Table S1. The product of the mass percentage of aggregates for each particle size and the aggregate-associated organic carbon measured in 1 g aggregates.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Soil layer (cm) | Particle size (mm) | NT | RT | CT | SS |
| 0-10 | 5-2 | 271.69a | 221.55c | 224.18c | 239.47b |
| 2-0.25 | 560.62b | 540.20c | 504.17d | 634.63a |
| 0.25-0.053 | 26.36c | 56.10a | 50.94b | 18.42d |
| 10-20 | 5-2 | 246.99a | 222.72b | 192.44c | 223.78b |
| 2-0.25 | 537.47b | 490.03c | 506.12c | 600.05a |
| 0.25-0.053 | 34.14b | 54.53a | 55.92a | 35.24b |
| 20-40 | 5-2 | 244.83a | 171.00c | 180.58b | 256.87a |
| 2-0.25 | 473.69b | 442.51c | 465.80b | 526.25a |
| 0.25-0.053 | 25.07d | 49.09b | 55.31a | 28.89c |
| ANOVA | Tillage (T) | Soil layer (L) | Particle size (S) | T×L | T×S | L×S | T×L×S |
|  | \*\*\* | \*\*\* | \*\*\* | \*\* | \*\* | \*\*\* | \*\* |

NT means no tillage, RT means rotary tillage, CT means conventional tillage, SS means subsoiling. Different letters in each line indicate significant differences among tillage methods (*p*<0.05, Duncan’s test). \*\**p*<0.01, \*\*\**p*<0.001.

Table S2. The product of the mass percentage of aggregates for each particle size and the aggregate-associated microbial biomass carbon measured in 20 g aggregates.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Soil layer (cm) | Particle size (mm) | NT | RT | CT | SS |
| 0-10 | 5-2 | 4471.43a | 3757.74b | 3450.37c | 3920.06b |
| 2-0.25 | 6350.19b | 5487.64d | 5770.75c | 6856.70a |
| 0.25-0.053 | 271.96c | 507.36a | 463.72b | 166.43d |
| 10-20 | 5-2 | 4125.19a | 3702.08b | 3215.58c | 3749.14b |
| 2-0.25 | 6100.47a | 5683.93b | 5252.64c | 6069.52a |
| 0.25-0.053 | 324.56c | 504.90a | 493.94a | 350.27b |
| 20-40 | 5-2 | 4359.45a | 3027.75b | 2922.29b | 4474.24a |
| 2-0.25 | 5786.28a | 4949.11b | 5041.97b | 5552.59a |
| 0.25-0.053 | 243.89c | 439.07a | 455.93a | 268.74b |
| ANOVA | Tillage (T) | Soil layer (L) | Particle size (S) | T×L | T×S | L×S | T×L×S |
|  | \*\*\* | \*\*\* | \*\*\* | \*\*\* | \*\*\* | \*\*\* | \*\*\* |

NT means no tillage, RT means rotary tillage, CT means conventional tillage, SS means subsoiling. Different letters in each line indicate significant differences among tillage methods (*p*<0.05; Duncan’s test). \*\*\* *p*<0.001.