Supplementary Table 1 Correlations between soil properties and microbial activity based on Mantel tests

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| --- | --- | --- | --- | --- | --- |
| Soil  microbial activities | Soil  properties | 0-10cm | | 10-20cm | |
| Mantel’s r | Mantel’s P | Mantel’s r | Mantel’s P |
| Enzyme  activities | BD | -0.133 | 0.731 | 0.132 | 0.207 |
| NCP | -0.030 | 0.512 | 0.135 | 0.153 |
| Clay | 0.079 | 0.294 | -0.015 | 0.480 |
| pH | -0.125 | 0.834 | 0.187 | 0.091 |
| SOC | -0.247 | 0.957 | -0.103 | 0.719 |
| TN | 0.061 | 0.363 | -0.134 | 0.813 |
| AN | 0.053 | 0.340 | -0.140 | 0.856 |
| TP | 0.079 | 0.309 | 0.244 | 0.075 |
| AP | 0.024 | 0.396 | 0.149 | 0.193 |
| TK | 0.402 | **0.042** | -0.114 | 0.820 |
| AK | -0.170 | 0.865 | -0.025 | 0.515 |
| Microbial  biomass | BD | 0.012 | 0.402 | 0.341 | **0.040** |
| NCP | -0.043 | 0.531 | 0.066 | 0.309 |
| Clay | 0.193 | 0.125 | 0.185 | 0.123 |
| pH | -0.124 | 0.823 | 0.047 | 0.349 |
| SOC | -0.203 | 0.917 | 0.458 | **0.028** |
| TN | -0.038 | 0.495 | -0.024 | 0.520 |
| AN | -0.114 | 0.756 | -0.090 | 0.680 |
| TP | -0.033 | 0.441 | -0.014 | 0.419 |
| AP | -0.127 | 0.667 | -0.102 | 0.628 |
| TK | 0.287 | 0.102 | 0.153 | 0.135 |
| AK | -0.162 | 0.889 | -0.129 | 0.839 |

Bold fonts indicate significant (*p* < 0.05) or extreme significance (*p* < 0.01).