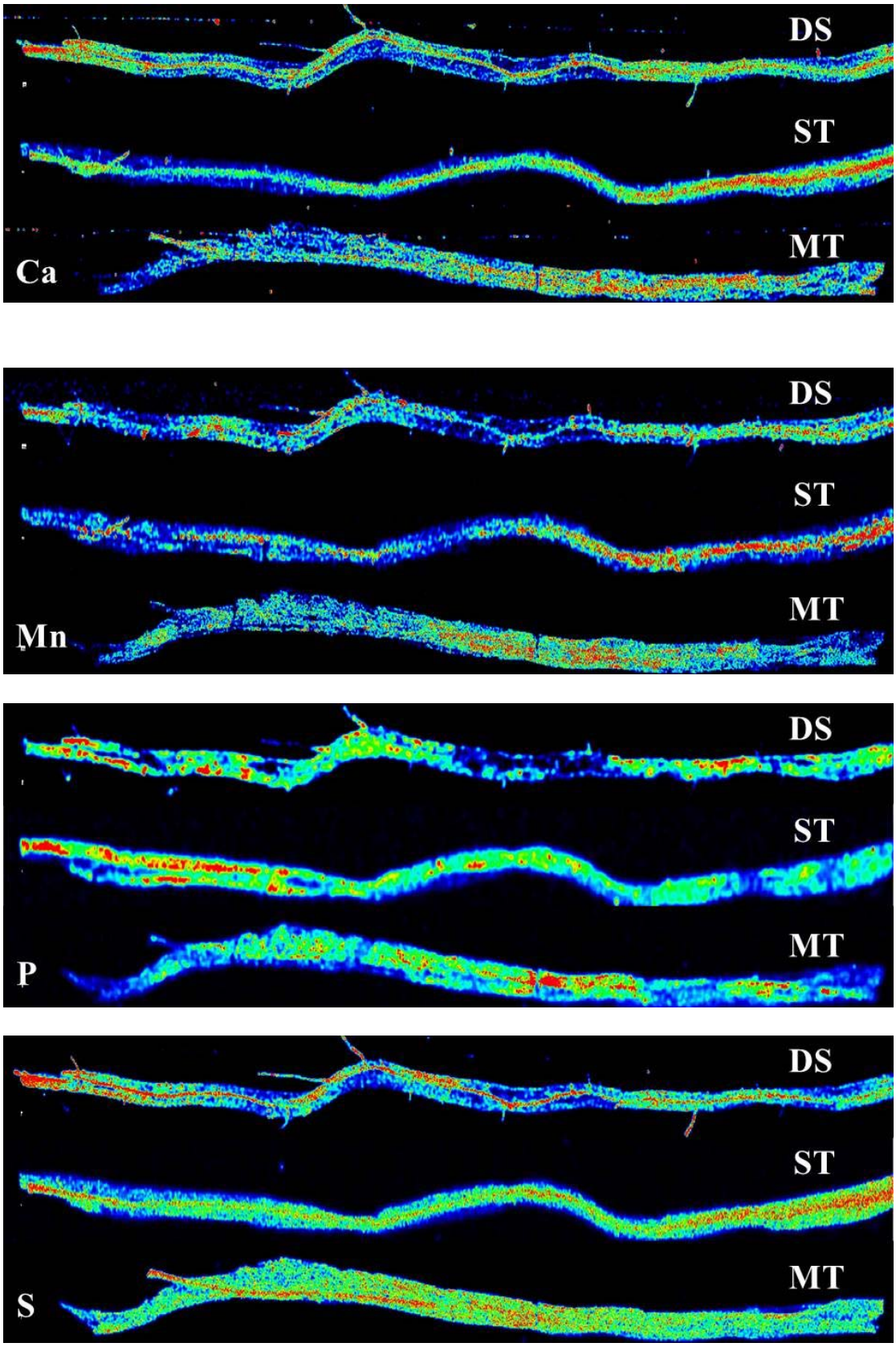


Fig. S2 Spectral data of each element of rice roots by micro-X ray fluorescence.


DS
ST
MT
Ca
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DS
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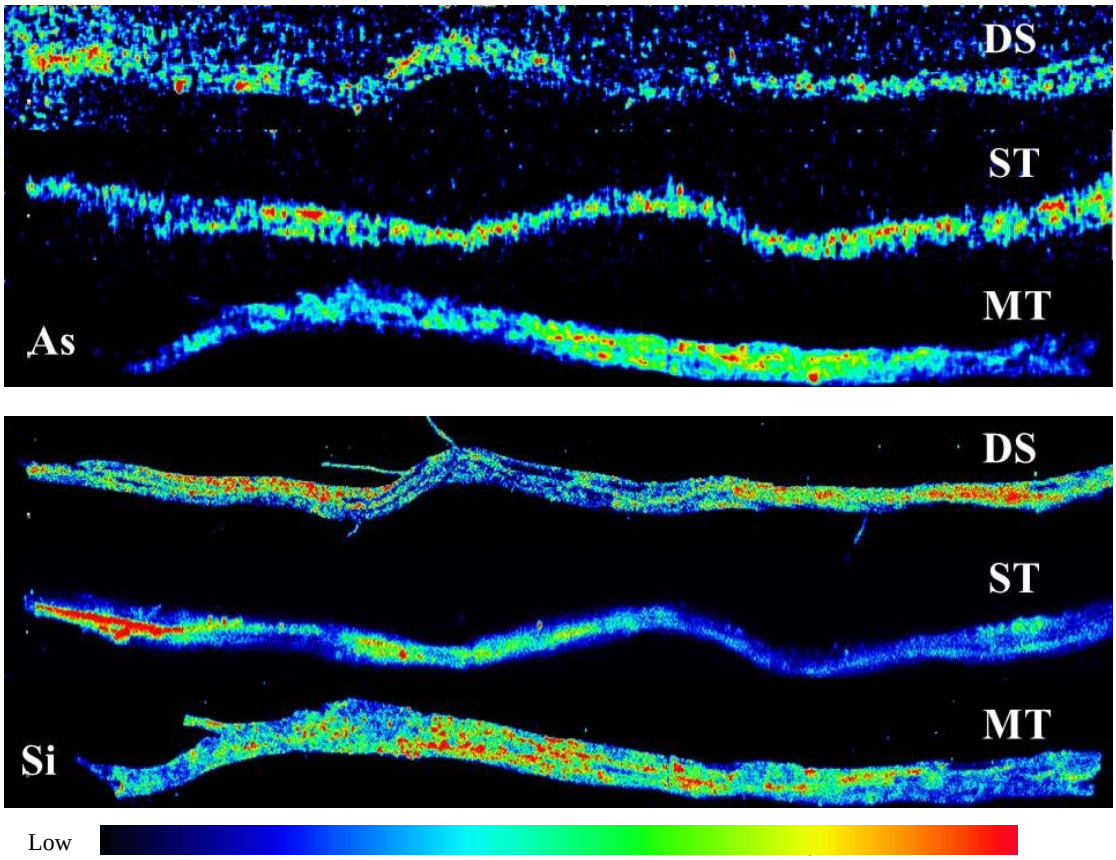

Fig. S3 Micro-XRF mapping of elements in the root surface.