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SUPPLEMENTARY MATERIALS

The effect of organic-magnesium fertilizer on the yield and the content of minerals in radish against the background of a double cropping sequence

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Table S1

Correlation matrix of nutrient concentration in radish roots, total dataset, n=48

Characteristics	DM	N	P	K	Na	Ca	Mg	Cu	Zn	Mn	Fe	Pb	Cd
Yield_R	0.72***	0.75***	0.58***	0.89***	0.64***	0.15	0.79***	-0.64***	0.13	0.31*	-0.67***	-0.35*	0.83***
DM	1.00	0.95***	0.68***	0.90***	0.79***	0.39**	0.92***	-0.51***	0.28	0.48**	-0.47**	-0.31*	0.89***
N		1.00	0.67***	**0.86****	0.75***	0.35*	0.88***	-0.54***	0.23	0.40**	-0.48**	-0.34*	0.87***
P			1.00	0.70***	0.67***	0.40**	0.67***	-0.33*	0.23	0.45**	-0.36*	-0.15	0.66***
K				1.00	0.82***	0.22	0.91***	-0.58***	0.24	0.47**	-0.61***	-0.30*	0.88***
Na					1.00	0.33*	0.80***	-0.38**	0.31*	0.46**	-0.43**	-0.15	0.68***
Ca						1.00	0.47**	0.17	0.37*	0.19	0.30*	0.01	0.26
Mg							1.00	-0.43**	0.34*	0.45**	-0.40**	-0.25	0.81***
Cu								1.00	0.29*	-0.03	0.85***	0.48**	-0.68***
Zn									1.00	0.40**	0.18	0.45**	0.15
Mn										1.00	-0.04	0.16	0.42**
Fe											1.00	0.33*	-0.62***
Pb												1.00	-0.34*

***, **, * indicate significant differences between nutrient traits at p<0.001, p<0.01, and p<0.05, respectively.

Table S2

Correlation matrix od nutrient content in radish roots — main crop, n=24

Characteristics	DM	N	P	K	Na	Ca	Mg	Cu	Zn	Mn	Fe	Pb	Cd
Yield_R	-0.22	-0.16	0.16	0.57**	0.06	-0.04	0.35	-0.04	-0.01	0.19	-0.11	0.20	0.25
DM	1.00	0.66***	0.23	0.39	0.40	0.49*	0.66***	0.62**	0.77***	0.61**	0.58**	0.32	0.40
N		1.00	0.14	0.08	0.24	0.35	0.478	0.49*	0.52**	0.40	0.56**	0.02	0.28
P			1.00	0.35	0.36	0.34	0.29	0.20	0.29	0.28	0.05	0.16	0.27
K				1.00	0.53**	0.10	0.70***	0.30	0.58**	0.57**	0.02	0.53**	0.19
Na					1.00	0.24	0.50*	0.25	0.32	0.33	-0.01	0.23	-0.10
Ca						1.00	0.57**	0.51*	0.27	0.10	0.69***	-0.24	0.37
Mg							1.00	0.68***	0.69***	0.48*	0.57**	0.18	0.19
Cu								1.00	0.72***	0.32	0.75****	-0.07	-0.11
Zn									1.00	0.73***	0.40	0.40	0.15
Mn										1.00	0.03	0.66***	0.41*
Fe											1.00	-0.44*	0.10
Pb												1.00	0.28

***, **, * indicate significant differences between nutrient traits at p<0.001, p<0.01, and p<0.05, respectively.

Table S3

Correlation matrix od nutrient content in radish roots — residual crop, n=24

Characteristics	DM	N	P	K	Na	Ca	Mg	Cu	Zn	Mn	Fe	Pb	Cd
Yield_R	-0.11	0.04	-0.11	0.24	0.09	0.29	0.02	-0.15	0.44*	-0.14	-0.37	-0.03	0.11
DM	1.00	0.88***	0.61**	0.60**	0.57**	0.78***	0.82***	0.41*	0.33	0.25	0.72***	0.31	0.16
N		1.00	0.65**	0.59**	0.47*	0.77***	0.73***	0.37	0.35	0.12	0.56**	0.33	0.15
P			1.00	0.46*	0.48*	0.55**	0.46*	0.40	0.25	0.49*	0.42*	0.36	0.23
K				1.00	0.74***	0.58**	0.51*	0.60**	0.48*	0.23	0.51*	0.26	0.30
Na					1.00	0.54**	0.55**	0.53**	0.58**	0.41*	0.57**	0.50*	0.52**
Ca						1.00	0.78***	0.32	0.55**	0.23	0.48*	0.45*	0.03
Mg							1.00	0.30	0.45*	0.08	0.53**	0.47*	0.08
Cu								1.00	0.32	0.33	0.62**	0.41*	0.09
Zn									1.00	0.11	0.25	0.61**	0.40
Mn										1.00	0.57**	0.18	0.24
Fe											1.00	0.30	0.13
Pb												1.00	0.26

***, **, * indicate significant differences between nutrient traits at p<0.001, p<0.01, and p<0.05, respectively.

Table S4

Correlation matrix of nutrient concentration in radish leaves, total dataset, n=48

Characteristics	Yield_L	DM	N	P	K	Na	Ca	Mg	Cu	Zn	Mn	Fe	Pb	Cd
Yield_R	0.86***	-0.01	0.21	-0.04	0.37**	0.47**	-0.41**	-0.53***	-0.59***	-0.30*	-0.72***	-0.38**	-0.62***	0.75***
Yield_L	1.00	-0.01	0.20	-0.12	0.22	0.37*	-0.42**	-0.49***	-0.48**	-0.19	-0.55***	-0.20	-0.48**	0.50***
DM		1.00	0.88***	0.71***	0.62***	0.66***	0.66***	0.53***	0.55***	0.63***	0.43**	0.69***	0.43**	0.07
N			1.00	0.68***	0.71***	0.82***	0.56***	0.44**	0.43**	0.55***	0.29[8]	0.53***	0.33*	0.18
P				1.00	0.54***	0.46**	0.56***	0.46**	0.42**	0.37*	0.31*	0.39**	0.30*	0.12
K					1.00	0.82***	0.54***	0.41**	0.30*	0.35*	0.05	0.25	0.17	0.29*
Na						1.00	0.34*	0.30*	0.25	0.38**	0.01	0.22	0.11	0.36*
Ca							1.00	0.88***	0.81***	0.61***	0.76***	0.69***	0.74***	-0.41**
Mg								1.00	0.94***	0.68***	0.83***	0.57***	0.89***	-0.58***
Cu									1.00	0.78***	0.90***	0.65***	0.92***	-0.63***
Zn										1.00	0.68***	0.59***	0.75***	-0.29*
Mn											1.00	0.76***	0.89***	-0.72***
Fe												1.00	0.59***	-0.39**
Pb													1.00	-0.67***

***, **, * indicate significant differences between nutrient traits at p<0.001, p<0.01, and p<0.05, respectively.

Table S5

Correlation matrix od nutrient content in radish leaves — main crop, n=24

Characteristics	Yield_L	DM	N	P	K	Na	Ca	Mg	Cu	Zn	Mn	Fe	Pb	Cd
Yield_R	0.86***	0.18	0.44*	0.12	0.50**	0.55**	0.20	0.45*	0.40	0.49*	0.50*	0.34	0.67***	0.10
Yield_L	1.00	0.14	0.44*	-0.02	0.45*	0.57**	0.06	0.37	0.55**	0.63**	0.45*	0.27	0.83***	-0.17
DM		1.00	0.84***	0.78***	0.73***	0.67***	0.77***	0.72***	0.70***	0.66***	0.81***	0.76***	0.24	0.48*
N			1.00	0.65**	0.74***	0.88***	0.62**	0.69***	0.67***	0.76***	0.88***	0.72***	0.46*	0.40
P				1.00	0.57**	0.51*	0.51*	0.51*	0.50*	0.44*	0.60**	0.42*	0.02	0.76***
K					1.00	0.76***	0.74***	0.79***	0.61**	0.58**	0.75***	0.82***	0.48*	0.38
Na						1.00	0.48*	0.69***	0.66***	0.65**	0.80***	0.66***	0.57**	0.30
Ca							1.00	0.74***	0.39	0.40	0.65**	0.81***	0.18	0.35
Mg								1.00	0.61**	0.56**	0.64***	0.69***	0.48*	0.31
Cu									1.00	0.85***	0.68***	0.52**	0.59**	0.09
Zn										1.00	0.75***	0.52**	0.73***	-0.01
Mn											1.00	0.78***	0.40	0.28
Fe												1.00	0.32	0.20
Pb													1.00	-0.16

***, **, * indicate significant differences between nutrient traits at p<0.001, p<0.01, and p<0.05, respectively.

Table S6

Correlation matrix od nutrient content in radish leaves — residual crop, n=24

Characteri-stics	Yield_L	DM	N	P	K	Na	Ca	Mg	Cu	Zn	Mn	Fe	Pb	Cd
Yield_R	0.44*	0.09	0.21	0.39	0.37	0.33	0.26	0.30	0.13	-0.23	-0.02	-0.1009	0.04	-0.09
Yield_L	1.00	0.01	-0.06	-0.01	-0.18	-0.16	-0.16	-0.18	-0.17	-0.28	0.03	0.21	-0.18	-0.25
DM		1.00	0.95***	0.74***	0.62**	0.76***	0.76***	0.71***	0.82***	0.66***	0.82***	0.76***	0.74***	0.05
N			1.00	0.77***	0.73***	0.83***	0.83***	0.79***	0.85***	0.58**	0.78***	0.63**	0.77***	0.08
P				1.00	0.69***	0.63**	0.72***	0.66***	0.58**	0.29	0.42*	0.37	0.52**	-0.21
K					1.00	0.84***	0.87***	0.88***	0.79***	0.45*	0.50*	0.26	0.61**	0.10
Na						1.00	0.79***	0.89***	0.90***	0.57**	0.62**	0.36	0.70***	0.14
Ca							1.00	0.89***	0.81***	0.52**	0.68***	0.45*	0.70***	0.09
Mg								1.00	0.91***	0.61**	0.56**	0.26	0.77***	0.17
Cu									1.00	0.79***	0.76***	0.46*	0.84***	0.23
Zn										1.00	0.75***	0.46*	0.78***	0.50*
Mn											1.00	0.81***	0.68***	0.22
Fe												1.00	0.36	0.03
Pb													1.00	0.36

***, **, * indicate significant differences between nutrient traits at p<0.001, p<0.01, and p<0.05, respectively.

Table S7

Leaf nutrients limiting the content of selected nutrients in radish roots

Nutrient In roots	Leaves – critical nutrients	Regression model developed
Main crop, n=24		
N	N	
P	ns	–
K	ns	–
Mg	ns	–
Residual crop, n=24		
N	N, Na, Mn	
P	N	
K	N	
Mg	ns	–
Total cropping sequence, n=48		
N	K, Mn	
P	K, Mg	
K	K, Mg	
Mg	P, Mn	

ns – non-significant statistical dependence