**Fig. S.1.** Effect of acidified and non-acidified biochars and phosphorus rates on post-harvest 1000 grain weight at reproductive growth stage of maize plants. Error bars represent ± standard deviations; different letters over bars indicate significant (*P* ≤ 0.05) difference according to Tukey's HSD test; GWB, AGWB, CCB and ACCB represent green waste biochar, acidified green waste biochar, corn cob biochar and acidified corn cob biochar, respectively.

**Table S.1. Characterization of corn cob, green waste, acidified corn cob and acidified green waste biochars**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Properties** | **Unit** | **Biochar** | | | |
| **CCB\*** | **GWB\*\*** | **ACCB\*\*\*** | **AGWB\*\*\*\*** |
| **Physical/Chemical properties** | | | | | |
| Ash Content | % | 8.69 | 12.5 | 5.23 | 8.37 |
| Moisture Content | % | 8.35 | 3.36 | 9.68 | 5.56 |
| Conversion  efficiency | % | 48.2 | 53.6 | 43.6 | 49.2 |
| pH (1:20) | − | 6.97 | 6.86 | 2.97 | 2.73 |
| EC (1:20) | dS m−1 | 1.54 | 2.31 | 1.41 | 2.17 |
| CEC | cmolc kg−1 | 43.6 | 28.3 | 47.9 | 32.6 |
| **Nutritional/Elemental composition** | | | | | |
| C | % | 53.4 | 66.4 | 51.6 | 65.2 |
| N | % | 1.79 | 1.88 | 1.03 | 1.17 |
| P | g kg─1 | 2.14 | 2.81 | 1.98 | 2.71 |
| K | g kg─1 | 8.26 | 11.12 | 7.67 | 10.75 |

All values are the means of three replicates

\*CCB represents Corn cob biochar

\*\*GWB represents Green waste biochar

\*\*\*ACCB represents Acidified corn cob biochar

\*\*\*\*AGWB represents Acidified green waste biochar

**Table S.2. Effect of acidified and non-acidified biochars and phosphorus rates on plant nutritional properties at vegetative growth stage of maize plants**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Treatments** | **Phosphorus Rates** | | | | | |
| 50% | 75% | 100% | 50% | 75% | 100% |
| **Organic Phosphorus (mg kg-1)** | | | **Phosphorus in Plant Shoot (mg g-1)** | | |
| **Control** | 53.9±5.2d | 84.53±5c | 51.54±0.6de | 0.39±0.01f | 0.42±0.02c-f | 0.43±0.02c-f |
| **GWB1** | 110.99±5b | 140.13±5a | 53.98±3d | 0.41±0.008def | 0.44±0.012c-f | 0.46±0.018cd |
| **AGWB2** | 84.94±1c | 106.22±1b | 75.80±3c | 0.47±0.026c | 0.60±0.013a | 0.59±0.012a |
| **CCB3** | 135±4a | 138.45±9a | 130.75±5a | 0.40±0.031ef | 0.45±0.012cde | 0.46±0.019cd |
| **ACCB4** | 38.73±4ef | 42.35±4def | 32.80±4f | 0.53±0.015b | 0.63 ±0.024a | 0.62±0.031a |

Values are means of three replicates ± standard deviations, means followed by different letters are significantly (*P* ≤ 0.05) different from each other according to Tukey's HSD test; 1. Green waste biochar; 2. Acidified green waste biochar; 3. Corn cob biochar; 4. Acidified corn cob biochar

**Table S.3. Effect of acidified and non-acidified biochars and phosphorus rates on post-harvest agronomic traits (plant height and plant fresh weight) at vegetative growth stage of maize plants**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Treatments** | **Phosphorus Rates** | | | | | | | | |
| 50% | 75% | 100% | 50% | | 75% | 100% |
| **Plant height (cm plant-1)** | | | | **Plant fresh weight (g plant-1)** | | | |
| **Control** | 89±2e | 118B±4cd | 118±1cd | 75±5g | | 120±1de | 123±2de |
| **GWB1** | 115±1d | 116±4d | 119±4bcd | 123±6de | | 123±6de | 119±3e |
| **AGWB2** | 118±3cd | 124±4abc | 122±3a-d | 125±2de | | 131±2bcd | 140±4b |
| **CCB3** | 115±2d | 116±3cd | 128±3a | 106±3f | | 125±5cde | 158±3a |
| **ACCB4** | 120±2a-d | 122±4a-d | 126±2ab | 136±3bc | | 129±4cde | 169±3a |

Values are means of three replicates ± standard deviations, means followed by different letters are significantly (P ≤ 0.05) different from each other according to Tukey's HSD test; 1. Green waste biochar; 2. Acidified green waste biochar; 3. Corn cob biochar; 4. Acidified corn cob biochar