**Table S2.** TN, SOC, and stocks at 0-0.1 m, relative and cumulative C-CO2 emissions.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Fall-winter | TNa | SOCb | N | C | relative soybean C-CO2 emissionc | Soybeand | Fall-wintere  | Springf | Soybeang | totalh  |
| content  | stock 2013  | 2013/2014 | 2014 | 2014 | 2014/2015 |
| (g kg-1) | (t ha-1) | (kg C-CO2 kg-1) | C-CO2 emission (t C-CO2 ha-1) |
| Triticale | 1.98 | 21.50 | 2.71 | 29.2 | 3.68 | 8.02 | 2.49 | 1.13 | 4.75 | 16.50 |
| Sunflower | 1.99 | 21.42 | 2.70 | 29.0 | 3.66 | 7.43 | 2.41 | 0.96 | 5.15 | 16.10 |
| LSD | 2.02 | 2.06 | 0.14 | 1.80 | 0.46 | 1.63 | 0.19 | 0.26 | 1.88 | 1.44 |
| Spring  |
| Pearl millet | 1.97 a | 20.8 ab | 2.73 ab | 28.9 ab | 3.67 a | 7.95 | 2.79 | 1.10 b | 5.22 | 17.1 ab |
| F. sorghum | 1.99 ab | 22.0 bc | 2.65 ab | 29.3 ab | 3.34 a | 6.78 | 2.35 | 1.24 b | 4.80 | 15.1 a |
| Sunn hemp | 2.07 b | 22.6 c | 2.83 b | 30.9 b | 3.24 a | 7.13 | 2.30 | 1.07 b | 4.67 | 15.5 ab |
| Fallow | 1.92 a | 20.4 a | 2.56 a | 27.2 a | 4.43 b | 9.04 | 2.37 | 0.78 a | 5.12 | 17.3 b |
| LSD | 0.09 | 1.30 | 0.22 | 2.70 | 0.51 | 1.90 | 0.55 | 0.21 | 0.90 | 3.5 |
| Fall-winter (W) | 0.93 | 0.85 | 0.84 | 0.80 | 0.91 | 0.33 | 0.27 | 0.14 | 0.54 | 0.37 |
| Spring (S) | 0.01 | <0.01 | 0.04 | 0.04 | <0.01 | 0.08 | 0.11 | <0.01 | 0.54 | 0.04 |
| (W) Vs. (S) | 0.63 | 0.42 | 0.56 | 0.86 | 0.52 | 0.77 | 0.39 | 0.19 | 0.4 | 0.56 |

aTotal Nitrogen; bSoil Organic Carbon; caverage from seasons 2013/2014 and 2014/2015; dSoybean season 2013/2014; eFall-winter crops 2014; fSpring crops 2014; gSoybean season 2014/2015; hcumulative C-CO2 emission. \*Means followed by different letters, differ from each other by the paired t-test (LSD, p < 0.05)