**Table S1** – Chemical properties of non – autoclaved litter mixtures taken from old growth (OG) forest, moderate logged (ML) forest, heavily logged (HL) forest and oil palm plantation. Data are means (n=5) ± 1 SE. Superscript letters denote whether parameters were significantly different between land uses from pairwise Tukey’s HSD test. Significant differences (p <0.05) between land uses are indicated when letters are different. Non – significant differences (P >0.05 between land-uses are indicated when letters are shared.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **OG Forest** | **ML Forest** | **HL Forest** | **Oil Palm** |
| C (%) | a45.47 (0.26) | a45.13 (0.35) | b42.36 (0.24) | b41.65 (0.55) |
| N (%) | a1.56 (0.03) | b1.06 (0.07) | a1.67 (0.05) | a1.93 (0.19) |
| P (µg/g) | a0.58 (0.03) | b0.32 (0.01) | a0.60 (0.03) | c0.97 (0.05) |
| K (µg/g) | a4.09 (0.30) | a3.25 (1.56) | a4.05 (0.34) | a3.77 (0.16) |
| Ca (µg/g) | a12.08 (0.74) | b7.53 (0.42) | a12.71 (0.46) | b6.58 (0.46) |
| Mg (µg/g) | a3.52 (0.25) | b1.77 (0.06) | c2.48 (0.07) | bc2.05 (0.13) |
| Al (µg/g) | a4473.87 (1111.84) | a2639.24 (1279.61) | a4047.22 (1038.77) | a3991.15 (1253.12) |
| Soluble Cell Content (%) | a40.02 (0.37) | a38.90 (0.77) | a38.05 (0.67) | b26.81 (0.87) |
| Hemicellulose + Proteins (%) | a8.84 (0.28) | b7.65 (0.28) | c10.49 (0.18) | d16.75 (0.21) |
| Cellulose (%) | a21.50 (0.29) | a23.08 (0.54) | a23.62 (0.71) | b30.66 (0.61) |
| Lignin + Recalcitrants (%) | a29.58 (0.50) | a30.32 (0.48) | b27.79 (0.70) | b25.73 (0.58) |
| C:N Ratio | a29.21 (0.63) | b43.27 (2.87) | a25.47 (0.70) | a22.81 (3.18) |
| Lignin:N Ratio | a19.00 (0.45) | b29.12 (2.16) | a16.74 (0.81) | a14.09 (2.01) |

**Table S2** –Linear regression results from models with litter mass loss of each litter type after 398 d as the dependent variable and axis scores 1 and 2 from principal co-ordinates analysis (PCoA) of initial bacteria, fungal and saprotrophic fungal community composition and principal components analysis (PCA) of PLFA’s as independent variables.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Litter Type** | **Source of variation** | **df** | **Sum of Squares** | **F** | **P - value** | **R2** |
| ***OG Litter*** | *Bacteria - PCoA 1* | 55.55 | 1 | 0.24 | 0.28 | 0.08 |
|  | *Bacteria - PCoA 2* | 9.11 | 1 | 0.2 | 0.66 |  |
|  | *residuals* | 764.42 | 17 |  |  |  |
|  | *Fungi - PCoA 1* | 35.1 | 1 | 0.75 | 0.4 | 0.05 |
|  | *Fungi - PCoA 2* | 2.22 | 1 | 0.05 | 0.83 |  |
|  | *residuals* | 791.77 | 17 |  |  |  |
|  | *Saprotrophic Fungi - PCoA 1* | 10.11 | 1 | 0.23 | 0.64 | 0.08 |
|  | *Saprotrophic Fungi - PCoA 2* | 58.53 | 1 | 1.31 | 0.27 |  |
|  | *residuals* | 760.45 | 17 |  |  |  |
|  | *PLFA PC1* | 6.21 | 1 | 0.17 | 0.68 | 0.26 |
|  | *PLFA PC2* | 208.31 | 1 | 5.76 | **0.03** |  |
|  | *residuals* | 614.57 | 17 |  |  |  |
| ***ML Litter*** | *Bacteria - PCoA 1* | 126.28 | 1 | 4.82 | **0.04** | 0.32 |
|  | *Bacteria - PCoA 2* | 86.55 | 1 | 3.30 | 0.09 |  |
|  | *residuals* | 445.5 | 17 |  |  |  |
|  | *Fungi - PCoA 1* | 2.59 | 1 | 0.10 | 0.75 | 0.34 |
|  | *Fungi - PCoA 2* | 219.91 | 1 | 8.58 | **0.009** |  |
|  | *residuals* | 435.83 | 17 |  |  |  |
|  | *Saprotrophic Fungi - PCoA 1* | 125.18 | 1 | 5.34 | **0.03** | 0.39 |
|  | *Saprotrophic Fungi - PCoA 2* | 134.32 | 1 | 5.73 | **0.03** |  |
|  | *residuals* | 398.83 | 17 |  |  |  |
|  | *PLFA PC1* | 139.63 | 1 | 4.70 | **0.04** | 0.23 |
|  | *PLFA PC2* | 13.48 | 1 | 0.45 | 0.51 |  |
|  | *residuals* | 505.22 | 17 |  |  |  |
| ***HL Litter*** | *Bacteria - PCoA 1* | 46.35 | 1 | 0.88 | 0.36 | 0.1 |
|  | *Bacteria - PCoA 2* | 48.56 | 1 | 0.93 | 0.35 |  |
|  | *residuals* | 891.89 | 17 |  |  |  |
|  | *Fungi - PCoA 1* | 10.55 | 1 | 0.21 | 0.65 | 0.15 |
|  | *Fungi - PCoA 2* | 133.63 | 1 | 2.70 | 0.12 |  |
|  | *residuals* | 842.62 | 17 |  |  |  |
|  | *Saprotrophic Fungi - PCoA 1* | 35.6 | 1 | 0.73 | 0.4 | 0.16 |
|  | *Saprotrophic Fungi - PCoA 2* | 123.8 | 1 | 2.54 | 0.13 |  |
|  | *residuals* | 827.39 | 17 |  |  |  |
|  | *PLFA PC1* | 237.03 | 1 | 5.90 | **0.03** | 0.31 |
|  | *PLFA PC2* | 67.17 | 1 | 1.67 | 0.21 |  |
|  | *residuals* | 682.6 | 17 |  |  |  |
| ***OP Litter*** | *Bacteria - PCoA 1* | 12.06 | 1 | 0.38 | 0.55 | 0.28 |
|  | *Bacteria - PCoA 2* | 171.5 | 1 | 5.34 | **0.04** |  |
|  | *residuals* | 481.5 | 15 |  |  |  |
|  | *Fungi - PCoA 1* | 81.6 | 1 | 3.22 | 0.09 | 0.43 |
|  | *Fungi - PCoA 2* | 257.21 | 1 | 10.14 | **0.006** |  |
|  | *residuals* | 380.16 | 15 |  |  |  |
|  | *Saprotrophic Fungi - PCoA 1* | 33.67 | 1 | 0.87 | 0.37 | 0.14 |
|  | *Saprotrophic Fungi - PCoA 2* | 59.8 | 1 | 1.54 | 0.23 |  |
|  | *residuals* | 580.97 | 15 |  |  |  |
|  | *PLFA PC1* | 270.22 | 1 | 11.68 | **0.004** | 0.48 |
|  | *PLFA PC2* | 128.23 | 1 | 5.54 | **0.03** |  |
|  | residuals | 347.1 | 15 |  |  |  |