**SUPPLEMENTARY MATERIALS – ДОПОЛНИТЕЛЬНЫЕ МАТЕРИАЛЫ**

**Factors for conversion of the content of double-stranded DNA to carbon of soil microbial biomass: physicochemical aspects and influence of human activity**

**Коэффициенты пересчета содержания двуцепочечной ДНК в углерод микробной биомассы почв: физико-химические аспекты и влияние антропогенной деятельности**

**E.V. Chernysheva, F. Fornasier, A.V. Borisov**

**Е.В. Чернышева, Ф. Форназьер, А.В. Борисов**

**Eurasian Soil Science.**

**Почвоведение.**

**Table S1.** Some physical and chemical properties of studied soils.

**Таблица S1.** Некоторые физические и химические свойства изученных почв.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Human activity | | Soil | Depth, cm | Clay | Silt | Сorg. | CaCO3 | рН |
| % | | | |
|  | Dry steppe zone (modern soils) | | | | | | | |
| Heavy grazing | | Kashtanozem | 0–10 | 37 | 19 | 1.3 | 5.8 | 8.3 |
|  | |  | 10–20 | 47 | 29 | 0.7 | 9.4 | 9.1 |
|  | |  | 20–30 | 49 | 30 | 0.7 | 8.1 | 9.3 |
|  | |  | 30–40 | 54 | 35 | 0.6 | 9.4 | 8.9 |
|  | |  | 40–50 | 55 | 35 | 0.3 | 17.1 | 8.5 |
|  | | Solonetz | 0–10 | 29 | 11 | 1.4 | 2.2 | 8.7 |
|  | |  | 10–20 | 55 | 39 | 1.0 | 2.2 | 9.4 |
|  | |  | 20–30 | 55 | 39 | 0.6 | 14.8 | 9.4 |
|  | |  | 30–40 | 56 | 35 | 0.7 | 16.6 | 8.8 |
|  | |  | 40–50 | 45 | 26 | 0.4 | 16.6 | 8.6 |
|  | | –"– | 0–10 | 51 | 35 | 1.2 | 2.2 | 8.2 |
|  | |  | 10–20 | 55 | 37 | 0.6 | 1.8 | 8.2 |
|  | |  | 20–30 | 54 | 37 | 0.4 | 1.8 | 8.1 |
|  | |  | 30–40 | 54 | 31 | 0.3 | 0.9 | 7.8 |
|  | |  | 40–50 | 48 | 30 | 0.3 | 4.9 | 8.4 |
| Moderate grazing | | Kashtanozem | 0–10 | 33 | 10 | 1.7 | 2.2 | 8.2 |
|  | |  | 10–20 | 42 | 21 | 1.2 | 1.8 | 8.2 |
|  | |  | 20–30 | 43 | 26 | 1.0 | 1.8 | 8.1 |
|  | |  | 30–40 | 47 | 29 | 0.8 | 0.9 | 7.8 |
|  | |  | 40–50 | 44 | 25 | 0.5 | 4.9 | 8.4 |
|  | | Solonetz | 0–10 | 32 | 12 | 1.5 | 0.9 | 7.8 |
|  | |  | 10–20 | 61 | 46 | 1.0 | 1.8 | 7.8 |
|  | |  | 20–30 | 52 | 39 | 0.7 | 3.1 | 8.6 |
|  | |  | 30–40 | 53 | 35 | 0.5 | 16.2 | 8.8 |
|  | |  | 40–50 | 50 | 28 | 0.4 | 17.5 | 8.8 |
|  | | –"– | 0–5 | 29 | 9 | 1.1 | 1.3 | 8.5 |
|  | |  | 5–20 | 62 | 45 | 1.1 | 2.7 | 8.5 |
|  | |  | 20–30 | 52 | 35 | 0.6 | 9.4 | 8.9 |
|  | |  | 30–40 | 54 | 32 | 0.3 | 18.0 | 8.7 |
|  | |  | 40–50 | 52 | 29 | 0.1 | 17.1 | 8.5 |
| Light grazingс | | Kashtanozem | 0–10 | 38 | 20 | 1.7 | 1.4 | 8.1 |
|  | |  | 10–20 | 44 | 29 | 1.1 | 0.5 | 8.0 |
|  | |  | 20–30 | 51 | 32 | 1.0 | 1.9 | 8.1 |
|  | |  | 30–40 | 46 | 29 | 0.7 | 1.9 | 8.4 |
|  | |  | 40–50 | 51 | 28 | 0.4 | 1.9 | 8.6 |
|  | | Solonetz | 0–10 | 34 | 8 | 1.3 | 0.9 | 6.9 |
|  | |  | 10–15 | 28 | 9 | 0.7 | 1.4 | 7.2 |
|  | |  | 15–20 | 56 | 44 | 1.1 | 1.9 | 7.2 |
|  | |  | 20–30 | 62 | 46 | 1.0 | 1.4 | 7.3 |
|  | |  | 30–40 | 55 | 32 | 0.8 | 18.5 | 7.3 |
|  | Submountain zone (soils in the vicinity of medieval archaeological site) | | | | | | | |
| Ploughing | | Calcaric Leptosol | 0–10 | 13 | 3 | 8.8 | 9.2 | 7.6 |
| with manuring | | (60 m) | 10–20 | 15 | 3 | 6.7 | 10.5 | 7.7 |
|  | |  | 20–30 | 18 | 3 | 5.5 | 22.4 | 7.9 |
|  | | –"– | 0–10 | 21 | 5 | 8.4 | 6.7 | 7.0 |
|  | | (120 m) | 10–20 | 20 | 5 | 6.2 | 7.0 | 7.0 |
|  | |  | 20–30 | 17 | 5 | 5.7 | 7.6 | 7.1 |
|  | | Leptic Phaeozem | 0–10 | 23 | 7 | 6.1 | 5.4 | 6.7 |
|  | | (250 m) | 10–20 | 22 | 8 | 5.1 | 4.0 | 6.6 |
|  | |  | 20–30 | 29 | 12 | 3.9 | 4.5 | 7.3 |
|  | |  | 30–40 | 37 | 17 | 3.3 | 3.6 | 6.7 |
|  | | –"– | 0–10 | 16 | 9 | 6.3 | 4.5 | 6.9 |
|  | | (600 m) | 10–20 | 25 | 11 | 5.3 | 3.6 | 7.1 |
|  | |  | 20–30 | 24 | 15 | 3.6 | 3.6 | 6.9 |
|  | |  | 30–40 | 28 | 11 | 3.2 | 4.0 | 7.5 |
| Ploughing | | –"– | 0–10 | 16 | 7 | 3.6 | 2.2 | 6.3 |
| without manuring | | (1200 m) | 10–20 | 16 | 6 | 3.2 | 3.1 | 6.5 |
|  | |  | 20–30 | 33 | 9 | 1.8 | 3.1 | 6.7 |
|  | |  | 40–50 | 37 | 15 | 1.0 | 2.2 | 6.2 |
|  | |  | 50–60 | 32 | 15 | 0.9 | 2.2 | 6.4 |
| Undisturbed soil | | –"– | 0–10 | 39 | 8 | 4.5 | 2.2 | 6.2 |
|  | | (2300 m) | 10–20 | 21 | 6 | 4.0 | 2.2 | 6.1 |
|  | |  | 20–30 | 29 | 12 | 2.1 | 2.2 | 6.5 |
|  | |  | 30–40 | 33 | 18 | 2.0 | 2.2 | 6.3 |
|  | |  | 40–50 | 29 | 17 | 1.9 | 2.2 | 6.7 |
|  | Middle elevation mountain zone (soils of ancient agricultural terraces) | | | | | | | |
| Ploughing | | Stratozem | 0–10 | 48 | 23 | 4.2 | 8.1 | 7.8 |
|  | | agristratified | 10–20 | 42 | 25 | 2.8 | 9.6 | 7.9 |
|  | | on limestone | 20–30 | 49 | 25 | 1.7 | 9.7 | 8.1 |
|  | | (Mugi) | 30–40 | 47 | 23 | 1.6 | 8.3 | 8.1 |
|  | |  | 40–50 | 46 | 24 | 1.6 | 6.9 | 8.1 |
|  | |  | 50–60 | 48 | 23 | 1.8 | 7.5 | 8.2 |
|  | |  | 60–70 | 48 | 23 | 2.1 | 6.0 | 8.1 |
|  | |  | 70–80 | 47 | 25 | 2.0 | 5.3 | 8.1 |
|  | |  | 80–90 | 48 | 26 | 2.7 | 4.1 | 8.1 |
|  | |  | 90–100 | 49 | 26 | 2.8 | 3.0 | 8.1 |
|  | |  | 100–110 | 52 | 28 | 3.3 | 2.4 | 8.1 |
|  | |  | 110–120 | 23 | 5 | 3.3 | 2.6 | 8.1 |
| –"– | | Stratozem | 0–20 | 41 | 14 | 2.0 | 0.8 | 7.7 |
|  | | agristratified | 20–40 | 53 | 21 | 1.4 | 1.2 | 7.7 |
|  | | on clay shale | 40–60 | 52 | 20 | 1.2 | 1.7 | 8.0 |
|  | | (Dzhaba) | 60–80 | 39 | 17 | 1.2 | 1.5 | 8.1 |
|  | |  | 80–100 | 48 | 19 | 1.1 | 1.8 | 8.2 |
|  | |  | 100–120 | 52 | 20 | 1.0 | 2.0 | 8.5 |
|  | |  | 120–140 | 47 | 20 | 1.1 | 2.0 | 8.4 |
|  | |  | 140–160 | 49 | 20 | 1.0 | 1.9 | 8.4 |
|  | |  | 160–180 | 47 | 18 | 0.9 | 2.1 | 8.2 |
|  | |  | 180–200 | 49 | 21 | 0.9 | 1.7 | 8.3 |
|  | |  | 200–220 | 50 | 20 | 0.9 | 2.0 | 8.5 |
|  | |  | 220–240 | 47 | 16 | 0.9 | 1.7 | 8.5 |
|  | |  | 240–260 | 43 | 16 | 1.0 | 1.9 | 8.5 |
|  | |  | 260–275 | 54 | 21 | 1.1 | 1.7 | 8.6 |
|  | |  | 275–285 | 47 | 13 | 1.0 | 1.6 | 8.6 |
|  | |  | 285–295 | 52 | 21 | 1.2 | 1.9 | 8.5 |
|  | |  | 295–305 | 41 | 13 | 1.1 | 3.5 | 8.4 |
| –"– | | Stratozem | 0–10 | 24 | 14 | 2.1 | 0.9 | 7.5 |
|  | | agristratified | 10–20 | 24 | 13 | 1.2 | 0.8 | 7.8 |
|  | | on sandstone | 20–30 | 25 | 12 | 1.3 | 1.1 | 7.8 |
|  | | (Akusha) | 30–40 | 25 | 14 | 0.4 | 1.2 | 7.8 |
|  | |  | 40–50 | 27 | 12 | 0.5 | 2.3 | 8.1 |
|  | |  | 50–60 | 27 | 14 | 0.6 | 3.6 | 8.1 |
|  | |  | 60–70 | 25 | 15 | 0.7 | 3.5 | 8.1 |
|  | |  | 70–80 | 24 | 15 | 0.8 | 4.1 | 8.1 |
|  | |  | 80–90 | 23 | 12 | 0.9 | 3.6 | 8.0 |
|  | |  | 90–100 | 27 | 18 | 0.1 | 4.1 | 8.0 |
|  | |  | 100–110 | 26 | 17 | 0.1 | 4.9 | 8.1 |
|  | |  | 110–120 | 31 | 18 | 0.1 | 5.6 | 8.1 |
|  | |  | 120–130 | 32 | 19 | 0.1 | 5.3 | 8.1 |
|  | |  | 130–140 | 36 | 21 | 0.1 | 6.1 | 8.1 |
|  | |  | 140–150 | 41 | 26 | 1.1 | 6.1 | 8.3 |
|  | |  | 150–160 | 38 | 22 | 1.1 | 7.6 | 8.1 |
| –"– | | Stratozem | 0–20 | 42 | 17 | 2.3 | 0.2 | 7.3 |
|  | | agristratified | 20–40 | 40 | 21 | 1.1 | 0.9 | 7.1 |
|  | | on diluvium of clay, | 40–60 | 36 | 21 | 0.7 | 1.8 | 7.4 |
|  | | argillite and sandstone | 60–80 | 34 | 19 | 0.6 | 2.6 | 7.6 |
|  | | (Gunib) | 80–100 | 40 | 24 | 0.7 | 3.0 | 7.9 |
|  | |  | 100–120 | 37 | 23 | 0.8 | 3.2 | 8.0 |
|  | |  | 120–140 | 38 | 24 | 0.7 | 3.6 | 8.0 |
|  | |  | 140–160 | 40 | 22 | 0.7 | 4.2 | 7.8 |
|  | |  | 160–180 | 39 | 19 | 0.7 | 3.9 | 7.9 |
|  | |  | 180–200 | 39 | 23 | 0.5 | 3.0 | 8.1 |
|  | |  | 200–220 | 42 | 24 | 0.5 | 3.7 | 8.1 |