**Table S4.** Total forms of nutrients (Cu, Zn, Fe, Mn, Ni) and toxic elements (Cd, Pb) in soil.

| **Land use** | **Site number** | **Sampling Depth**  **(cm)** | Cu  **(mg/kg)** | Zn  **(mg/kg)** | Fe  **(g/kg)** | Mn  **(mg/kg)** | Ni  (**mg/kg)** | Cd  **mg/kg)** | Pb  **(mg/kg)** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Orchards | 1 | 0-30 | 68.86 | 88.85 | 58.39 | 673.41 | 61.61 | 4.26 | 18.69 |
| 2 | 0-30 | 24.21 | 67.07 | 45.16 | 577.48 | 26.61 | 2.48 | 2.79 |
| 3 | 0-30 | 45.69 | 97.55 | 38.08 | 931.63 | 115.15 | 3.78 | 32.01 |
| 4 | 0-30 | 54.43 | 73.64 | 25.86 | 521.62 | 68.38 | 3.29 | 25.89 |
| 5 | 0-30 | 51.26 | 75.78 | 24.62 | 652.85 | 96.46 | 1.99 | 24.15 |
| Vineyards | 1 | 0-30 | 215.94 | 96.57 | 24.88 | 573.93 | 88.88 | 0.67 | 10.58 |
| 2 | 0-30 | 582.97 | 660.47 | 33.41 | 986.05 | 257.70 | 9.00 | 33.15 |
| 3 | 0-30 | 105.08 | 737.93 | 37.42 | 1021.20 | 268.11 | 4.02 | 28.27 |
| 4 | 0-30 | 138.27 | 954.14 | 32.66 | 948.53 | 207.82 | 4.11 | 23.37 |
| 5 | 0-30 | 67.35 | 88.17 | 55.41 | 696.89 | 48.88 | 3.88 | 13.27 |
| 6 | 0-30 | 158.40 | 83.53 | 56.07 | 639.75 | 31.49 | 2.83 | 6.00 |
| 7 | 0-30 | 158.33 | 111.06 | 48.33 | 683.39 | 44.78 | 3.35 | 6.58 |
| 8 | 0-30 | 141.77 | 106.33 | 59.13 | 540.00 | 52.21 | 3.15 | 0.99 |
| 9 | 0-30 | 88.63 | 80.56 | 58.46 | 638.08 | 32.42 | 3.12 | 7.07 |
| Former  vineyards | 1 | 0-30 | 508.59 | 505.78 | 27.84 | 2206.28 | 60.58 | 4.06 | 31.16 |
| 2 | 0-30 | 409.49 | 522.63 | 33.34 | 939.39 | 230.33 | 6.72 | 28.09 |
| 3 | 0-30 | 255.57 | 290.16 | 37.17 | 1035.06 | 248.92 | 4.79 | 27.35 |
| 4 | 0-30 | 497.29 | 530.21 | 36.37 | 1928.31 | 62.05 | 4.49 | 41.79 |
| 5 | 0-30 | 308.82 | 104.93 | 22.70 | 506.51 | 64.26 | 2.82 | 25.99 |
| 6 | 0-30 | 138.77 | 128.59 | 48.70 | 612.42 | 57.95 | 3.37 | 12.03 |
| 7 | 0-30 | 143.16 | 111.95 | 50.48 | 739.93 | 46.71 | 3.13 | 5.51 |
| 8 | 0-30 | 245.01 | 338.68 | 35.30 | 758.94 | 267.88 | 33.46 | 40.61 |
| 9 | 0-30 | 256.05 | 301.90 | 35.59 | 961.53 | 277.05 | 4.38 | 27.32 |
| 10 | 0-30 | 237.31 | 273.74 | 41.55 | 1883.74 | 54.87 | 2.38 | 10.51 |

\*n/d – not detected

**Table S4.** Continued

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Land use** | **Site number** | **Sampling Depth**  **(cm)** | Cu  **(mg/kg)** | Zn  **(mg/kg)** | Fe  **(g/kg)** | Mn  **(mg/kg)** | Ni  (**mg/kg)** | Cd  **mg/kg)** | Pb  **(mg/kg)** |
| Arable,  intensive | 1 | 0-30 | 138.59 | 226.44 | 29.37 | 1800.08 | 56.62 | 2.51 | 16.77 |
| 2 | 0-30 | 49.65 | 85.79 | 25.36 | 574.01 | 61.25 | 2.58 | 21.53 |
| 3 | 0-30 | 48.73 | 21.01 | 33.93 | 623.84 | 79.40 | 2.91 | 1.78 |
| 4 | 0-30 | 69.39 | 126.28 | 20.23 | 2480.72 | 64.86 | 1.67 | 24.97 |
| 5 | 0-30 | 53.83 | 66.09 | 36.40 | 585.35 | 110.27 | 4.57 | 27.93 |
| 6 | 0-30 | 65.80 | 96.56 | 53.41 | 783.68 | 47.14 | 3.46 | 13.47 |
| 7 | 0-30 | 57.83 | 118.84 | 25.22 | 1351.04 | 75.71 | 2.90 | 46.12 |
| 8 | 0-30 | 55.32 | 77.59 | 32.13 | 575.60 | 104.92 | 3.97 | 28.08 |
| 9 | 0-30 | 115.55 | 100.51 | 27.52 | 780.67 | 85.07 | 3.76 | 28.66 |
| 10 | 0-30 | 66.54 | 100.86 | 31.48 | 816.24 | 93.93 | 3.60 | 28.68 |
| 11 | 0-30 | 30.90 | 66.72 | 48.96 | 572.60 | 25.40 | 2.52 | 3.15 |
| 12 | 0-30 | 150.50 | 209.95 | 57.58 | 801.70 | 62.96 | 3.96 | 6.54 |
| 13 | 0-30 | 72.59 | 134.53 | 36.68 | 1985.50 | 78.60 | 2.57 | 46.04 |
| 14 | 0-30 | 102.64 | 86.48 | 30.50 | 825.66 | 99.02 | 4.02 | 27.79 |
| Arable,  extensive | 1 | 0-30 | 103.09 | 186.11 | 29.37 | 2149.90 | 66.00 | 2.42 | 19.20 |
| 2 | 0-30 | 37.88 | 99.05 | 25.36 | 2445.85 | 51.19 | 1.50 | 9.94 |
| 3 | 0-30 | 42.92 | 116.83 | 33.93 | 2719.34 | 67.55 | 1.87 | 20.41 |
| 4 | 0-30 | 51.76 | 68.79 | 29.16 | 773.58 | 73.74 | 0.88 | 21.30 |
| 5 | 0-30 | 57.21 | 143.74 | 20.23 | 1940.25 | 79.54 | 2.75 | 52.01 |
| 6 | 0-30 | 65.19 | 135.66 | 36.40 | 1637.04 | 82.14 | 2.65 | 50.64 |
| 7 | 0-30 | 76.72 | 131.17 | 53.41 | 2008.47 | 76.98 | 2.76 | 43.98 |
| 8 | 0-30 | 58.20 | 110.68 | 53.71 | 2626.35 | 74.93 | 3.00 | 51.06 |
| 9 | 0-30 | 56.82 | 128.29 | 25.22 | 2265.05 | 80.79 | 2.49 | 47.65 |
| 10 | 0-30 | 50.68 | 117.79 | 32.13 | 2252.52 | 66.58 | 2.19 | 34.35 |
| 11 | 0-30 | 50.95 | 121.92 | 27.52 | 2122.07 | 76.58 | 2.31 | 36.54 |
| 12 | 0-30 | 128.01 | 246.56 | 31.48 | 1942.27 | 60.86 | 2.47 | 31.69 |
| 13 | 0-30 | 63.09 | 135.08 | 48.96 | 1980.59 | 62.91 | 1.76 | 19.98 |
| 14 | 0-30 | 81.15 | 159.36 | 53.06 | 1831.26 | 61.25 | 1.93 | 20.93 |
| 15 | 0-30 | 56.59 | 71.29 | 57.58 | 620.31 | 109.49 | 4.70 | 24.62 |
| 16 | 0-30 | 80.38 | 97.46 | 54.04 | 669.67 | 70.93 | 2.69 | 30.46 |
| 17 | 0-30 | 49.32 | 70.11 | 36.68 | 583.48 | 100.77 | 3.13 | 28.87 |
| 18 | 0-30 | 44.87 | 64.71 | 30.50 | 557.35 | 92.81 | 2.59 | 23.62 |
| 19 | 0-30 | 74.83 | 7.47 | 29.37 | 907.17 | 80.54 | 3.07 | 1.67 |
| 20 | 0-30 | 44.51 | 100.56 | 33.93 | 878.82 | 123.62 | 4.75 | 33.11 |

\*n/d – not detected

**Table S4.** Continued

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Land use** | **Site number** | **Sampling Depth**  **(cm)** | Cu  **(mg/kg)** | Zn  **(mg/kg)** | Fe  **(g/kg)** | Mn  **(mg/kg)** | Ni  (**mg/kg)** | Cd  **mg/kg)** | Pb  **(mg/kg)** |
| Pastures | 1 | 0-30 | 52.34 | 115.88 | 40.60 | 2513.15 | 83.50 | 3.07 | 54.38 |
| 2 | 0-30 | 46.50 | 103.21 | 24.16 | 3106.68 | 67.84 | 2.15 | 26.88 |
| 3 | 0-30 | 37.67 | 80.78 | 23.14 | 1671.34 | 40.64 | 1.30 | 8.75 |
| 4 | 0-30 | 52.91 | 68.11 | 28.30 | 484.08 | 71.74 | 3.65 | 19.70 |
| 5 | 0-30 | 55.97 | 78.07 | 29.31 | 629.98 | 75.95 | 4.00 | 29.27 |
| 6 | 0-30 | 124.12 | 159.18 | 26.11 | 571.60 | 75.21 | 3.60 | 26.38 |
| 7 | 0-30 | 51.02 | 85.15 | 25.35 | 786.68 | 86.77 | 2.68 | 25.57 |
| 8 | 0-30 | 42.30 | 62.85 | 22.89 | 355.11 | 86.25 | 3.39 | 30.15 |
| 9 | 0-30 | 44.36 | 62.62 | 20.74 | 435.62 | 76.94 | 2.07 | 25.15 |
| 10 | 0-30 | 46.41 | 66.60 | 24.51 | 588.27 | 91.57 | 3.18 | 27.41 |
| 11 | 0-30 | 42.86 | 62.33 | 20.76 | 436.21 | 86.85 | 2.64 | 25.21 |
| 12 | 0-30 | 50.60 | 75.30 | 24.38 | 615.59 | 91.18 | 1.93 | 24.54 |
| 13 | 0-30 | 38.73 | 55.51 | 18.63 | 336.22 | 87.02 | 2.95 | 28.93 |
| 14 | 0-30 | 42.43 | 55.96 | 19.60 | 475.11 | 99.88 | 2.85 | 22.72 |
| 15 | 0-30 | 46.40 | 63.10 | 20.99 | 698.00 | 87.82 | 1.35 | 22.01 |
| 16 | 0-30 | 43.54 | 63.91 | 22.60 | 610.32 | 91.72 | 0.70 | 17.90 |
| 17 | 0-30 | 46.71 | 66.19 | 21.23 | 630.90 | 95.29 | 1.26 | 21.74 |
| 18 | 0-30 | 49.11 | 69.31 | 20.32 | 737.48 | 80.04 | 1.00 | 20.36 |
| 19 | 0-30 | 48.83 | 67.26 | 21.26 | 439.08 | 84.16 | 1.27 | 10.46 |
| 20 | 0-30 | 46.60 | 71.79 | 27.76 | 724.92 | 81.70 | 1.43 | 15.24 |
| 21 | 0-30 | 38.64 | 62.79 | 21.14 | 515.05 | 87.77 | 2.21 | 17.39 |
| 22 | 0-30 | 53.57 | 79.16 | 24.85 | 794.11 | 85.19 | 0.96 | 11.97 |
| 23 | 0-30 | 48.68 | 66.88 | 22.54 | 521.22 | 90.06 | 1.03 | 13.90 |
| 24 | 0-30 | 67.21 | 78.70 | 26.11 | 513.41 | 85.11 | 1.48 | 9.77 |
| 25 | 0-30 | 47.35 | 72.21 | 22.48 | 556.20 | 98.59 | 0.38 | 10.87 |

\*n/d – not detected