# Numerical Data

**Effects of various levels of Cd and salinity on growth parameters (plant height, stem diameter, number of branches per plant, root length, shoot dry weight, root dry weight) of A. nilotica in a pot experiment.**

| Cd and salinity levels | Plant height (cm) | Stem diameter (cm) | Branches (plant$^{-1}$) | Root length (cm) | Shoot dry weight (g plant$^{-1}$) | Root dry weight (g plant$^{-1}$) |
|---|---|---|---|---|---|---|
| Control | 81 § 4.04 a | 1.2 § 0.04 a | 16 § 0.57 a | 80 § 3.0 a | 37 § 2.0 a | 15.7 § 0.66 a |
| Cd-0-NaCl-0.5 | 74 § 2.30 b | 1.12 § 0.02 b | 15 § 0.57 ab | 72 § 1.15 bc | 32 § 1.0 bc | 13.3 § 0.57 bc |
| Cd-0-NaCl-1.0 | 59 § 3.71 d | 1 § 0.04 c | 13 § 0.67 cd | 65 § 1.66 d | 23 § 1.45 e | 11 § 0.88 e |
| Cd-5-NaCl-0 | 76.8 § 1.92 ab | 1.17 § 0.05 ab | 15 § 0.57 ab | 77.2 § 3.28 ab | 36 § 0.57 a | 15 § 0.66 a |
| Cd-5-NaCl-0.5 | 72.3 § 1.76 bc | 1.02 § 0.04 c | 13.3 § 0.57 c | 67.3 § 2.84 cd | 30 § 0.57 cd | 12.5 § 0.57 cd |
| Cd-5-NaCl-1.0 | 57 § 1.85 d | 0.9 § 0.02 d | 12.5 § 0.3 cd | 56.2 § 1.15 e | 20 § 0.88 f | 9.6 § 0.66 f |
| Cd-10-NaCl-0 | 74.3 § 1.45 b | 1.11 § 0.03 b | 13.7 § 0.7 b | 74.2 § 2.72 b | 34 § 1.52 ab | 14 § 0.33 ab |
| Cd-10-NaCl-0.5 | 65 § 3.48 cd | 0.89 § 0.04 d | 12.7 § 0.66 cd | 62.2 § 2.88 de | 28 § 0.57 d | 11 § 0.33 e |
| Cd-10-NaCl-1.0 | 50 § 3.2 e | 0.8 § 0.03 e | 12 § 0.2 d | 48.9 § 3.92 f | 16 § 1.45 g | 8 § 0.33 g |
| Cd-15-NaCl-0 | 69 § 3.60 c | 1.05 § 0.05 bc | 13.2 § 0.66 bc | 70.5 § 1.85 c | 31.3 § 2.02 bc | 13 § 57 bc |
| Cd-15-NaCl-0.5 | 60 § 3.06 d | 0.85 § 0.05 de | 12 § 0.57 d | 57.9 § 2.40 e | 23.1 § 1.52 e | 9.4 § 0.57 f |
| Cd-15-NaCl-1.0 | 44 § 2.8 f | 0.7 § 0.03 f | 10.5 § 0.57 e | 41.2 § 2.90 g | 12.5 § 1.45 h | 6.5 § 0.33 h |

For each parameter, the values (mean § standard error of three replicates) sharing the same letter are not significantly different (LSD test, P D 0.05).

**Effects of various levels of Cd and salinity on root and shoot ionic (Na, K, Cl) concentrations (mmol g$^{-1}$ dry weight) of A. nilotica in a pot experiment**

| Cd and salinity levels | Root Na | Shoot Na | Root K | Shoot K | Root Cl | Shoot Cl |
|---|---|---|---|---|---|---|
| Control | 0.12 § 0.02 c | 0.14 § 0.01 c | 0.90 § 0.07 a | 1.25 § 0.02 a | 0.16 § 0.04 ij | 0.18 § 0.01 hi |
| Cd-0-NaCl-0.5 | 0.50 § 0.01 b | 0.66 § 0.02 b | 0.71 § 0.05 c | 0.80 § 0.01 e | 0.85 § 0.03 gh | 0.90 § 0.03 fg |
| Cd-0-NaCl-1.0 | 0.90 § 0.03 a | 1.10 § 0.03 a | 0.35 § 0.03 ef | 0.50 § 0.02 h | 1.45 § 0.04 d | 1.57 § 0.03 d |
| Cd-5-NaCl-0 | 0.12 § 0.02 c | 0.13 § 0.05 c | 0.86 § 0.02 ab | 1.15 § 0.02 b | 0.17 § 0.05 i | 0.19 § 0.04 hi |
| Cd-5-NaCl-0.5 | 0.49 § 0.02 b | 0.66 § 0.05 b | 0.65 § 0.02 cd | 0.70 § 0.04 f | 0.90 § 0.02 g | 0.94 § 0.03 g |
| Cd-5-NaCl-1.0 | 0.91 § 0.05 a | 1.10 § 0.04 a | 0.30 § 0.01 ef | 0.39 § 0.05 i | 1.55 § 0.02 c | 1.64 § 0.02 c |
| Cd-10-NaCl-0 | 0.11 § 0.04 c | 0.14 § 0.03 c | 0.80 § 0.02 bc | 1.05 § 0.06 c | 0.18 § 0.01 i | 0.20 § 0.02 h |
| Cd-10-NaCl-0.5 | 0.48 § 0.04 b | 0.65 § 0.02 b | 0.59 § 0.04 de | 0.59 § 0.07 g | 0.98 § 0.01 f | 1.00 § 0.01 f |
| Cd-10-NaCl-1.0 | 0.91 § 0.05 a | 1.12 § 0.01 a | 0.27 § 0.06 fg | 0.35 § 0.03 ij | 1.65 § 0.03 b | 1.78 § 0.05 b |
| Cd-15-NaCl-0 | 0.12 § 0.03 c | 0.13 § 0.04 c | 0.67 § 0.05 cd | 0.90 § 0.01 d | 0.20 § 0.04 i | 0.21 § 0.06 h |
| Cd-15-NaCl-0.5 | 0.49 § 0.04 b | 0.66 § 0.05 b | 0.35 § 0.05 e | 0.42 § 0.02 i | 1.07 § 0.05 e | 1.12 § 0.07 e |
| Cd-15-NaCl-1.0 | 0.92 § 0.02 a | 1.14 § 0.03 a | 0.20 § 0.03 h | 0.28 § 0.05 jk | 1.78 § 0.05 a | 1.89 § 0.05 a |

For each parameter, the values (mean § standard error of three replicates) sharing the same letter are not significantly different (LSD test, P D 0.05).

**Effects of various levels of Cd and salinity treatments on root and shoot Cd concentrations (mg $kg^{-1}$ ), root and shoot Cd uptake (mg $plant^{-1}$ ) and tolerance index (%) of A. nilotica in a pot experiment.**

| Cd and salinity levels | Root Cd concentration | Shoot Cd concentration | Root Cd Uptake | Shoot Cd Uptake | Tolerance index |
|---|---|---|---|---|---|
| Control | 0.19 § 0.15 h | 0.24 § 0.15 h | 2.97 § 1.4 h | 8.88 § 3.5 i | ---- |
| Cd-0-NaCl-0.5 | 0.2 § 0.21 h | 0.23 § 0.12 h | 2.7 § 1.5 h | 7.36 § 3.0 i | 90 § 5.0 ab |
| Cd-0-NaCl-1.0 | 0.21 § 0.15 h | 0.24 § 0.15 h | 2.31 § 1.0 h | 5.52 § 3.6 i | 81.3 § 3.0 c |
| Cd-5-NaCl-0 | 2.5 § 0.39 g | 3.3 § 0.45 g | 36.75 § 1.0 g | 115.5 § 4.5 h | 96.5 § 4.0 a |
| Cd-5-NaCl-0.5 | 3.8 § 0.3 f | 4.7 § 0.24 f | 47.5 § 1.0 e | 141 § 2.5 g | 84.1 § 3.0 bc |
| Cd-5-NaCl-1.0 | 4.5 § 0.3 e | 5.4 § 0.3 ef | 43.2 § 2.0 f | 108 § 7.8 h | 70.3 § 2.0 de |
| Cd-10-NaCl-0 | 4.1 § 0.3 ef | 6.1 § 0.54 e | 56.99 § 1.0 d | 200.69 § 2.5 e | 92.8 § 2.0 ab |
| Cd-10-NaCl-0.5 | 5.8 § 0.2 d | 8.9 § 0.6 d | 63.8 § 0.8 c | 249.2 § 8.6 c | 77.8 § 4.0 cd |
| Cd-10-NaCl-1.0 | 7.0 § 0.3 c | 10.9 § 0.3 c | 56 § 1.8 c | 174.4 § 4.5 f | 61.1 § 3.0 e |
| Cd-15-NaCl-0 | 5.8 § 0.45 d | 9.3 § 0.66 d | 75.4 § 2.5 b | 291.09 § 4.5 b | 88.1 § 3.0 b |
| Cd-15-NaCl-0.5 | 8.9 § 0.39 b | 15 § 0.69 b | 83.66 § 1.8 a | 346.5 § 8.9 a | 72.4 § 4.0 d |
| Cd-15-NaCl-1.0 | 11.2 § 0.36 a | 18.5 § 0.39 a | 72.8 § 2.0 b | 231.25 § 5.0 d | 51.5 § 2.0 f |

For each parameter, the values (mean § standard error of three replicates) sharing the same letter are not significantly different (LSD test, P D 0.05)

**Source**: https://www.tandfonline.com/doi/pdf/10.1080/15226514.2017.1413339?needAccess=true

## Effects of cadmium on rice yield and its parameter

| | | | number/pot | weight (g) | rate (%) | |
|---|---|---|---|---|---|---|
| V1 | Cd0 | 30.33 ± 0.33$^{a}$ | 121.07 ± 0.58$^{bc}$ | 23.97 ± 0.33$^{a}$ | 89.1 ± 0.11$^{a}$ | 78.44 ± 1.40$^{a}$ |
| | Cd1 | 23.66 ± 0.88$^{b}$ | 127.52 ± 3.88$^{b}$ | 19.88 ± 0.38$^{b}$ | 85.963 ± 1.45$^{b}$ | 51.48 ± 1.61$^{b}$ |
| | Cd2 | 20.00 ± 0.57$^{c}$ | 142.34 ± 2.87$^{a}$ | 19.03 ± 0.32bc | 82.293 ± 0.74$^{c}$ | 44.51 ± 0.48$^{c}$ |
| | Cd3 | 17.33 ± 0.88$^{d}$ | 113.63 ± 5.25$^{c}$ | 18.1 ± 0.11c | 79.92 ± 0.45$^{c}$ | 28.35 ± 0.05$^{d}$ |
| V2 | Cd0 | 27.67 ± 0.33$^{a}$ | 116.35 ± 2.46$^{c}$ | 23.60 ± 0.28$^{a}$ | 92.32 ± 0.84$^{a}$ | 70.12 ± 1.60$^{a}$ |
| | Cd1 | 25.33 ± 0.33$^{b}$ | 132.01 ± 2.39$^{ab}$ | 21.55 ± 0.17$^{b}$ | 87.86 ± 1.49$^{b}$ | 63.41 ± 2.69$^{b}$ |
| | Cd2 | 23.66 ± 0.33$^{c}$ | 123.49 ± 2.58$^{bc}$ | 19.05 ± 0.47$^{c}$ | 86.883 ± 0.32$^{b}$ | 48.31 ± 0.66$^{c}$ |
| | Cd3 | 20.33 ± 0.66$^{d}$ | 140.32 ± 7.90$^{a}$ | 18.63 ± 0.19$^{c}$ | 80.697 ± 1.15$^{c}$ | 42.75 ± 1.38$^{c}$ |
| V3 | Cd0 | 32.33 ± 0.33$^{a}$ | 113.11 ± 2.03$^{a}$ | 24.98 ± 0.24$^{a}$ | 93.79 ± 0.72$^{a}$ | 85.63 ± 1.01$^{a}$ |
| | Cd1 | 31.66 ± 0.33$^{a}$ | 111.66 ± 0.70$^{a}$ | 24.03 ± 0.12$^{ab}$ | 89.90 ± 0.25$^{b}$ | 76.37 ± 0.19$^{b}$ |
| | Cd2 | 28.67 ± 0.33$^{b}$ | 110.93 ± 0.14$^{a}$ | 23.38 ± 0.47$^{bc}$ | 88.12 ± 0.42$^{c}$ | 65.5 ± 0.73$^{c}$ |
| | Cd3 | 26.66 ± 0.33$^{c}$ | 98.58 ± 2.1$^{5b}$ | 22.66 ± 0.33$^{c}$ | 86.22 ± 0.43$^{d}$ | 51.42 ± 2.10$^{d}$ |
| V4 | Cd0 | 25.66 ± 0.33$^{a}$ | 131.33 ± 3.60$^{b}$ | 22.44 ± 0.67a | 90.29 ± 0.96$^{a}$ | 68.37 ± 3.59$^{a}$ |
| | Cd1 | 23.33 ± 0.33$^{b}$ | 139.15 ± 1.73$^{ab}$ | 21.05 ± 0.49$^{ab}$ | 87.67 ± 1.03$^{a}$ | 59.87 ± 1.46$^{b}$ |
| | Cd2 | 21.66 ± 0.33$^{c}$ | 148.57 ± 6.18$^{a}$ | 19.66 ± 0.22$^{bc}$ | 83.54 ± 0.74$^{b}$ | 52.87 ± 2.43$^{bc}$ |
| | Cd3 | 19.66 ± 0.33$^{d}$ | 150.92 ± 3.7$^{2a}$ | 19.30 ± 0.60$^{c}$ | 81.99 ± 0.47$^{b}$ | 46.95 ± 1.73$^{c}$ |
| V5 | Cd0 | 27.66 ± 0.33$^{a}$ | 130.58 ± 0.53$^{ab}$ | 24.04 ± 0.50$^{a}$ | 89.70 ± 0.55a | 77.9 ± 1.43$^{a}$ |
| | Cd1 | 25 ± 0.5774$^{b}$ | 117.65 ± 0.60$^{bc}$ | 23.44 ± 0.10a | 80.05 ± 0.77$^{b}$ | 55.19 ± 1.42$^{b}$ |
| | Cd2 | 24.33 ± 0.66$^{b}$ | 103.53 ± 11.81$^{c}$ | 21.83 ± 0.56$^{b}$ | 77.13 ± 3.54$^{b}$ | 41.94 ± 3.22$^{c}$ |
| | Cd3 | 18.33 ± 0.66$^{c}$ | 147.21 ± 4.34$^{a}$ | 19.65 ± 0.21$^{c}$ | 76.98 ± 1.52$^{b}$ | 40.77 ± 1.36$^{c}$ |

Three replicated means (±SE) were calculated for each treatment. Values with different letters are significantly different at $p<0.05$. Cd0 = 0 mg Cd/kg, Cd1 = 50 mg Cd/kg, Cd2 = 100 mg Cd/kg, and Cd3 = 150 mg Cd/kg

**Source:** https://www.hindawi.com/journals/jchem/2017/1405878/abs

**Effects of cadmium application on the growth parameters of *E. crus-galli***

| Treatments (mg·kg-1) | FW (g per plant) | | Organ length (cm) | | Till number per plant |
|---|---|---|---|---|---|
| | Root | Aboveground parts | Root | Aboveground parts | |
| **0.3** | 15.36±0.58[b] | 30.07±4.69 [a] | 30.60±0.94[bc] | 122.83±2.02[b] | 6.00±0.58[a] |
| **0.6** | 17.48±0.58[b] | 24.97±2.01[a] | 29.17±1.43[c] | 110.40±3.65[b] | 5.33±0.33[a] |
| **0.9** | 23.97±0.58[a] | 45.84±1.98[a] | 35.67±2.41[a] | 112.80±1.31[b] | 5.67±0.89[a] |
| **1.5** | 21.72±0.58[a] | 43.56±5.79[a] | 34.93±1.21[ab] | 109.53±2.28[a] | 6.67±0.65[a] |
| **Control** | 23.54±4.33[a] | 32.01±3.44[a] | 37.53±0.94[a] | 124.33±0.58[a] | 6.00±0.48[a] |

Values are mean ± standard error (SE) of three replications. Different small letters within the same short columns indicate significant differences between treatments according to Duncan's multiple range test at $p< 0.05$ level

**Source:** http://www.pjoes.com/pdf/26.2/Pol.J.Environ.Stud.Vol.26.No.2.779-784.pdf

**Dry biomass (g/plant) of different plant tissues along with root length (cm) and total leaf area ($cm^2$) of *Eichhornia crassipes* grown in different cadmium concentrations.**

| $CdCl_2$ (mg $L^{-1}$) | Day (d) | Root | Shoot | Leaf | Root length (cm) | Total leaf area (cm2 ) |
|---|---|---|---|---|---|---|
| **Control** | 0 d | 0.44 ± 0.002 | 0.51 ± 0.003 | 0.62 ±0.009 | 9.9 ± 0.264 | 165.0 ± 8.88 |
| | 21 d | 1.58 ± 0.36 | 2.13 ± 0.19 | 2.35 ± 0.22 | 20.3 ± 0.45 | 311.4 ± 4.20 |
| **5** | 0 d | 0.44 ± 0.002 | 0.51 ± 0.003 | 0.62 ± 0.003 | 9.9 ± 0.173 | 165.6 ± 1.52 |
| | 21 d | 0.86 ± 0.02* (–45.56%) | 1.25 ± 0.25* (–41.31%) | 1.22 ± 0.19* (–48%) | 18.2 ± 0.50 (–10.34%) | 276.5 ± 7.31* (–11.21%) |
| **10** | 0 d | 0.44 ± 0.003 | 0.51 ± 0.003 | 0.62 ± 0.003 | 9.9 ± 0.20 | 165.6 ± 3.21 |
| | 21 d | 0.67 ± 0.01* (–57.34%) | 0.76 ± 0.02* (–64.08%) | 0.83 ± 0.008* (–64.46%) | 17.2 ± 0.37* (–15.27%) | 254.7 ± 10.14* (–18.21%) |
| **15** | 0 d | 0.44 ± 0.003 | 0.50 ± 0.002 | 0.62 ± 0.006 | 9.96 ± 0.251 | 165.3 ± 3.20 |
| | 21 d | 0.55 ± 0.01* (–64.6%) | 0.61 ± 0.01* (–71.12%) | 0.72 ± 0.008* (–69.19%) | 15.4 ± 0.40* (–24.13%) | 225.9 ± 12.15* (–27.45%) |
| **20** | 0 d | 0.44 ± 0.001 | 0.50 ± 0.003 | 0.62 ± 0.009 | 9.9 ± 0.057 | 164.66 ± 4.5 |
| | 21 d | 0.46 ± 0.01* (–70.75%) | 0.53 ± 0.01* (–75.16%) | 0.65 ± 0.01* (–72.17%) | 14.5 ± 0.20* (–28.57%) | 205.8 ± 4.32* (–33.91%) |

Values are mean ± SD of 3 replicates; values in the parentheses include percent decrease in mean values as compared to the corresponding control values.

**Source:** http://journals.tubitak.gov.tr/biology/issues/biy-16-40-1/biy-40-1-7-1411-86.pdf

**Leaf dry weight of Premia and Blitz seedlings grown in the root media containing distilled water (Control), 2 µmol/L $Cd^{2+}$, 2 µmol/L**

| Treatments | Leaf Dry Weight(mg) | |
|---|---|---|
| | Control | Cd |
| **Premia** | 16.92 ± 1.923[a] | 17.31 ± 1.846[a] |
| **Blitz** | 21.35 ± 2.5[b] | 21.92 ± 2.885[b] |

Mean weights in mg ± SD, the same letters indicate no statistically significant differences at P < 0.05)

**Source:** https://www.degruyter.com/downloadpdf/j/agri.2016.62.issue-4/agri-2016-0013/agri-2016-0013.pdf

**Differential Cd assimilation and Translocation ratio in wheat and kodo millet**

| Cd concentration in µm | *Triticum aestivum* | | | *Paspalum scrobiculatum* | | |
|---|---|---|---|---|---|---|
| | Cadmium assimilation (mg/kg) | | | Cadmium assimilation (mg/kg) | | |
| | Root | Shoot | Shoot/Root Ratio | Root | Shoot | Shoot/Root Ratio |
| **10** | 14.50±1.24[a] | 1.79±0.40[a] | 1.79±0.40[a] | 73.28±0.88[a] | 7.32±0.44[a] | 0.0996 |
| **20** | 11.08±1.46[b] | 2.45±0.64[a] | 0.22227 | 103.40±1.6[b] | 19.59±0.83[b] | 0.1986 |
| **50** | 17.52±1.14[c] | 6.43±0.31[a] | 0.3674 | 164.27±1.5[c] | 57.33±2.83 [c] | 0.3488 |
| **100** | 46.29±2.58[d] | 30.00±1.9[b] | 0.6481 | 248.82±2.4[d] | 150.13±1.91 [d] | 0.6028 |
| **500** | 97.32±2.23[e] | 80.43±1.4[c] | 0.8621 | 896.32±1.9[e] | 896.32±1.9[e] | 0.8182 |

The values followed by different letters are significantly different at a significance level of p<0.05
**Source:** www.tandfonline.com/doi/full/10.1080/15226514.2016.1207608?scroll=top...true

## Effect of Cd on induction of PCs in leaves, stems and roots of cabbage variety Pluto

Plants were harvested after 4 weeks of Cd exposure. For a plant part, means with the same letter are not significantly different (P>0.05). LSD comparisons are valid only within the one plant part and one constituent a Each value is the mean of four replicates b Cadmium in the control is due to background contamination of the hydroponic solution (1μgL−1)

**Source:** Environ Sci Pollut Res (2016) 23:5296–5306

| Plant Part | Cd level ( $\mu g l^{-1}$ ) | Concentration of PCs and GSH[a] | | | | |
|---|---|---|---|---|---|---|
| | | PC2 | PC3 | PC4 | GSH | PCs+GSH |
| | | (mmol thiol [-SH] $KG^{-1}$ dw) | | | | |
| **Leaves** | Control[b]<br>500 | 0a<br>0.20b | 0a<br>0.50b | 0a<br>0.46b | 2.37a<br>2.24a | 2.37a<br>3.40b |
| **Stem** | Control[b]<br>500 | 0a<br>0.30b | 0a<br>0.25b | 0a<br>0.15b | 5.60a<br>5.50a | 5.60a<br>6.20b |
| **Roots** | Control[b]<br>500 | 0.50±0.03<br>1.50±0.12 | 0.80±0.03<br>2.50±0.40 | 0.55±0.01<br>2.40±0.30 | 4.10±0.15<br>4.85±0.20 | 5.95±0.20<br>11.3±0.80 |

## Effect of exogenous betaine on photosynthesis parameters, SPAD value and Fv/Fm in maize seedlings exposed to Cd for 7 days

| | Pn (1mol $m^{-2}$ $s^{-1}$ | Gs mmol $m^{-2}$ $s^{-1}$ | Ci 1LL-1 | Tr(mmol-2 $s^{-1}$) | WUE (μmol $mmol^{-1}$) | SPAD value | Fv/Fm |
|---|---|---|---|---|---|---|---|
| **Control** | 11.9 ± 1.1b | 79.0 ± 9.5a | 190.2 ± 21.5bc | 0.82 ± 0.04b | 14.4±1.3a | 35.24 ±4.1a | 0.8 ±0.01a |
| **Betaine** | 14.1±0.6a | 89.2±3.5a | 155.3±21.0c | 1.03±0.01a | 13.7±0.5a | 13.7±0.5a | 0.8±0.01a |
| **Cd** | Cd±0.2d | 51.1±3.1b | 302.6±18.3a | 0.59±0.04d | 6.3±0.7c | 15.74±1.1c | 0.61±0.02b |
| **Cd + Betaine** | 7.3+0.1c | 57.0+3.5b | 194.6+16.0b | 0.74+0.03c | 9.9+0.6b | 23.13+4.0b | 0.64+0.02b |

Data were means of three independent replicates (each replicate containing seven plants). Different letters indicate significant differences (P\0.05) among the four treatments Pn net photosynthetic rate,Gs stomatal conductance,Ciintercellular CO2 concentration,Tr transpiration rate,WUE water use efficiency,Fv/Fmoptimal/maximal photochemical efficiency of PSII in the dark

**Source:** Acta Physiol Plant (2016) 38:95

**Cadmium up take with varying cadmium concentrations on different harvest days**

| Cadmium Accumulation in soils | Harvest Days | | | | | |
|---|---|---|---|---|---|---|
| | 15 days | | 30 days | | 45 days | |
| | root | shoot | root | shoot | root | shoot |
| Control | 0.68±0.003 | 0.8±0.005 | 0.93±0.002 | 1.14±0.003 | 1.12±0.002 | 1.4±0.001 |
| TC1 | 6.56±0.003 | 7.9±0.02 | 8.25±0.002 | 10.5±0.02 | 9.35±0.003 | 12.1±0.01 |
| TC2 | 15.3±0.003 | 19.4±0.002 | 19.07±0.001 | 25.07±0.003 | 17.1±0.002 | 22.8±0.001 |
| TC3 | 24.1±0.002 | 37.8±0.01 | 30.52±0.01 | 41.25±0.005 | 32.14±0.008 | 43.9±0.006 |
| TC4 | 28.9±0.002 | 41.04±0.008 | 34.1±0.004 | 45.5±0.008 | 36.2±0.006 | 48.62±0.006 |

**Source:** http://www.cwejournal.org/vol10no1/assessment-of-cadmium-and-chromium-stress-on-growth-physiology-and-metal-uptake-using-mirabilis-jalapa/

**Lipid peroxidation (MDH) and activities of superoxide (SOD), catalase (CAT), as carbate peroxidase (APX), guaiacal peroxidase (GPX) and Glutathione reductase (GR) in the roots and leaves of 60-day-old *Pfaffia glomerata* plants cultivated during 20 days in nutritive solution containing 0,15, 45 and 90 µmol Cd $L^{-1}$. Values are the mean of five measurements:**

| Cd (mmol $L^{-1}$) | MDA(nmol MDA $g^{-1}$ FW) | SOD (Umg$^{-1}$ protein) | CAT (mmol $H_2O_2$ $mg^{-1}$ protein $Min^{-1}$ | APX (mmol Asorbate $mg^{-1}$ protein $Min^{-1}$ | GPX mmol Guaiacol $mg^{-1}$ protein $Min^{-1}$ | GR (mmol NADPH $mg^{-1}$ protein $Min^{-1}$ |
|---|---|---|---|---|---|---|
| **Root** | | | | | | |
| **0** | 27.30 c | 1.26 d | 0.33 b | 7.65 c | 9.35 b | 1.32 a |
| **15** | 37.43 b | 5.86 a | 0.29 b | 8.62 b | 8.05 c | 0.53 b |
| **45** | 44.62 a | 4.75 b | 0.20 c | 4.94 d | 9.57 b | 0.44 b |
| **90** | 48.36 a | 3.55 c | 0.49 a | 9.40 a | 10.20 a | 0.58 b |
| **Leaves** | | | | | | |
| **0** | 144.45 b | 5.49 | 0.79 b | 2.36 | 0.82 c | 0.50 c |
| **15** | 137.72 b | 8.23 | 0.84 b | 3.94 | 0.74 c | 0.52 c |
| **45** | 129.07 b | 6.33 | 1.00 a | 3.38 | 1.00 b | 0.76 b |
| **90** | 298.81 a | 6.91 NS | 0.60 c | 3.28 NS | 1.60 a | 0.95 a |

**Source:** Cd-tolerance markers of *Pfaffia glomerata* (Spreng.) Pedersen plants: anatomical and physiological features, Brazilian journal of plants physiology, 2012

**Effect of Cd on photosynthetic pigments (mg g−1 fw) of *B. monnieri* at different concentrations and exposure periods**

| Cd concentrations (µM) | Photosynthetic pigments (mg $g^{-1}$ fw) | Exposure periods (h) | | |
|---|---|---|---|---|
| | | **48** | **96** | **144** |
| **Control** | Chlorophyll | 1.32 ± 0.15 | 1.29 ± 0.04 | 1.37 ± 0.11 |
| | Carotenoid | (0.33 ± 0.03) | (0.32 ± 0.02) | (0.33 ± 0.01) |
| **10** | Chlorophyll | 1.23 ± 0.07 | 1.20 ± 0.08 | $1.06 \pm 0.09^{AB}$ |
| | Carotenoid | $(0.38 \pm 0.03)^{a}$ | $(0.39 \pm 0.01)^{a}$ | $(0.31 \pm 0.02)^{b}$ |
| **50** | Chlorophyll | $1.18 \pm 0.06^{A}$ | $0.96 \pm 0.09^{AB}$ | $0.76 \pm 0.08^{AB}$ |
| | Carotenoid | $(0.41 \pm 0.01)^{a}$ | $(0.42 \pm 0.03)^{a}$ | $(0.29 \pm 0.02)^{ab}$ |
| **100** | Chlorophyll | $1.15 \pm 0.04^{A}$ | $0.93 \pm 0.03^{AB}$ | $0.69 \pm 0.03^{AB}$ |
| | Carotenoid | (0.32 ± 0.03) | $(0.27 \pm 0.03)^{ab}$ | $(0.22 \pm 0.03)^{ab}$ |
| **200** | Chlorophyll | $0.99 \pm 0.02^{A}$ | $0.66 \pm 0.06^{AB}$ | $0.57 \pm 0.05^{AB}$ |
| | Carotenoid | $(0.28 \pm 0.02)^{a}$ | $(0.25 \pm 0.01)^{a}$ | $(0.18 \pm 0.02)^{ab}$ |

The plants were referred with initial metal concentration at every 48 h. All values are means of triplicates ±SD. LSD ($p < 0.01$)

**Source:** http://www.sciencedirect.com/science/article/pii/S004565350500723X

**Antioxidant enzymes modified in different plant species exposed to variable cadmium concentration**

| Cadmium concentration (µM) | Exposure time | Plant Species | Antioxidant enzymes modified | References |
|---|---|---|---|---|
| 5 | 10 d | Pisum sativum | CAT, APOX, GPOX | Metwally et al., 2003 |
| 1 and 10 | 10 d | Triticum alurum | CAT, SOD, APOX, GPOX | Milone et al., 2003 |
| 4 and 40 | 7 d | Pisum sativum | CAT, SOD, APOX, GPOX | Dixit et al., 2001 |
| 5 and 50 | 48 h | Populus conescens | CAT, SOD, APOX, GR, MDAR | Schutzendubel and Polle, 2002 |
| 50 | 21 d | Phragmites australis | CAT, SOD, APOX, GR | Ianelli et al., 2002 |
| 50, 100 and 200 | 48 h | Glycine max | CAT, SOD, APOX | Balestrasse et al., 2001 |
| 500 | 12 h | Helianthus annus | CAT, SOD, APOX, GR, DHAR | Gallego et al., 1996 |
| 100 and 500 | 20 d | Oryza sativa | CAT, SOD, GPOX | Shah et al ., 2001 |
| 300 and 500 | 21 d | Arabidopsis thaliana | CAT, SOD, APOX, GPOX, GR | Cho and Seo, 2004 |
| 2000 and 5000 | 0.96 h | Sacchrum officinarum | CAT, SOD, GR | Fprnazier et al., 2002 |
| 5000 | 0.24 h | Oryza sativa | CAT, SOD, APOX, GPOX, GR | Hsu and Kso, 2004 |

**Source:** Cadmium toxicity in plants, Brazilian journal of plants physiology, 2005