Supplementary materials

Effect of soil salinity and foliar application of jasmonic acid on mineral balance of carrot plants tolerant and sensitive to salt stress

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Table S1 Concentrations of N, P, K, Mg, Ca and S in the substrate after carrot cultivation (mmol·kg^{-1})

JA application	Variety	Treatment	N*	P	K	Mg	Ca	S
No JA	DLBA	Control	0.40±0.031a	0.24±0.026a	0.55±0.116a	3.2±0.11a	28.2±0.86a	2.4±0.18a
No JA	DLBA	NaCl	7.14±0.031a	0.26±0.026a	1.28±0.116b	2.9±0.11a	26.2±0.86a	2.2±0.18a
No JA	DH1	Control	2.39±0.031a	0.23±0.026a	0.46±0.116a	3.4±0.10a	29.4±0.86a	2.5±0.18a
No JA	DH1	NaCl	5.79±0.032a	0.31±0.026a	1.61±0.116b	3.0±0.11a	26.8±0.86a	2.2±0.18a
JA	DLBA	Control	1.32±0.046a	0.23±0.029a	0.54±0.129a	3.2±0.12a	28.1±0.96a	2.3±0.20a
JA	DLBA	NaCl	4.03±0.031a	0.32±0.026a	1.48±0.116b	3.0±0.10a	27.5±0.86a	2.6±0.18a
JA	DH1	Control	3.77±0.046a	0.22±0.029a	0.55±0.129a	3.2±0.12a	28.2±0.96a	2.2±0.20a
JA	DH1	NaCl	1.84±0.031a	0.35±0.026a	1.54±0.116b	2.9±0.11a	26.0±0.86a	2.3±0.18a

*Total concentration of ammonium and nitrate forms of mineral nitrogen in the substrate ($N\text{-}NH_4$ + $N\text{-}NO_3$). Means followed by the same letters are not significantly different at p = 0.05; ±s.e. – standard error; n=5. JA – jasmonic acid

Table S2 Concentrations of B, Mn, Zn, Cd and Ti in the substrate after carrot cultivation (mmol·kg^{-1})

JA application	Variety	Treatment	B	Mn	Zn	Cd	Ti
No JA	DLBA	Control	0.021±0.0034a	0.40±0.162a	0.033±0.002a	0.00023±0.00002a	0.0009±0.0001a
No JA	DLBA	NaCl	0.007±0.0034a	0.38±0.162a	0.037±0.002a	0.00025±0.00002a	0.0009±0.0001a
No JA	DH1	Control	0.011±0.0034a	0.40±0.162a	0.029±0.002a	0.00024±0.00002a	0.0006±0.0001a
No JA	DH1	NaCl	0.014±0.0034a	0.65±0.162a	0.042±0.002a	0.00026±0.00002a	0.0008±0.0001a
JA	DLBA	Control	0.013±0.0038a	0.39±0.181a	0.033±0.002a	0.00023±0.00002a	0.0009±0.0001a
JA	DLBA	NaCl	0.011±0.0034a	1.04±0.162a	0.033±0.002a	0.00027±0.00002a	0.0006±0.0001a
JA	DH1	Control	0.016±0.0038a	0.41±0.181a	0.031±0.002a	0.00029±0.00002a	0.0009±0.0001a
JA	DH1	NaCl	0.012±0.0034a	0.40±0.162a	0.102±0.002a	0.00022±0.00002a	0.0008±0.0001a

Means followed by the same letters are not significantly different at p = 0.05; ±s.e. – standard error; n=5. JA – jasmonic acid

Table S3 Concentrations of Cu, Fe, Mo, Al and Ba in carrot leaves and storage roots (mmol·kg^{-1} D.W.)

Organ	JA application	Variety	Treatment	Cu	Fe	Mo	Al	Ba
Leaves	No JA	DLBA	Control	0.033±0.0028a	3.767±0.4974a	0.0044±0.00081a	4.497±0.4327a	0.1445±0.0120b
Leaves	No JA	DLBA	NaCl	0.041±0.0028a	4.469±0.4974ab	0.0063±0.00081a	5.548±0.4327a	0.0809±0.0120a
Leaves	No JA	DH1	Control	0.026±0.0028a	3.820±0.4974a	0.0035±0.00081a	2.014±0.4327a	0.1166±0.0120b
Leaves	No JA	DH1	NaCl	0.032±0.0028a	4.452±0.4974ab	0.0054±0.00081a	2.427±0.4327a	0.0697±0.0120a
Leaves	JA	DLBA	Control	0.038±0.0031a	6.043±0.5561b	0.0047±0.00090a	3.255±0.4838a	0.1315±0.0134b
Leaves	JA	DLBA	NaCl	0.042±0.0028a	3.211±0.4974a	0.0056±0.00081a	3.989±0.4327a	0.0987±0.0120a
Leaves	JA	DH1	Control	0.032±0.0031a	3.512±0.5561a	0.0039±0.00090a	1.417±0.4838a	0.1009±0.0134b
Leaves	JA	DH1	NaCl	0.031±0.0028a	3.903±0.5561a	0.0050±0.00081a	1.427±0.4327a	0.0692±0.0120a
Roots	No JA	DLBA	Control	0.020±0.0029a	0.573±0.055a	0.0012±0.00029a	0.297±0.037a	0.0385±0.0031a
Roots	No JA	DLBA	NaCl	0.028±0.0029a	0.581±0.055a	0.0008±0.00029a	0.332±0.037a	0.0143±0.0031a
Roots	No JA	DH1	Control	0.023±0.0029a	0.515±0.055a	0.0015±0.00029a	0.211±0.037a	0.0582±0.0031a
Roots	No JA	DH1	NaCl	0.031±0.0029a	0.630±0.055a	0.0007±0.00029a	0.230±0.037a	0.0214±0.0031a
Roots	JA	DLBA	Control	0.020±0.0033a	0.518±0.061a	0.0004±0.00033a	0.181±0.042a	0.0393±0.0034a
Roots	JA	DLBA	NaCl	0.026±0.0029a	0.481±0.055a	0.0006±0.00029a	0.199±0.037a	0.0174±0.0031a
Roots	JA	DH1	Control	0.021±0.0033a	0.503±0.061a	0.0020±0.00033a	0.204±0.042a	0.0529±0.0034a
Roots	JA	DH1	NaCl	0.032±0.0029a	0.671±0.055a	0.0006±0.00029a	0.323±0.037a	0.0219±0.0031a

Means followed by the same letters are not significantly different at p = 0.05; ±s.e. – standard error; n=5. JA – jasmonic acid

Table S4 Concentrations of Cu, Fe, Mo, Al and Ba in the substrate after carrot cultivation (mmol·kg^{-1})

JA application	Variety	Treatment	Cu	Fe	Mo	Al	Ba
No JA	DLBA	Control	0.016±0.001a	9.04±0.867a	0.0025±0.0002a	2.18±0.074a	0.0118±0.0005a
No JA	DLBA	NaCl	0.014±0.001a	10.00±0.867a	0.0020±0.0002a	2.14±0.074a	0.0107±0.0005a
No JA	DH1	Control	0.012±0.001a	8.77±0.867a	0.0021±0.0002a	2.00±0.074a	0.0106±0.0005a
No JA	DH1	NaCl	0.017±0.001a	10.15±0.867a	0.0024±0.0002a	2.20±0.074a	0.0121±0.0005a
JA	DLBA	Control	0.016±0.001a	9.24±0.969a	0.0023±0.0002a	2.08±0.083a	0.0115±0.0005a
JA	DLBA	NaCl	0.013±0.001a	10.84±0.867a	0.0026±0.0002a	2.07±0.074a	0.0114±0.0005a
JA	DH1	Control	0.014±0.001a	12.60±0.969a	0.0021±0.0002a	2.07±0.083a	0.0122±0.0005a
JA	DH1	NaCl	0.011±0.001a	10.05±0.867a	0.0019±0.0002a	2.04±0.074a	0.0107±0.0005a

Means followed by the same letters are not significantly different at p = 0.05; ±s.e. – standard error; n=5. JA – jasmonic acid

Table S5 Concentrations of Sr, Co, Eu, La and Li in carrot leaves and storage roots (mmol·kg^{-1} D.W.)

Organ	JA application	Variety	Treatment	Sr	Co	Eu	La	Li
Leaves	No JA	DLBA	Control	0.475±0.0120a	0.0052±0.000811a	0.00324±0.000123b	0.0081±0.00027a	0.336±0.0272a
Leaves	No JA	DLBA	NaCl	0.437±0.0120a	0.0060±0.000811a	0.00274±0.000123a	0.0087±0.00027a	0.314±0.0272a
Leaves	No JA	DH1	Control	0.368±0.0120a	0.0023±0.000811a	0.00291±0.000123a	0.0074±0.00027a	0.360±0.0272a
Leaves	No JA	DH1	NaCl	0.379±0.0120a	0.0015±0.000811a	0.00276±0.000123a	0.0075±0.00027a	0.333±0.0272a
Leaves	JA	DLBA	Control	0.478±0.0134a	0.0048±0.000907a	0.00323±0.000137b	0.0080±0.00030a	0.323±0.0304a
Leaves	JA	DLBA	NaCl	0.453±0.0120a	0.0029±0.000811a	0.00248±0.000123a	0.0077±0.00027a	0.335±0.0272a
Leaves	JA	DH1	Control	0.344±0.0134a	0.0015±0.000907a	0.00278±0.000137a	0.0068±0.00030a	0.342±0.0304a
Leaves	JA	DH1	NaCl	0.389±0.0120a	0.0026±0.000811a	0.00261±0.000123a	0.0075±0.00027a	0.302±0.0273a
Roots	No JA	DLBA	Control	0.103±0.0031a	0.0011±0.00033a	0.00077±0.00008a	0.0016±0.00009a	0.006±0.0010a
Roots	No JA	DLBA	NaCl	0.083±0.0031a	0.0015±0.00033a	0.00029±0.00008a	0.0017±0.00009a	0.011±0.0010a
Roots	No JA	DH1	Control	0.109±0.0031a	0.0008±0.00033a	0.00083±0.00008a	0.0020±0.00009a	0.004±0.0010a
Roots	No JA	DH1	NaCl	0.099±0.0031a	0.0011±0.00033a	0.00049±0.00008a	0.0018±0.00009a	0.007±0.0010a
Roots	JA	DLBA	Control	0.105±0.0034a	0.0010±0.00037a	0.00081±0.00009a	0.0019±0.00010a	0.005±0.0011a
Roots	JA	DLBA	NaCl	0.090±0.0031a	0.0016±0.00033a	0.00029±0.00008a	0.0017±0.00009a	0.010±0.0010a
Roots	JA	DH1	Control	0.106±0.0034a	0.0009±0.00037a	0.00081±0.00009a	0.0020±0.00010a	0.004±0.0011a
Roots	JA	DH1	NaCl	0.098±0.0031a	0.0018±0.00033a	0.00044±0.00008a	0.0022±0.00009a	0.007±0.0010a

Means followed by the same letters are not significantly different at p = 0.05; ±s.e. – standard error; n=5. JA – jasmonic acid

Table S6 Concentrations of Sr, Co, Eu, La and Li in the substrate after carrot cultivation (mmol·kg^{-1})

JA application	Variety	Treatment	Sr	Co	Eu	La	Li
No JA	DLBA	Control	0.037±0.002a	0.0031±0.0001a	0.000066±0.000004a	0.00175±0.00007a	0.0084±0.00057a
No JA	DLBA	NaCl	0.030±0.002a	0.0028±0.0001a	0.000069±0.000004a	0.00178±0.00007a	0.0107±0.00057a
No JA	DH1	Control	0.030±0.002a	0.0030±0.0001a	0.000067±0.000004a	0.00167±0.00007a	0.0076±0.00057a
No JA	DH1	NaCl	0.036±0.002a	0.0028±0.0001a	0.000063±0.000004a	0.00166±0.00007a	0.0107±0.00057a
JA	DLBA	Control	0.033±0.003a	0.0029±0.0001a	0.000069±0.000005a	0.00174±0.00008a	0.0082±0.00064a
JA	DLBA	NaCl	0.034±0.002a	0.0027±0.0001a	0.000073±0.000004a	0.00185±0.00007a	0.0102±0.00057a
JA	DH1	Control	0.036±0.003a	0.0030±0.0001a	0.000084±0.000005a	0.00200±0.00008a	0.0079±0.00064a
JA	DH1	NaCl	0.029±0.002a	0.0027±0.0001a	0.000061±0.000004a	0.00158±0.00007a	0.0094±0.00057a

Means followed by the same letters are not significantly different at p = 0.05; ±s.e. – standard error; n=5. JA – jasmonic acid

Table S7 Concentrations of Lu, Sm, Th, Y and Yb in carrot leaves and storage roots (mmol·kg^{-1} D.W.)

Organ	JA application	Variety	Treatment	Lu	Sm	Th	Y	Yb
Leaves	No JA	DLBA	Control	0.00032±0.000027a	0.0042±0.00045a	0.069±0.0028a	0.00092±0.000092a	0.000128±0.000012a
Leaves	No JA	DLBA	NaCl	0.00028±0.000027a	0.0062±0.00045a	0.065±0.0028a	0.00100±0.000092a	0.000121±0.000012a
Leaves	No JA	DH1	Control	0.00021±0.000027a	0.0064±0.00045a	0.060±0.0028a	0.00060±0.000092a	0.000098±0.000012a
Leaves	No JA	DH1	NaCl	0.00024±0.000027a	0.0059±0.00045a	0.059±0.0028a	0.00055±0.000092a	0.000101±0.000012a
Leaves	JA	DLBA	Control	0.00027±0.000031a	0.0056±0.00050a	0.065±0.0031a	0.00072±0.000103a	0.000118±0.000013a
Leaves	JA	DLBA	NaCl	0.00027±0.000027a	0.0059±0.00045a	0.058±0.0028a	0.00093±0.000092a	0.000130±0.000012a
Leaves	JA	DH1	Control	0.00023±0.000031a	0.0061±0.00050a	0.059±0.0031a	0.00047±0.000103a	0.000068±0.000013a
Leaves	JA	DH1	NaCl	0.00029±0.000027a	0.0067±0.00045a	0.065±0.0028a	0.00047±0.000092a	0.000115±0.000012a
Roots	No JA	DLBA	Control	0.00011±0.000018a	0.0021±0.00016a	0.015±0.0013a	0.00017±0.00003a	0.000030±0.000006b
Roots	No JA	DLBA	NaCl	0.00010±0.000018a	0.0018±0.00016a	0.012±0.0013a	0.00015±0.00003a	0.000018±0.000006a
Roots	No JA	DH1	Control	0.00011±0.000018a	0.0024±0.00016a	0.018±0.0013a	0.00013±0.00003a	0.000038±0.000006b
Roots	No JA	DH1	NaCl	0.00009±0.000018a	0.0022±0.00016a	0.015±0.0013a	0.00012±0.00003a	0.000019±0.000006a
Roots	JA	DLBA	Control	0.00009±0.000020a	0.0023±0.00018a	0.016±0.0015a	0.00016±0.00004a	0.000038±0.000007b
Roots	JA	DLBA	NaCl	0.00011±0.000018a	0.0018±0.00016a	0.009±0.0013a	0.00015±0.00003a	0.000014±0.000006a
Roots	JA	DH1	Control	0.00012±0.000020a	0.0024±0.00018a	0.019±0.0015a	0.00014±0.00004a	0.000024±0.000007b
Roots	JA	DH1	NaCl	0.00013±0.000018a	0.0021±0.00016a	0.015±0.0013a	0.00017±0.00003a	0.000032±0.000006b

Means followed by the same letters are not significantly different at p = 0.05; ±s.e. – standard error; n=5. JA – jasmonic acid

Table S8 Concentrations of Lu, Sm, Th, Y and Yb in the substrate after carrot cultivation (mmol·kg^{-1})

JA application	Variety	Treatment	Lu	Sm	Th	Y	Yb
No JA	DLBA	Control	0.000039±0.000002a	0.00061±0.00003	0.0011±0.000067a	0.0027±0.00011a	0.000082±0.000004a
No JA	DLBA	NaCl	0.000040±0.000002a	0.00064±0.00003	0.0011±0.000067a	0.0028±0.00011a	0.000082±0.000004a
No JA	DH1	Control	0.000036±0.000002a	0.00058±0.00003	0.0010±0.000067a	0.0026±0.00011a	0.000078±0.000004a
No JA	DH1	NaCl	0.000041±0.000002a	0.00061±0.00003	0.0011±0.000067a	0.0027±0.00011a	0.000081±0.000004a
JA	DLBA	Control	0.000040±0.000002a	0.00061±0.00004	0.0010±0.000074a	0.0027±0.00012a	0.000080±0.000004a
JA	DLBA	NaCl	0.000041±0.000002a	0.00068±0.00003	0.0012±0.000067a	0.0030±0.00011a	0.000089±0.000004a
JA	DH1	Control	0.000047±0.000002a	0.00074±0.00004	0.0013±0.000074a	0.0034±0.00012a	0.000105±0.000004a
JA	DH1	NaCl	0.000040±0.000002a	0.00055±0.00003	0.0011±0.000067a	0.0026±0.00011a	0.000076±0.000004a

Means followed by the same letters are not significantly different at p = 0.05; ±s.e. – standard error; n=5. JA – jasmonic acid