

**Plant growth promotion and enhanced uptake of Cd by combinatorial application of *Bacillus pumilus* and EDTA on *Zea mays* L.**

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**Supplementary Table S1:** The distribution of treatments

| Sequence | P | M    | C    |
|----------|---|------|------|
| T0       | 1 | None | None |
| T1       | 1 | 1    | None |
| T2       | 1 | 1    | 1    |
| T3       | 1 | None | 1    |

Letter P, M and C indicates plant (*Z. mays*), microbe (*B. pumilus*) and chelator (EDTA)

**Supplementary Table S2:** Pearson's correlation coefficients showing the significant correlations among the measured parameters at p=0.05

| Variables         | SL           | RL           | FW           | DW           | Chl <i>a</i> | Chl <i>b</i> | Car          | Pro           | RWC           | Soil Cd      | Root Cd      | Shoot Cd     | Root BCF      | Shoot BCF     | TF           | TI           | Cd P <sub>e</sub> |
|-------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------|--------------|--------------|--------------|---------------|---------------|--------------|--------------|-------------------|
| SL                | <b>1</b>     | <b>0.908</b> | <b>0.950</b> | <b>0.958</b> | <b>0.938</b> | <b>0.971</b> | <b>0.809</b> | 0.157         | 0.002         | 0.548        | <b>0.923</b> | <b>0.931</b> | -0.034        | -0.274        | <b>0.918</b> | <b>0.833</b> | <b>0.931</b>      |
| RL                | <b>0.908</b> | <b>1</b>     | <b>0.989</b> | <b>0.985</b> | <b>0.944</b> | <b>0.904</b> | <b>0.708</b> | 0.407         | -0.322        | <b>0.806</b> | <b>0.958</b> | <b>0.924</b> | -0.248        | -0.457        | <b>0.766</b> | <b>0.984</b> | <b>0.941</b>      |
| FW                | <b>0.950</b> | <b>0.989</b> | <b>1</b>     | <b>0.992</b> | <b>0.972</b> | <b>0.948</b> | <b>0.766</b> | 0.310         | -0.220        | <b>0.760</b> | <b>0.964</b> | <b>0.937</b> | -0.164        | -0.380        | <b>0.837</b> | <b>0.963</b> | <b>0.955</b>      |
| DW                | <b>0.958</b> | <b>0.985</b> | <b>0.992</b> | <b>1</b>     | <b>0.967</b> | <b>0.955</b> | <b>0.791</b> | 0.288         | -0.174        | <b>0.728</b> | <b>0.960</b> | <b>0.941</b> | -0.152        | -0.378        | <b>0.839</b> | <b>0.947</b> | <b>0.955</b>      |
| Chl <i>a</i>      | <b>0.938</b> | <b>0.944</b> | <b>0.972</b> | <b>0.967</b> | <b>1</b>     | <b>0.980</b> | <b>0.881</b> | 0.154         | -0.089        | <b>0.710</b> | <b>0.931</b> | <b>0.905</b> | 0.007         | -0.216        | <b>0.882</b> | <b>0.918</b> | <b>0.941</b>      |
| Chl <i>b</i>      | <b>0.971</b> | <b>0.904</b> | <b>0.948</b> | <b>0.955</b> | <b>0.980</b> | <b>1</b>     | <b>0.914</b> | 0.041         | 0.071         | 0.582        | <b>0.915</b> | <b>0.911</b> | 0.113         | -0.128        | <b>0.948</b> | <b>0.847</b> | <b>0.934</b>      |
| Car               | <b>0.809</b> | <b>0.708</b> | <b>0.766</b> | <b>0.791</b> | <b>0.881</b> | <b>0.914</b> | <b>1</b>     | -0.256        | 0.329         | 0.410        | <b>0.743</b> | <b>0.742</b> | 0.385         | 0.156         | <b>0.883</b> | 0.658        | <b>0.788</b>      |
| Pro               | 0.157        | 0.407        | 0.310        | 0.288        | 0.154        | 0.041        | -0.256       | <b>1</b>      | <b>-0.933</b> | 0.462        | 0.359        | 0.327        | <b>-0.838</b> | <b>-0.896</b> | -0.172       | 0.437        | 0.295             |
| RWC               | 0.002        | -0.322       | -0.220       | -0.174       | -0.089       | 0.071        | 0.329        | <b>-0.933</b> | <b>1</b>      | -0.582       | -0.211       | -0.140       | <b>0.832</b>  | <b>0.790</b>  | 0.300        | -0.409       | -0.141            |
| Soil Cd           | 0.548        | <b>0.806</b> | <b>0.760</b> | <b>0.728</b> | <b>0.710</b> | 0.582        | 0.410        | 0.462         | -0.582        | <b>1</b>     | 0.638        | 0.539        | -0.459        | -0.471        | 0.371        | <b>0.888</b> | 0.594             |
| Root Cd           | <b>0.923</b> | <b>0.958</b> | <b>0.964</b> | <b>0.960</b> | <b>0.931</b> | <b>0.915</b> | <b>0.743</b> | 0.359         | -0.211        | 0.638        | <b>1</b>     | <b>0.992</b> | -0.141        | -0.423        | <b>0.814</b> | <b>0.920</b> | <b>0.996</b>      |
| Shoot Cd          | <b>0.931</b> | <b>0.924</b> | <b>0.937</b> | <b>0.941</b> | <b>0.905</b> | <b>0.911</b> | <b>0.742</b> | 0.327         | -0.140        | 0.539        | <b>0.992</b> | <b>1</b>     | -0.093        | -0.396        | <b>0.834</b> | <b>0.865</b> | <b>0.993</b>      |
| Root BCF          | -0.034       | -0.248       | -0.164       | -0.152       | 0.007        | 0.113        | 0.385        | <b>-0.838</b> | <b>0.832</b>  | -0.459       | -0.141       | -0.093       | <b>1</b>      | <b>0.932</b>  | 0.352        | -0.304       | -0.066            |
| Shoot BCF         | -0.274       | -0.457       | -0.380       | -0.378       | -0.216       | -0.128       | 0.156        | <b>-0.896</b> | <b>0.790</b>  | -0.471       | -0.423       | -0.396       | <b>0.932</b>  | <b>1</b>      | 0.112        | -0.478       | -0.359            |
| TF                | <b>0.918</b> | <b>0.766</b> | <b>0.837</b> | <b>0.839</b> | <b>0.882</b> | <b>0.948</b> | <b>0.883</b> | -0.172        | 0.300         | 0.371        | <b>0.814</b> | <b>0.834</b> | 0.352         | 0.112         | <b>1</b>     | 0.683        | <b>0.846</b>      |
| TI                | <b>0.833</b> | <b>0.984</b> | <b>0.963</b> | <b>0.947</b> | <b>0.918</b> | <b>0.847</b> | 0.658        | 0.437         | -0.409        | <b>0.888</b> | <b>0.920</b> | <b>0.865</b> | -0.304        | -0.478        | 0.683        | <b>1</b>     | <b>0.896</b>      |
| Cd P <sub>e</sub> | <b>0.931</b> | <b>0.941</b> | <b>0.955</b> | <b>0.955</b> | <b>0.941</b> | <b>0.934</b> | <b>0.788</b> | 0.295         | -0.141        | 0.594        | <b>0.996</b> | <b>0.993</b> | -0.066        | -0.359        | <b>0.846</b> | <b>0.896</b> | <b>1</b>          |

*Values in bold are different from 0 with a significance level alpha=0.05*

**Abbreviation:** SL, shoot length; RL, root length; FW, fresh weight; DW, dry weight; Chl *a*, leaf chlorophyll *a* content; Chl *b*, leaf chlorophyll *b* content; Car, leaf carotenoids contents; Pro, plant proline content; RWC, relative water contents; BCF, bioconcentration factor; TF, translocation factor; TI, tolerance index; Cd P<sub>e</sub>, Cd phytoextraction efficiency.