**Isothermal drying kinetics of sewage sludge using weathered coal fly ash as adjuvant for agronomic application**

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**Supplementary information**

* **Drying process procedure**

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| (a) | (b) |
| Fig. S1. Drying screening phase to determine the (a) cylinder length, and (b) samples: SS, and SS\_CFA. | |

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| Fig. S2. Temperature evolution inside the cylinder during the drying process at 70, 100 and 130 ºC [Periods 0, I and II represent the rising rate period, the constant rate period, and falling rate period, respectively]. |
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* **Phytotoxicity tests**

Table S1. pH and EC measured in the extracts used in the phytotoxicity tests.

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| **Samples** | **Parameter** | **L/S (L kg-1)** | | | | | | |
| **5** | **10** | **25** | **50** | **100** | **200** | **500** |
| SS | pH | 6.44 | 6.71 | 6.81 | 6.81 | 6.73 | 6.44 | 6.13 |
| EC (mS cm-1) | 4.48 | 1.72 | 1.00 | 0.59 | 0.40 | 0.40 | 0.19 |
| SS\_CFA | pH | 6.25 | 6.73 | 6.86 | 6.99 | 7.07 | 7.18 | 7.31 |
| EC (mS cm-1) | 4.67 | 2.63 | 1.38 | 0.82 | 0.45 | 0.26 | 0.15 |
| CFA | pH | 8.91 | 8.63 | 8.52 | 8.34 | 7.75 | 7.97 | 7.14 |
| EC (mS cm-1) | 0.83 | 0.49 | 0.24 | 0.15 | 0.09 | 0.08 | 0.06 |

**Germination Index (GI) calculation**

For each sample, the germination index (GI) was calculated by combining Eq. (S1), (S2) and (S3) (S1)

(S2)

(S3)

where and are the mean number of germination seeds in each sample and in control, respectively; and are the mean length of roots in each sample and in control, respectively; is the relative seed germination (%) and (%) is the relative root growth. The GI results were classified as: non-phytotoxic if GI > 80%; mild phytotoxicity 60% < GI < 80%; strong phytotoxicity 40% < GI < 60%; severe phytotoxicity GI < 40% [1,2].

* **Drying kinetics**

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| Fig. S3. Energy consumption during Period I at 70, 100 and 130 ºC to SS and SS\_CFA samples. Results marked with different letters are statistically different through the Tukey HSD test (p < 0.05). |

* **References**

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[2] Pinho IA, Lopes D V., Martins RC, et al. Phytotoxicity assessment of olive mill solid wastes and the influence of phenolic compounds. Chemosphere. 2017;185:258–267. doi:10.1016/j.chemosphere.2017.07.002