**Modeling and optimizing the removal of cadmium by *Sinapis alba* L. from contaminated soil via Response Surface Methodology and Artificial Neural Networks during assisted phytoremediation with sewage sludge**

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Content of the supplementary material section:

Supplementary Table 4. Germination index, plants biomass and roots length after 28 days of exposure

Supplementary Table 5. Comparison between the use of different number of neurons in the hidden layer

Supplementary Table 4. Germination index, plants biomass and roots length after 28 days of exposure [A, B, C – soils with Cd concentrations: 1.12, 14.22, 20.80 mg kg-1 respectively, A+0.5SS, B+0.5SS, C+0.5SS – soils with half of a full dose of sewage sludge supplementation based on the EU norm (EUR-Lex - 31991L0676 e EN), A+SS, B+SS, C+SS – soils with full dose of sewage sludge supplementation (EUR-Lex - 31991L0676 e EN). All results are expressed as means ± standard deviation, n = 3. Means within a column followed by the different letters are significantly different according to Tukey test (p < 0.05).]

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| --- | --- | --- | --- |
| Treatment | Average germination  index [%] | Biomass  [g] | Root length |
| A | 96a | 7.45 ± 0.4a | 15.24 ± 1.5a |
| B | 43b | 3.2 ± 0.3b | 5.27 ± 1.6b |
| C | 13c | 2.0 ± 0.2c | 1.81 ± 1.1c |
| A+0.5SS | 96a | 9.1 ± 0.4d | 19.7 ± 0.8d |
| B+0.5SS | 73d | 7.7 ± 0.1a | 11.4 ± 0.5e |
| C+0.5SS | 41b | 3.5 ± 0.3b | 5.21 ± 0.b |
| A+SS | 97a | 9.5 ± 0.8d | 19.1 ± 0.4d |
| B+SS | 75d | 3.9 ± 0.5b | 11.5 ± 0.2e |
| C+SS | 42b | 3.8 ± 0.3b | 6.84 ± 0.b |

Supplementary Table 5. Comparison between the use of different number of neurons in the hidden layer

|  |  |  |  |
| --- | --- | --- | --- |
| Number of Neurons in hidden layer | R (test data) | MSE | MAE |
| 4 | 0.788 | 0.00546 | 0.0632 |
| 5 | 0.851 | 0.00035 | 0.0211 |
| 6 | 0.983 | 0.00022 | 0.0145 |
| 7 | 0.987 | 0.00019 | 0.0098 |
| 8 | 0.997 | 0.00006 | 0.0081 |
| 9 | 0.961 | 0.00045 | 0.0138 |
| 10 | 0.954 | 0.00208 | 0.0314 |