

Supplementary Table S1: Soil properties (mean \pm SD) of the top 10 cm of the study plots at the commercial sugarcane farm at Maroochy River prior to the start of the field experiment.

| | | |
|--|--------|------------------|
| Soil texture | Sand % | 50 |
| | Silt % | 27.5 |
| | Clay % | 22.5 |
| Bulk density, row (g cm^{-3}) | | 1.00 |
| Bulk density, inter-row (g cm^{-3}) | | 1.07 |
| pH | | 5.27 ± 0.39 |
| EC ($\mu\text{S cm}^{-1}$) | | 13.08 ± 3.75 |
| CEC (cmol kg^{-1}) | | 36.81 ± 1.22 |
| Total C (%) | | 2.04 ± 0.08 |
| Total N (%) | | 0.19 ± 0.01 |
| Total P (%) | | 0.03 ± 0.00 |
| Total K (%) | | 0.41 ± 0.03 |
| $\text{NH}_4^+\text{-N}$ (mg N kg^{-1} soil) | | 6.80 ± 6.79 |
| $\text{NO}_3^-\text{-N}$ (mg N kg^{-1} soil) | | 0.92 ± 0.86 |
| Microbial biomass N (mg kg^{-1} soil) | | 0.56 ± 0.83 |

Supplementary Table S2: Physical and chemical properties of the poultry litter and amendments used in the field trial. Data are means of 3 replicates \pm SD; <d.l. below detection limit.

| | Poultry litter | Bentonite | Biochar | Compost |
|--|------------------|------------------|------------------|-------------------|
| Dry matter (%) | 79.40 | n/a | n/a | 66.90 |
| pH | 8.39 ± 0.06 | 8.85 ± 0.01 | 8.78 ± 0.08 | 6.96 ± 0.08 |
| EC (mS cm^{-1}) | n/a | 1.66 ± 0.04 | 0.26 ± 0.09 | 0.57 ± 0.08 |
| CEC (cmolc kg^{-1}) | 74.68 ± 7.19 | 76.81 ± 2.27 | 39.04 ± 3.10 | 52.02 ± 2.19 |
| Total C (%) | 37.70 ± 1.69 | 0.66 ± 0.04 | 25.89 ± 4.89 | 17.72 ± 0.39 |
| Total N (%) | 3.05 ± 0.10 | 0.04 ± 0.01 | 0.75 ± 0.18 | 1.19 ± 0.01 |
| C/N ratio | 12.35 | n/a | 34.43 | 14.87 |
| Total P (%) | 0.77 ± 0.15 | 0.03 ± 0.00 | 0.01 ± 0.00 | 0.20 ± 0.01 |
| Total K (%) | 0.94 ± 0.07 | 0.39 ± 0.21 | 0.10 ± 0.01 | 0.50 ± 0.04 |
| $\text{NH}_4^+\text{-N}$ (mg N kg^{-1}) | 2836 ± 48 | 7.98 ± 5.44 | <d.l. | 9.23 ± 7.37 |
| $\text{NO}_3^-\text{-N}$ (mg N kg^{-1}) | <d.l. | <d.l. | 13.20 ± 3.27 | 350.6 ± 103.9 |