Table 1.The effect of cadmium stress on the growth of ginger

Treatment days	Cd levels (mg/kg)	Plant height (cm)	Stem diameter (cm)	Shoot number	Leaf number	Root FW (g)	Stem FW (g)	Leaf FW (g)	Rhizome FW (g)
40	0	49.5±2.3a	1.2±0.0a	3.3±0.6a	53.7±0.6a	18.2±3.0a	61.1±2.0a	33.2±1.4a	72.1±5.1a
	1	49.5±1.5a	1.2±0.1a	3.3±0.6a	52.0±1ab	13.7±3.0a	62.4±0.8a	33.8±0.6a	71.7±2.7a
	2	45.8±2.8a	1.0±0.0b	2.7±0.6a	49.3±1.5b	12.1±5.7a	50.7±1.9b	33.4±1.6a	72.2±5.0a
	4	44.7±1.5a	1.0±0.1b	2.3±0.6a	46.0±2.9c	12.1±5.7a	44.3±1.2c	32.2±2.8a	70.5±5.0a
80	0	61.7±3.1a	1.3±0.2a	5.7±0.6a	63.7±0.6a	32.2±2.0a	79.8±1.7a	44.8±3.0a	96.8±1.2a
	1	60.6±0.8a	1.3±0.1ab	4.7±0.6ab	61.3±0.6b	30.7±7.1a	75.1±0.9b	43.7±1.4ab	93.7±6.6ab
	2	54.5±1.3b	1.2±0.1bc	3.7±0.6b	56.7±1.2c	28.2±0.6ab	54.7±0.5c	40.1±1.1bc	88.4±0.6bc
	4	48.5±0.9c	1.0±0.1c	3.3±0.6b	54.7±1.2d	22.6±0.1b	48.4±1.2d	37.3±1.3c	85.3±1.9c
120	0	66.2±3.9a	1.4±0.1a	8.3±0.6a	76.3±1.5a	42.2±1.9a	123.0±5.5a	59.8±4.8a	155.8±1.9a
	1	63.2±3.5a	1.3±0ab	7.7±0.6ab	70.0±5.2b	40.7±2.2ab	115.2±2.9b	55.8±0.6ab	149.1±4.1ab
	2	58.2±2.6b	1.2±0bc	7.0±1.0bc	61.7±0.6c	34.2±2.1bc	82.2±0.5c	49.8±4.0b	141.6±3.9bc
	4	49.2±0.8c	1.1±0.1c	6.7±0.6c	55.7±0.6d	29.4±2.7c	70.7±0.8d	41.4±1.4c	134.9±6.5c

Note: Under the same column, values followed with the same letter was not significant at $P = 0.05$

Table 2.The effect of cadmium stress on the quality of ginger rhizome

Cd (mg/kg)	Yield (g/plant)	Dry matter (%)	Soluble sugar (%)	Crude cellulose (mg/g)	Soluble protein (mg/g)	Free amino acid (mg/g)	Vitamin C (%)	Gingerol (%)
0	155.80a	17.14a	0.75a	0.39a	2.96a	0.52a	2.78a	0.58a
1	149.10ab	16.40ab	0.64b	0.38a	2.78b	0.44b	2.71a	0.51b
2	141.60bc	15.80bc	0.53c	0.27b	2.37c	0.28c	2.67b	0.40c
4	134.93c	14.84c	0.52c	0.21c	2.23d	0.27c	2.46c	0.36d

Note: Under the same column, values followed with the same letter was not significant at $P = 0.05$

Table 3.The effect of silicon on ginger growth under cadmium stress

Treatment days	Si (g/kg)	Plant height (cm)	Stem diameter (cm)	Shoot number	Leaf number	Root FW (g)	Stem FW (g)	Leaf FW (g)	Rhizome FW (g)
40	0	44.7±2.8a	1.0±0.0c	2.7±0.6a	49.3±1.5a	13.7±1.0a	50.7±1.9b	33.8±1.6a	72.2±5.0a
	1	46.2±0.8a	1.2±0.0b	2.7±0.6a	50.7±1.5a	14.0±1.7a	52.2±1.9ab	34.2±1.4a	71.9±5.1a
	2	47.2±1.0a	1.3±0.0a	3.0±0.0a	51.7±0.6a	16.5±1.8a	55.5±1.0a	36.1±0.6a	72.9±2.7a
80	0	50.4±1.4b	1.2±0.1b	3.7±0.6b	56.7±1.2c	28.2±2.0a	54.7±0.5c	40.1±1.1c	88.4±0.6c
	1	58.7±0.3a	1.3±0ab	4.0±0.0b	58.7±0.6b	28.7±2.1a	57.1±1.0b	41.8±0.3b	99.0±1.3b
	2	60.8±0.6a	1.3±0.1a	5.0±0. 0a	60.9±0.6a	30.8±1.8a	63.8±1.7a	43.1±0.8a	102.2±1.1a
120	0	54.7±0.8b	1.2±0.1b	7.0±1.0a	60.7±1.2c	34.2±2.1b	82.2±0.5c	50.0±1.0c	137.6±3.9c
	1	65.0±1.7a	1.3±0.0ab	6.7±0.6a	63.7±0.6b	37.8±1.9ab	97.2±1.1b	53.3±0.6b	157.3±1.9b
	2	68.2±0.8a	1.4±0.0a	8.0±0.0a	67.7±2.1a	40.8±1.2a	115.1±5.5a	58.2±0.3a	164.4±0.3a

Note: Under the same column, values followed with the same letter was not significant at $P = 0.05$

Table 4.The effect of silicon on the quality of ginger rhizome under cadmium stress

Si (g/kg)	Yield (g/plant)	Dry matter (%)	Soluble sugar (%)	Crude cellulose (mg/g)	Soluble protein (mg/g)	Free amino acid (mg/g)	Vitamin C (%)	Gingerol (%)
0	137.60c	15.80b	0.56c	0.28b	2.42c	0.30c	2.64b	0.38c
1	157.30b	16.42ab	0.66b	0.36a	2.87b	0.41b	2.65b	0.52b
2	164.37a	16.84a	0.73a	0.38a	2.97a	0.50a	2.71a	0.62a

Note: Under the same column, values followed with the same letter was not significant at $P = 0.05$

Table 5.The effect of silicon on Cd content in different organ of ginger under Cd stress

Treatment days	Si (g/kg)	Cd content (μg/g)									
		Root	Mother-ginger	Son-ginger	Grandson-ginger	Main branch	Primary branch	Secondary branch	Main branch leaves	Primary branch leaves	Secondary branch leaves
40	0	0.496a	0.087a	0.056a	**	0.029a	0.018a	**	0.029a	0.02a	**
	1	0.34b	0.05b	0.027b	**	0.024b	0.016a	**	0.003b	0.002b	**
	2	0.283c	0.038c	0.02c	**	0.012c	0.007b	**	0.001c	0.001b	**
80	0	0.573a	0.188a	0.089a	0.024a	0.071a	0.03a	0.011a	0.006a	0.004a	0.001a
	1	0.446b	0.154b	0.056b	0.017b	0.068b	0.029a	0.01b	0.005b	0.004a	0.001a
	2	0.323c	0.136c	0.041c	0.012c	0.046c	0.014b	0.009c	0.004c	0.003a	0.001a
120	0	1.246a	0.257a	0.107a	0.058a	0.094a	0.051a	0.015a	0.046a	0.041a	0.012a
	1	1.025b	0.219b	0.095b	0.038b	0.089b	0.043b	0.013b	0.037b	0.036b	0.01b
	2	0.743c	0.186c	0.069c	0.028c	0.065c	0.032c	0.008c	0.02c	0.012c	0.005c

Note: Under the same column, values followed with the same letter was not significant at *P* = 0.05

Table 6.The effect of silicon on Cd accumulation in different organ of ginger under Cd stress

	Si (g/kg)	Root	Mother-ginger	Son-ginger	Grandson-ginger	Main branch	Primary branch	Secondary branch	Main branch leaves	Primary branch leaves	Secondary branch leaves
Accumulation (μg/plant)	0	2.986a	0.676a	0.704a	0.382a	0.116a	0.157b	0.046a	0.081a	0.179a	0.053a
	1	2.572b	0.533b	0.691a	0.251b	0.116a	0.168a	0.047a	0.06b	0.176a	0.045b
	2	2.046c	0.393c	0.434b	0.234c	0.084b	0.124c	0.043c	0.03c	0.055b	0.032c

Note: Under the same column, values followed with the same letter was not significant at $P = 0.05$

Table 7. The effect of silicon on cadmium absorption coefficient and transfer coefficient under Cd stress

Si (g/kg)	Primary transfer coefficient	Secondary transfer coefficient	Root absorption coefficient	Above-ground absorption coefficient
0	0.590	0.359	0.187	0.040
1	0.573	0.415	0.161	0.038
2	0.519	0.347	0.128	0.023