

(A) Data set for aucubin and citric acid concentrations in *A. japonica* roots.

July 2017										
Detoxicant (mg/g FW)	1	2	3	4	5	6	7	8	9	10
Aucubin	19.2	30.2	19.8	23.2	24.8	21.7	26.4	22.0	22.7	18.4
Citric acid	1.2	0.9	0.9	0.3	0.7	0.4	0.9	0.7	0.6	1.2

January 2018										
Detoxicant (mg/g FW)	1	2	3	4	5	6	7	8	9	10
Aucubin	14.3	28.9	19.9	18.8	16.1	17.8	23.3	18.2	27.2	13.8
Citric acid	1.1	0.9	1.0	1.4	1.6	1.4	1.8	1.2	1.5	1.2

The numbers from 1 to 10 indicate the replications of *A. japonica*.

(B) Data set for Table 1: AM fungi and root endophytes infection rates.

July 2016

Replications	AM fungi (%)				Root endophytic fungi (%)	
	<i>Paris</i> type	<i>Arum</i> type	Vesicle	Hyphae	Microsclerotia	Hyphae
1	54.7	1.3	17.3	56.0	8.0	34.0
2	74.0	0.0	24.7	78.0	6.0	16.7
3	72.7	0.0	2.0	50.7	22.7	82.7
4	47.3	0.7	6.0	46.0	35.3	48.7
5	81.3	0.0	16.0	66.7	23.3	39.3
6	40.0	0.0	33.3	46.7	40.0	38.0
7	64.7	0.7	25.3	42.7	19.3	59.3
8	45.3	0.7	16.0	26.7	17.3	23.3
9	85.3	4.7	15.3	88.7	8.7	47.3
10	73.3	0.0	4.0	80.0	16.0	78.7

January 2107

Replications	Root endophytic fungi (%)				Root endophytic fungi (%)	
	<i>Paris</i> type	<i>Arum</i> type	Vesicle	Hyphae	Microsclerotia	Hyphae
1	56.0	1.3	10.0	49.3	10.7	48.7
2	71.3	0.0	22.7	66.7	18.0	43.3
3	59.3	0.0	4.7	53.3	28.7	81.3
4	72.0	0.0	22.7	77.3	16.0	30.0
5	68.0	0.0	16.0	76.7	28.0	66.0
6	71.3	0.0	8.0	74.0	33.3	79.3
7	69.3	0.0	7.3	66.7	25.3	58.7
8	81.3	0.0	13.3	90.7	19.3	60.7
9	87.3	0.0	9.3	45.3	15.3	66.0
10	46.7	0.0	2.0	45.3	8.7	26.7

The numbers from 1 to 10 indicate the replications of *A. japonica*.

(C) Data set for S1 Table: Properties of root-zone soil.

Properties	1	2	3	4	5	6	7	8	9	10
Total Cd (mg/kg)	3.0	3.1	3.6	3.3	3.4	2.5	3.4	3.3	3.3	2.8
Total Cu (mg/kg)	366.6	368.0	284.3	323.9	364.6	284.2	385.5	368.3	317.5	393.2
Total Mn (mg/kg)	586.1	952.2	2253.6	826.3	648.3	604.8	1015.2	875.5	724.3	547.3
Total Pb (mg/kg)	382.2	266.0	252.2	320.8	276.1	186.0	381.8	264.1	261.5	302.9
Total Zn (mg/kg)	100.9	107.8	131.8	140.4	116.3	93.2	215.6	116.7	118.8	88.0
Exchangeable Cd (mg/kg)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Exchangeable Cu (mg/kg)	4.0	5.9	1.0	1.2	2.1	2.3	2.1	2.3	2.3	5.0
Exchangeable Pb (mg/kg)	151.9	95.9	90.4	107.9	87.1	75.9	114.1	81.6	83.2	111.6
Exchangeable Zn (mg/kg)	18.2	5.5	16.7	16.2	10.7	10.4	14.8	5.3	20.7	8.6
pH (H ₂ O)	4.5	4.9	5.0	5.0	4.8	4.6	4.8	4.8	4.4	4.3

ND indicates that the concentration was below detection limit. The numbers from 1 to 10 indicate the replications of root-zone soil.

(D) Data set for S2 Table: Cd, Cu, Mn, Pb, and Zn concentrations in *A. japonica* collected in July 2016.

Current-year leaves						
Element (mg/kg DW)	3	4	5	8	9	10
Cd	ND	ND	ND	ND	ND	ND
Cu	9.4	12.8	10.4	10.3	7.4	9.4
Mn	478.4	344.7	837.2	352.9	755.9	556.8
Pb	ND	ND	ND	ND	ND	ND
Zn	41.4	28.7	30.9	20.7	29.2	30.3

1-year-old leaves						
Element (mg/kg DW)	3	4	5	8	9	10
Cd	ND	ND	ND	ND	ND	ND
Cu	4.7	7.8	7.5	17.9	6.3	5.0
Mn	1481.8	934.0	1385.0	544.7	2123.7	1447.8
Pb	ND	ND	ND	ND	ND	ND
Zn	35.1	28.8	34.2	22.6	25.7	47.1

Branches										
Element (mg/kg DW)	1	2	3	4	5	6	7	8	9	10
Cd	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cu	220.9	19.2	16.1	54.1	19.1	30.9	28.6	21.9	76.7	25.1
Mn	449.3	337.2	262.2	176.0	338.8	407.3	381.6	224.2	486.7	437.1
Pb	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zn	72.8	57.0	52.9	27.2	30.1	51.3	40.3	48.7	64.8	98.8

Roots										
Element (mg/kg DW)	1	2	3	4	5	6	7	8	9	10
Cd	36.1	23.2	6.8	33.3	51.9	24.1	27.5	21.1	42.4	29.3
Cu	53.8	53.5	59.9	62.6	91.1	56.9	104.1	113.2	78.1	69.7
Mn	251.0	240.1	162.7	206.1	182.1	124.7	255.7	167.1	322.9	133.9
Pb	228.6	202.4	16.5	129.2	500.0	190.5	341.2	127.7	182.2	284.8
Zn	722.3	577.2	453.6	1230.2	1101.9	586.9	630.5	799.3	908.3	349.2

ND indicates that the concentration was below detection limit. The numbers from 1 to 10 indicate the replications of *A. japonica*.

(E) Data set for S2 Table: Cd, Cu, Mn, Pb, and Zn concentrations in *A. japonica* collected in January 2017.

Current-year leaves

Element (mg/kg DW)	3	4	5	8	9	10
Cd	ND	ND	ND	ND	ND	ND
Cu	9.7	16.1	15.8	39.4	18.2	11.6
Mn	870.3	439.8	829.9	408.8	1616.8	873.3
Pb	ND	ND	ND	ND	ND	ND
Zn	21.8	20.0	14.3	38.1	21.9	30.1

1-year-old leaves

Element (mg/kg DW)	3	4	5	8	9	10
Cd	ND	ND	ND	ND	ND	ND
Cu	4.6	15.2	24.1	16.4	6.0	11.4
Mn	1355.2	635.3	1386.4	651.0	2827.8	1214.1
Pb	ND	ND	ND	ND	ND	ND
Zn	33.7	11.6	13.6	21.1	16.7	22.0

Branches

Element (mg/kg DW)	1	2	3	4	5	6	7	8	9	10
Cd	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cu	17.4	9.6	29.2	18.9	15.9	14.5	23.1	14.6	15.3	36.0
Mn	536.7	413.2	436.1	301.0	449.8	269.6	394.1	282.7	441.4	454.1
Pb	4.5	6.6	2.4	4.6	2.7	3.0	2.6	2.5	9.3	3.0
Zn	38.4	50.4	113.0	22.8	44.0	9.1	42.7	116.7	45.2	16.0

Roots

Element (mg/kg DW)	1	2	3	4	5	6	7	8	9	10
Cd	34.8	31.8	35.2	51.3	37.9	52.8	42.6	24.8	33.3	40.1
Cu	93.9	57.5	36.6	82.5	69.0	84.3	60.0	159.7	99.1	94.9
Mn	342.7	357.6	209.1	133.2	382.8	266.6	343.4	163.7	352.6	375.8
Pb	143.9	320.7	32.7	425.4	282.8	495.3	465.4	202.9	167.3	843.6
Zn	682.7	716.4	1074.1	1319.4	1114.2	972.5	897.9	680.5	849.6	836.7

ND indicates that the concentration was below detection limit. The numbers from 1 to 10 indicate the replications of *A. japonica*.

(F) Data set for S2 Table: Cd, Cu, Mn, Pb, and Zn concentrations in *A. japonica* collected in July 2017.

Current-year leaves

Element (mg/kg DW)	1	2	3	4	5	6	7	8	9	10
Cd	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cu	6.8	10.8	12.9	10.1	7.4	10.2	8.0	7.7	8.5	7.6
Mn	512.0	375.9	376.7	483.7	291.6	452.4	338.7	711.0	549.5	509.5
Pb	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zn	32.8	30.6	32.0	37.0	23.7	40.3	33.3	34.0	29.1	28.4

1-year-old leaves

Element (mg/kg DW)	1	2	3	4	5	6	7	8	9	10
Cd	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cu	6.0	7.0	8.8	8.1	9.3	8.1	6.2	8.5	6.5	8.6
Mn	1219.0	1416.8	985.9	1584.6	1268.2	883.5	992.8	2038.8	898.4	2133.3
Pb	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zn	28.7	24.9	30.1	39.0	30.3	27.1	37.1	35.1	35.1	40.3

Branches

Element (mg/kg DW)	1	2	3	4	5	6	7	8	9	10
Cd	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cu	42.0	19.8	56.7	33.3	26.6	33.6	47.8	14.6	17.5	58.4
Mn	211.3	322.1	200.9	471.4	242.7	316.8	322.0	226.1	324.1	223.8
Pb	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zn	44.2	29.3	46.4	90.9	44.4	41.5	56.4	22.2	44.3	37.4

Roots

Element (mg/kg DW)	1	2	3	4	5	6	7	8	9	10
Cd	27.0	25.1	24.2	38.2	14.3	11.5	20.4	55.8	16.4	22.3
Cu	52.7	99.3	53.7	165.4	96.3	153.6	86.8	151.9	81.3	65.1
Mn	250.1	185.9	196.0	87.4	72.4	68.4	400.7	266.9	237.8	97.1
Pb	312.7	221.0	147.9	863.0	48.2	112.5	221.8	186.4	27.0	311.6
Zn	931.1	796.5	701.6	738.2	338.9	364.1	835.4	1015.9	613.9	363.8

ND indicates that the concentration was below detection limit. The numbers from 1 to 10 indicate the replications of *A. japonica*.

(G) Data set for S2 Table: Cd, Cu, Mn, Pb, and Zn concentrations in *A. japonica* collected in January 2018.

Current-year leaves										
Element (mg/kg DW)	1	2	3	4	5	6	7	8	9	10
Cd	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cu	8.2	6.5	8.1	6.3	7.9	8.2	16.4	15.0	6.6	10.5
Mn	734.4	534.2	686.4	497.2	742.0	514.1	650.3	778.6	383.1	791.7
Pb	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zn	29.0	19.3	21.8	21.3	36.1	23.7	26.1	25.0	17.6	20.1

1-year-old leaves										
Element (mg/kg DW)	1	2	3	4	5	6	7	8	9	10
Cd	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cu	6.8	7.2	14.3	6.7	7.4	9.4	7.2	6.7	8.4	13.7
Mn	1225.3	767.2	927.0	791.6	1170.3	685.7	870.8	1191.4	690.0	1581.2
Pb	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zn	30.8	18.8	21.1	37.1	29.6	31.3	28.8	31.1	26.6	28.5

Branches										
Element (mg/kg DW)	1	2	3	4	5	6	7	8	9	10
Cd	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cu	18.2	16.0	15.8	17.6	23.5	14.0	29.9	19.6	19.4	17.5
Mn	237.7	168.6	235.6	251.2	299.8	216.8	210.6	243.0	184.4	398.1
Pb	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zn	30.6	21.2	17.2	50.6	21.9	51.5	34.9	66.5	48.1	58.2

Roots										
Element (mg/kg DW)	1	2	3	4	5	6	7	8	9	10
Cd	25.8	13.8	16.0	60.0	20.6	19.9	22.8	48.1	38.8	14.2
Cu	69.2	49.0	51.0	134.2	66.3	120.4	125.0	109.7	78.8	82.1
Mn	140.1	96.0	117.9	182.4	162.0	93.2	186.0	141.7	232.8	106.8
Pb	126.1	91.4	50.1	410.8	160.6	146.9	315.4	162.4	182.8	54.6
Zn	752.9	449.9	621.5	1735.7	384.4	561.4	733.2	755.0	1185.1	340.0

ND indicates that the concentration was below detection limit. The numbers from 1 to 10 indicate the replications of *A. japonica*.

(H) Data set for S3 Table: Cd, Cu, Mn, Pb, and Zn concentrations in current-year *A. japonica* seedlings.

Leaves					
Element (mg/kg DW)	1	2	3	4	5
Cd	ND	ND	ND	ND	ND
Cu	11.5	13.2	12.9	17.1	13.9
Mn	124.2	70.6	1038.5	75.5	122.8
Pb	ND	ND	ND	ND	ND
Zn	37.4	55.1	71.3	34.5	31.6

Cotyledons					
Element (mg/kg DW)	1	2	3	4	5
Cd	ND	ND	ND	ND	ND
Cu	ND	ND	ND	ND	ND
Mn	525.1	180.1	1954.8	190.6	358.0
Pb	ND	ND	ND	ND	ND
Zn	38.5	43.4	36.7	28.6	27.1

Hypocotyls					
Element (mg/kg DW)	1	2	3	4	5
Cd	ND	ND	ND	ND	ND
Cu	ND	ND	ND	ND	ND
Mn	73.1	39.6	311.4	49.8	74.3
Pb	ND	ND	ND	ND	ND
Zn	63.6	31.0	51.4	26.5	31.7

Roots					
Element (mg/kg DW)	1	2	3	4	5
Cd	ND	ND	ND	ND	ND
Cu	54.8	21.7	52.3	23.7	19.8
Mn	56.4	75.2	76.5	562.1	62.1
Pb	100.5	35.1	57.5	61.2	83.2
Zn	140.6	161.5	151.2	220.5	161.1

ND indicates that the concentration was below detection limit. The numbers from 1 to 5 indicate the replications of *A. japonica* seedlings.

(I) Data set for S2 Fig.: Net photosynthetic rates in *A. japonica*

July 2017

PFD ($\mu\text{mol m}^{-2}\text{s}^{-1}$)	Net photosynthetic rates ($\mu\text{mol m}^{-2}\text{s}^{-1}$)									
	1	2	3	4	5	6	7	8	9	10
1500	3.76	4.20	4.51	3.99	4.15	5.07	6.26	5.08	4.72	4.83
1000	3.53	4.32	4.66	3.41	3.68	4.89	6.66	6.00	5.22	5.41
750	4.01	4.37	4.96	3.97	3.90	4.86	7.29	6.29	4.69	4.68
500	3.81	3.85	4.59	3.49	3.89	4.58	7.30	5.81	4.75	3.99
300	3.43	3.77	4.32	3.45	4.28	5.04	6.80	5.65	4.35	4.33
200	3.36	3.98	4.12	3.42	3.75	4.12	5.96	5.32	4.14	4.31
100	2.62	3.09	3.46	3.16	3.28	3.02	4.38	3.98	3.63	3.92
50	1.80	1.99	1.82	2.25	2.28	1.70	2.30	2.37	2.20	2.55
30	1.29	1.33	1.49	1.35	1.38	1.68	1.34	1.60	1.32	1.67
15	0.14	0.96	0.43	0.19	0.80	0.65	0.50	0.96	0.35	0.72
8	-0.06	0.07	-0.08	0.02	0.21	-0.12	-0.20	0.11	0.01	-0.44
0	-0.15	-0.16	-0.46	-0.28	-0.14	-0.28	-0.70	-0.35	-0.62	-0.67

December 2017-February 2018

PFD ($\mu\text{mol m}^{-2}\text{s}^{-1}$)	Net photosynthetic rates ($\mu\text{mol m}^{-2}\text{s}^{-1}$)									
	1	2	3	4	5	6	7	8	9	10
1500	3.11	3.32	5.45	4.56	5.08	5.41	4.55	3.93	4.44	5.22
1000	2.61	3.52	5.43	4.18	5.51	5.13	4.83	4.20	4.07	5.94
750	2.77	3.08	5.42	3.26	5.12	5.05	4.79	4.02	3.31	5.31
500	2.29	2.92	4.74	3.96	4.19	4.83	4.93	4.51	3.58	4.78
300	2.66	2.58	4.29	3.54	4.29	4.39	3.76	3.27	3.51	4.33
200	1.47	2.84	3.81	3.04	3.93	3.92	4.32	2.47	3.32	3.48
100	0.63	1.33	3.01	2.90	3.49	2.34	2.30	2.18	2.93	4.44
50	0.85	0.89	1.88	2.10	1.62	1.30	1.39	0.56	1.88	2.76
30	0.37	0.35	1.14	1.71	1.59	0.30	1.08	0.47	1.20	1.34
15	0.32	0.48	0.82	1.02	1.17	0.04	0.33	0.01	1.15	0.61
8	0.17	0.16	0.12	0.30	0.35	-0.23	0.23	-0.25	0.30	0.28
0	-0.29	-0.29	-0.20	-0.34	-0.24	-0.54	-0.60	-0.88	-0.38	-0.16

The numbers from 1 to 10 indicate the replications of *A. japonica*.

(J) Data set for S3 Fig.: Growth rate of annual branch in *A. japonica*.

Replications	Length (mm)									
	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Mar.	Apr.	May
1	1.0	0.0	0.0	0.1	0.4	0.2	0.1	0.0	12.1	7.9
2	1.2	0.5	0.6	0.2	0.0	0.1	0.2	0.0	12.7	10.4
3	1.4	0.2	0.0	0.2	0.2	0.2	0.2	0.0	15.9	8.3
4	0.5	0.0	0.0	0.3	0.4	0.3	0.2	0.0	10.3	9.5
5	4.5	0.2	0.2	0.5	0.3	0.3	0.1	0.0	12.2	7.3
6	1.0	0.0	0.5	0.7	0.2	0.3	0.0	0.0	5.4	5.4
7	0.5	0.5	0.7	0.2	0.3	0.0	0.1	0.3	9.8	6.9
8	0.2	0.8	0.5	0.0	0.0	0.2	0.2	0.0	15.6	16.3
9	1.0	0.0	2.0	0.0	0.7	0.0	0.3	0.0	5.8	4.1
10	3.0	0.4	0.0	0.4	0.2	0.2	0.0	0.0	17.1	15.8

The numbers from 1 to 10 indicate the replications of *A. japonica*.