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| **Table S1 Effect of long-term biochar application on soil basic properties** |
|  | SOM (g·kg-1) | TP (g·kg-1) | TK(%) | AK(mg·kg-1) | ANa(mg·kg-1) | CEC (cmol·kg-1) | pH |
| Upland soil | 0-20 cm | CK | 26.13 ± 1.11 | 0.88 ± 0.03 | 2.08 ± 0.01 | 214.67 ± 3.18 | **81.33 ± 0.33** | **70.79 ± 0.33** | **6.89 ± 0.02** |
| BC | 28.10 ± 1.41 | 0.82 ± 0.02 | 2.14 ± 0.03 | 185.33 ± 0.88 | **87.00 ± 1.53** | **79.63 ± 0.33** | **7.38 ± 0.04** |
| 20-40 cm | CK | 20.13 ± 0.28 | **0.82 ± 0.02** | 2.10 ± 0.01 | **210.33 ± 1.20** | 83.00 ± 5.00 | 67.40 ± 2.69 | **6.92 ± 0.01** |
| BC | 22.87 ± 0.94 | **0.85 ± 0.01** | 2.11 ± 0.02 | **138.33 ± 1.20** | 97.00 ± 0.58 | 74.51 ± 3.14 | **7.52 ± 0.00** |
| Paddy soil | 0-20 cm | CK | **25.62 ± 0.33** | **0.53± 0.02** | **3.68 ± 0.02** | **155.33 ± 0.67** | **74.33 ± 0.88** | 65.00 ± 0.99 | **6.94 ± 0.03** |
| BC | **30.56 ± 2.15** | **0.45 ± 0.02** | **3.86 ± 0.05** | **128.00 ± 0.58** | **68.67 ± 0.33** | 73.24 ± 6.43 | **7.15 ± 0.03** |
| 20-40 cm | CK | **14.81 ± 2.28** | 0.32 ± 0.02 | 3.47 ± 0.17 | 137.67 ± 8.17 | 69.67 ± 4.67 | 64.85 ± 1.39 | **6.97 ± 0.01** |
| BC | **21.95 ± 2.43** | 0.58 ± 0.15 | 3.57 ± 0.03 | 121.00 ± 0.00 | 72.00 ± 0.58 | 68.81 ± 2.72± | **7.17 ± 0.02** |
| Greenhouse soil | 0-20 cm | CK | 47.31 ± 1.03 | 4.33 ± 0.20 | **3.12 ± 0.10** | **546.33 ± 1.86** | **248.00 ± 2.00** | 74.45 ± 1.18 | **6.38 ± 0.01** |
| BC | 51.83 ± 1.42 | 4.20 ± 0.13 | **3.76 ± 0.06** | **576.00 ± 5.20** | **290.00 ± 11.14** | 77.84 ± 3.88 | **6.52 ± 0.03** |
| 20-40 cm | CK | 53.18 ± 0.74 | 3.30 ± 0.12 | 3.81 ± 0.08 | **539.33 ± 3.67** | **233.33 ± 0.67** | 66.20 ± 2.19 | 6.54 ± 0.03 |
| BC | 52.62 ± 1.28 | 3.15 ± 0.14 | 3.56 ± 0.05 | **556.33 ± 3.33** | **313.670 ±.33** | 71.15 ± 1.50 | 6.51 ± 0.05 |
| SOM: Soil Organic Matter; TP: Total Phosphorus, TK: Total potassium; AK: Available Potassium; ANa: Available Sodium; CEC: Cation Exchange Capacity. Date in bold indicate significant differences between control and biochar treatments with same soil depth based on an independent *t* test at *P*< 0.05. |