**SUPPLEMENTARY MATERIALS – ДОПОЛНИТЕЛЬНЫЕ МАТЕРИАЛЫ**

**Ampelopedological Peculiarities of Geographical Areas of Crimea Viticulture**

**Ампелопедологические особенности географических районов виноградарства Крыма**

F.N.Lisetskii, E.Ya.Zelenskaya

Ф.Н. Лисецкий, Е.Я. Зеленская

Table S1. The content of macroaggregates and indicators of the structural state of soils

Таблица S1. Содержание макроагрегатов и показатели структурного состояния почв

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| №\* | | Слой,  см | Размер структурных отдельностей, мм | | D,  мм | Kстр | A | Dw,  % |
| макроагрегаты  >10 | микроагрегаты  <0.25 |
|
| Северо-Западный Крым | | | | | | | | |
| 36 | св | 0-16 | 7.2 | 11.9 | 4.2 | 1.2 | 36.65 | 38.37 |
| 37 | св | 16-34 | 14.9 | 3.4 | 4.7 | 2.2 | 43.20 | 36.43 |
| 0-15 | 3.8 | 20.4 | 3.9 | 0.6 | 34.35 | 33.03 |
| 38 | сз | 15-31 | 36.4 | 4.1 | 4.5 | 1.5 | 32.95 | 32.57 |
| 0-16 | 0.2 | 17.0 | 1.2 | 0.7 | 79.90 | 76.65 |
| 39 | сз | 0-16 | 0.2 | 8.7 | 1.1 | 2.0 | 81.75 | 81.88 |
| Юго-Западный Крым | | | | | | | | |
| 29 | св | 0-18 | 8.6 | 17.7 | 6.3 | 0.7 | 60.00 | 57.53 |
| 18-32 | 5.0 | 15.7 | 5.9 | 1.0 | 59.70 | 54.18 |
| 30 | св | 0-16 | 9.5 | 14.5 | 6.2 | 0.7 | 48.80 | 40.52 |
| 16-30 | 6.9 | 16.8 | 6.1 | 0.8 | 43.60 | 40.37 |
| 31 | св | 0-14 | 14.6 | 10.1 | 5.2 | 1.6 | 71.50 | 69.87 |
| 14-26 | 4.0 | 7.1 | 4.6 | 2.1 | 88.60 | 86.63 |
| 32 | св | 0-16 | 9.6 | 11.9 | 4.9 | 1.4 | 71.15 | 73.15 |
| 16-29 | 2.7 | 11.0 | 4.7 | 1.5 | 78.75 | 78.22 |
| 33 | пз | 0-12 | 0.7 | 18.8 | 1.3 | 1.2 | 97.00 | 95.82 |
| 34 | сз | 0-18 | 0.9 | 38.9 | 1.4 | 0.4 | 80.40 | 78.30 |
| 35 | сз | 0-18 | 1.0 | 42.2 | 1.1 | 0.5 | 84.50 | 85.13 |
| Предгорный Крым | | | | | | | | |
| 27 | сз | 0-16 | 8.2 | 5.0 | 3.6 | 2.2 | 94.55 | 92.80 |
| 28 | сз | 0-13 | 6.9 | 5.6 | 3.5 | 2.7 | 97.10 | 93.85 |
| 13-26 | 6.9 | 2.7 | 3.5 | 2.5 | 92.20 | 91.13 |
| Южный берег Крыма | | | | | | | | |
| 11 | сз | 0-13 | 3.5 | 14.3 | 1.9 | 2.2 | 76.25 | 76.45 |
| 12 | сз | 0-13 | 4.2 | 14.3 | 2.1 | 2.3 | 85.25 | 86.28 |
| 13 | св | 0-15 | 0.9 | 22.4 | 1.3 | 1.3 | 63.10 | 67.12 |
| 14 | св | 0-15 | 0.6 | 19.3 | 1.1 | 1.2 | 51.95 | 55.20 |
| 15 | св | 0-15 | 0.8 | 23.0 | 1.2 | 0.9 | 71.35 | 74.08 |
| 16 | св | 0-12 | 12.7 | 4.8 | 2.1 | 2.7 | 80.30 | 83.85 |
| 17 | св | 0-16 | 25.8 | 2.3 | 6.9 | 1.9 | 61.80 | 60.48 |
| 16-24 | 33.6 | 2.6 | 7.3 | 1.7 | 76.75 | 72.95 |
| 18 | св | 0-17 | 29.4 | 3.0 | 7.3 | 2.3 | 34.05 | 36.05 |
| 17-27 | 28.5 | 3.0 | 7.2 | 1.9 | 27.65 | 37.97 |
| 19 | св | 0-14 | 15.6 | 2.2 | 4.6 | 3.0 | 78.85 | 80.65 |
| 14-25 | 8.9 | 4.9 | 3.8 | 2.6 | 79.05 | 77.88 |
| 20 | св | 0-15 | 28.3 | 4.1 | 4.7 | 1.9 | 34.85 | 29.75 |
| 15-28 | 47.6 | 2.1 | 4.9 | 1.9 | 36.10 | 33.37 |
| 21 | св | 0-17 | 15.9 | 8.3 | 8.2 | 1.7 | 28.90 | 35.85 |
| 17-28 | 23.8 | 4.7 | 8.5 | 2.1 | 36.90 | 45.78 |
| 22 | св | 0-16 | 47.2 | 5.0 | 8.7 | 1.5 | 16.00 | 18.97 |
| 16-27 | 60.4 | 2.3 | 8.8 | 1.2 | 21.60 | 22.90 |
| 23 | св | 0-16 | 23.7 | 5.4 | 8.3 | 1.8 | 31.75 | 24.48 |
| 16-31 | 15.3 | 8.0 | 7.9 | 1.7 | 31.35 | 26.82 |
| 24 | св | 0-17 | 20.6 | 7.2 | 8.1 | 1.5 | 19.70 | 18.13 |
| 17-29 | 14.4 | 7.3 | 7.8 | 1.9 | 23.90 | 17.67 |
| 25 | св | 0-15 | 3.1 | 14.6 | 3.2 | 0.9 | 76.50 | 68.58 |
| 15-27 | 8.9 | 8.4 | 3.6 | 1.8 | 73.40 | 65.65 |
| 26 | св | 0-17 | 6.7 | 14.9 | 3.5 | 1.1 | 69.45 | 65.55 |
| 17-30 | 6.7 | 6.0 | 3.5 | 1.7 | 75.70 | 67.55 |
| Восточный Крым | | | | | | | | |
| 1 | пз | 0-11 | 6.1 | 21.9 | 2.3 | 0.8 | 91.85 | 92.58 |
| 2 | пз | 0-13 | 4.9 | 42.3 | 1.9 | 0.7 | 91.55 | 90.72 |
| 13-23 | 8.7 | 42.1 | 3.3 | 0.7 | 94.20 | 91.80 |
| 3 | пз | 5-16 | 6.8 | 29.5 | 2.4 | 0.9 | 90.45 | 86.48 |
| 16-29 | 3.2 | 41.1 | 1.5 | 0.7 | 86.70 | 85.80 |
| 4 | пз | 6-18 | 3.1 | 38.4 | 1.5 | 0.8 | 85.45 | 84.03 |
| 18-32 | 4.9 | 34.2 | 2.4 | 0.9 | 87.05 | 86.27 |
| 5 | пз | 5-17 | 4.4 | 32.3 | 2.2 | 0.9 | 89.45 | 85.07 |
| 17-28 | 4.0 | 43.4 | 2.0 | 0.6 | 90.50 | 88.48 |
| 6 | св | 2-13 | 16.5 | 27.2 | 4.5 | 0.7 | 44.70 | 48.03 |
| 13-24 | 12.7 | 7.5 | 4.3 | 0.6 | 56.05 | 54.93 |
| 7 | св | 2-15 | 19.0 | 26.3 | 6.7 | 0.6 | 40.10 | 38.85 |
| 15-27 | 38.7 | 11.6 | 9.1 | 1.2 | 45.35 | 43.30 |
| 8 | пз | 0-15 | 10.4 | 10.4 | 2.4 | 1.3 | 84.50 | 83.58 |
| 15-32 | 17.6 | 8.7 | 2.9 | 1.3 | 82.05 | 79.72 |
| >32 | 45.7 | 5.5 | 3.8 | 1.3 | 69.70 | 66.07 |
| 9 | сз | 0-15 | 3.2 | 8.3 | 1.9 | 2.4 | 86.55 | 83.97 |
| 10 | сз | 0-15 | 2.0 | 9.4 | 1.7 | 2.5 | 90.30 | 89.90 |

Примечание. \*пз – постантичные залежи, сз – современные залежи, св – современные виноградники (почвы в междурядьях). dW – показатель водоустойчивости агрегатов диаметром 1-2, 2-3.15, 3.15-5 мм, %; D – средневзвешенный диаметр макроагрегатов, мм; Кстр. – коэффициент структурности, б/разм.; А – критерий водоустойчивости (отношение процентного содержания водоустойчивых агрегатов к доле структурных отдельностей диаметром 3.15-5 мм), б/разм.

Table S2. Geochemical features of soils (horizons A and AB) in historical and modern areas of viticulture

Таблица S2. Геохимические особенности почв (гор. А и АВ) в исторических и современных районах виноградарства

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| №\* | | Na2O | MgO | Al2O3 | SiO2 | P2O5 | K2O | CaO | TiO2 | Fe2O3 | V | Cr | MnO | Co | Ni | Cu | Zn | As | Rb | Sr | Zr | Ba | Pb |
| % | | | | | | | | | мг/кг | | | | | | | | | | | | |
| Восточный Крым | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | пз | 1.38 | 1.85 | 8.2 | 36.5 | 0.83 | 1.67 | 10.9 | 0.55 | 2.56 | 56.5 | 122.9 | 0.08 | 7.7 | 44.9 | 42.7 | 90.9 | 6.2 | 52.4 | 348 | 242.1 | 510.5 | 20.9 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | пз | 1.52 | 1.96 | 8.6 | 38.2 | 0.77 | 1.67 | 13.1 | 0.52 | 2.53 | 58.9 | 84.6 | 0.06 | 8.6 | 41.5 | 36.8 | 88.4 | 6.4 | 56.9 | 391 | 210.4 | 466.6 | 18.3 |
| 1.61 | 2.08 | 7.9 | 34.7 | 0.79 | 1.69 | 13.9 | 0.50 | 2.50 | 61.1 | 77.7 | 0.06 | 9.7 | 39.7 | 29.9 | 92.4 | 5.7 | 57.2 | 465 | 218.0 | 519.7 | 12.1 |
| 3 | пз | 2.66 | 3.16 | 6.7 | 20.2 | 0.32 | 1.04 | 28.0 | 0.41 | 2.01 | 46.3 | 77.9 | 0.09 | 5.0 | 30.3 | 21.3 | 67.4 | 8.3 | 33.5 | 1270 | 126.4 | 607.4 | 15.5 |
| 3.03 | 3.24 | 5.8 | 10.3 | 0.36 | 0.91 | 31.1 | 0.36 | 1.90 | 36.6 | 73.0 | 0.09 | 5.0 | 30.1 | 23.9 | 55.7 | 7.7 | 32.3 | 1382 | 105.4 | 605.7 | 15.8 |
| 4 | пз | 2.68 | 2.85 | 6.1 | 12.8 | 0.35 | 0.98 | 28.1 | 0.38 | 2.04 | 40.4 | 68.4 | 0.09 | 6.3 | 32.8 | 26.3 | 60.3 | 9.3 | 32.6 | 1246 | 134.7 | 587.1 | 12.9 |
| 3.21 | 3.38 | 5.5 | 10.3 | 0.38 | 0.88 | 32.9 | 0.34 | 1.82 | 36.3 | 67.8 | 0.07 | 8.3 | 27.9 | 20.2 | 54.6 | 7.6 | 31.7 | 1316 | 122.5 | 585.5 | 14.9 |
| 5 | пз | 2.69 | 2.72 | 6.2 | 16.3 | 0.32 | 0.92 | 25.8 | 0.43 | 2.23 | 45.8 | 78.1 | 0.10 | 7.5 | 33.5 | 29.8 | 60.9 | 13.1 | 36.7 | 1389 | 140.3 | 759.6 | 16.0 |
| 2.97 | 2.90 | 6.9 | 13.9 | 0.34 | 0.90 | 29.6 | 0.40 | 2.14 | 44.8 | 73.8 | 0.09 | 5.5 | 30.8 | 25.9 | 59.6 | 11.2 | 32.4 | 1467 | 118.2 | 752.9 | 13.5 |
| 6 | св | 1.02 | 1.06 | 9.4 | 40.8 | 0.11 | 1.34 | 3.6 | 0.79 | 3.10 | 87.7 | 105.8 | 0.12 | 10.3 | 51.5 | 32.6 | 62.1 | 7.1 | 67.7 | 105 | 323.7 | 476.2 | 20.8 |
| 0.97 | 1.19 | 10.2 | 40.2 | 0.11 | 1.32 | 3.6 | 0.88 | 3.31 | 91.0 | 101.0 | 0.13 | 18.9 | 54.5 | 29.7 | 62.9 | 7.8 | 70.1 | 110 | 316.3 | 505.6 | 22.4 |
| 7 | св | 1.01 | 1.22 | 10.1 | 40.3 | 0.11 | 1.35 | 3.7 | 0.86 | 3.20 | 85.3 | 94.6 | 0.13 | 25.1 | 54.1 | 30.4 | 66.0 | 8.6 | 68.5 | 106 | 340.9 | 487.4 | 23.2 |
| 1.09 | 1.10 | 9.9 | 42.1 | 0.10 | 1.32 | 3.8 | 0.83 | 3.15 | 86.6 | 99.6 | 0.12 | 11.1 | 55.9 | 30.6 | 56.3 | 7.7 | 69.5 | 118 | 323.5 | 492.2 | 19.1 |
| 8 | пз | 1.89 | 1.96 | 11.5 | 52.0 | 0.33 | 2.21 | 9.4 | 0.77 | 5.22 | 95.1 | 96.6 | 0.12 | 14.2 | 46.9 | 43.9 | 82.8 | 24.3 | 68.1 | 492 | 251.4 | 484.4 | 24.9 |
| 2.01 | 1.93 | 11.5 | 53.6 | 0.37 | 2.22 | 8.1 | 0.73 | 5.31 | 92.4 | 93.2 | 0.12 | 13.4 | 45.7 | 43.3 | 84.6 | 20.9 | 70.0 | 426 | 246.2 | 480.9 | 26.4 |
| 2.14 | 1.94 | 11.4 | 53.8 | 0.34 | 2.15 | 8.2 | 0.76 | 5.10 | 91.9 | 93.9 | 0.11 | 12.3 | 44.9 | 42.5 | 81.3 | 20.7 | 68.4 | 428 | 288.7 | 485.3 | 25.5 |
| 9 | сз | 1.48 | 1.62 | 11.5 | 55.3 | 0.17 | 1.70 | 7.5 | 0.71 | 4.45 | 91.0 | 93.4 | 0.10 | 14.8 | 46.1 | 42.6 | 70.6 | 17.2 | 69.1 | 165 | 307.5 | 501.1 | 20.2 |
| 10 | сз | 1.53 | 1.56 | 11.5 | 54.8 | 0.16 | 1.65 | 8.1 | 0.75 | 4.57 | 91.3 | 88.8 | 0.09 | 13.7 | 44.2 | 41.6 | 69.5 | 17.7 | 68.7 | 172 | 339.9 | 493.9 | 21.5 |
| Южный берег Крыма | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | сз | 1.26 | 1.29 | 20.2 | 59.9 | 0.16 | 2.88 | 0.64 | 0.93 | 6.23 | 153.6 | 110.5 | 0.09 | 18.9 | 62.3 | 56.7 | 114.4 | 13.5 | 140.0 | 102 | 224.6 | 439.6 | 34.4 |
| 12 | сз | 1.31 | 1.33 | 19.9 | 57.1 | 0.19 | 2.93 | 0.91 | 0.87 | 6.12 | 151.7 | 106.1 | 0.11 | 15.4 | 62.7 | 55.4 | 138.7 | 15.2 | 139.9 | 109 | 209.1 | 439.5 | 29.6 |
| 13 | св | 1.24 | 1.36 | 17.9 | 46.1 | 0.18 | 2.73 | 1.32 | 1.05 | 4.56 | 145.9 | 114.4 | 0.13 | 22.4 | 67.1 | 63.2 | 168.9 | 12.9 | 137.2 | 84 | 199.5 | 548.5 | 42.1 |
| 14 | св | 1.21 | 1.14 | 18.1 | 42.7 | 0.16 | 2.64 | 1.81 | 0.96 | 4.51 | 155.7 | 119.2 | 0.11 | 21.6 | 72.4 | 68.9 | 219.0 | 14.2 | 140.2 | 114 | 198.6 | 574.9 | 69.7 |
| 15 | св | 1.30 | 1.45 | 16.1 | 41.2 | 0.14 | 2.19 | 4.41 | 0.90 | 4.22 | 130.6 | 106.6 | 0.10 | 20.6 | 65.8 | 61.7 | 111.4 | 11.4 | 113.8 | 90 | 201.2 | 453.9 | 27.7 |
| 16 | св | 1.46 | 1.20 | 21.5 | 57.6 | 0.18 | 2.75 | 0.81 | 0.91 | 5.98 | 150.9 | 108.6 | 0.11 | 16.9 | 67.5 | 57.4 | 147.2 | 15.8 | 145.1 | 105 | 189.8 | 459.7 | 33.4 |
| 17 | св | 0.98 | 1.43 | 19.7 | 56.9 | 0.17 | 2.62 | 0.72 | 0.94 | 6.21 | 117.3 | 117.9 | 0.16 | 18.4 | 67.7 | 63.1 | 118.7 | 15.8 | 128.8 | 126 | 207.4 | 435.1 | 27.2 |
| 0.83 | 1.39 | 19.8 | 56.6 | 0.16 | 2.58 | 0.68 | 0.92 | 6.40 | 124.7 | 116.6 | 0.16 | 18.7 | 67.4 | 62.5 | 125.2 | 15.6 | 127.3 | 120 | 192.6 | 411.5 | 26.7 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Продолжение** **Табл. S2.** | | | | | | | | | | | | | | | | | | | | | | | |
| №\* | | Na2O | MgO | Al2O3 | SiO2 | P2O5 | K2O | CaO | TiO2 | Fe2O3 | V | Cr | MnO | Co | Ni | Cu | Zn | As | Rb | Sr | Zr | Ba | Pb |
| % | | | | | | | | | мг/кг | | | | | | | | | | | | |
| 18 | св | 0.99 | 1.38 | 18.3 | 59.2 | 0.15 | 2.40 | 0.67 | 0.94 | 5.82 | 125.6 | 119.3 | 0.15 | 17.2 | 62.8 | 50.3 | 107.1 | 15.3 | 120.5 | 124 | 203.9 | 401.5 | 24.4 |
| 1.02 | 1.36 | 18.6 | 58.2 | 0.15 | 2.48 | 0.64 | 0.92 | 5.96 | 120.4 | 120.5 | 0.15 | 17.1 | 64.0 | 51.5 | 106.7 | 14.1 | 122.1 | 126 | 198.5 | 415.3 | 26.8 |
| 19 | св | 1.06 | 1.20 | 20.5 | 56.2 | 0.20 | 2.79 | 0.90 | 0.98 | 6.35 | 151.9 | 126.5 | 0.10 | 17.6 | 77.1 | 65.0 | 135.3 | 20.1 | 143.2 | 126 | 213.8 | 457.2 | 30.0 |
| 0.96 | 1.23 | 21.4 | 56.2 | 0.17 | 2.81 | 0.80 | 0.95 | 6.65 | 166.1 | 128.2 | 0.11 | 16.9 | 77.8 | 67.2 | 124.6 | 20.3 | 145.8 | 118 | 198.9 | 461.3 | 32.8 |
| 20 | св | 1.10 | 1.24 | 21.3 | 57.4 | 0.17 | 2.76 | 0.75 | 0.97 | 6.35 | 147.2 | 131.2 | 0.11 | 15.9 | 78.3 | 69.4 | 120.6 | 20.7 | 146.8 | 120 | 202.7 | 448.8 | 32.3 |
| 0.93 | 1.20 | 20.9 | 56.4 | 0.17 | 2.73 | 0.92 | 0.97 | 6.33 | 146.6 | 135.0 | 0.11 | 17.2 | 78.8 | 65.6 | 124.8 | 20.2 | 143.4 | 120 | 203.4 | 456.9 | 34.2 |
| 21 | св | 0.73 | 1.34 | 16.2 | 58.1 | 0.18 | 2.31 | 2.55 | 0.86 | 5.54 | 114.9 | 105.2 | 0.06 | 14.7 | 63.4 | 55.0 | 104.2 | 15.0 | 112.8 | 141 | 212.0 | 357.1 | 21.7 |
| 0.77 | 1.38 | 16.8 | 57.3 | 0.31 | 2.41 | 2.70 | 0.84 | 5.60 | 121.0 | 102.2 | 0.06 | 13.0 | 63.9 | 51.9 | 102.8 | 17.7 | 119.4 | 191 | 210.9 | 359.2 | 20.4 |
| 22 | св | 1.07 | 1.41 | 16.6 | 58.9 | 0.16 | 2.26 | 2.42 | 0.84 | 5.51 | 113.9 | 93.9 | 0.06 | 13.5 | 61.9 | 37.7 | 98.9 | 15.3 | 106.4 | 126 | 216.9 | 337.2 | 23.3 |
| 0.92 | 1.47 | 17.6 | 57.0 | 0.17 | 2.46 | 2.29 | 0.86 | 5.90 | 124.9 | 119.6 | 0.07 | 15.8 | 66.3 | 33.9 | 104.2 | 17.5 | 117.2 | 140 | 217.0 | 362.9 | 21.6 |
| 23 | св | 1.04 | 1.29 | 14.5 | 50.6 | 0.22 | 1.98 | 8.07 | 0.71 | 5.60 | 101.7 | 80.5 | 0.09 | 16.3 | 51.8 | 58.2 | 100.0 | 14.6 | 73.7 | 158 | 208.8 | 392.5 | 22.7 |
| 1.16 | 1.25 | 13.9 | 53.2 | 0.21 | 1.88 | 7.17 | 0.66 | 5.25 | 97.5 | 88.0 | 0.08 | 16.8 | 50.0 | 59.5 | 96.9 | 14.7 | 73.6 | 150 | 225.9 | 375.1 | 23.3 |
| 24 | св | 1.19 | 1.27 | 14.3 | 50.2 | 0.20 | 1.93 | 8.71 | 0.70 | 5.44 | 100.4 | 85.9 | 0.09 | 16.7 | 51.3 | 58.6 | 96.9 | 15.6 | 73.7 | 161 | 206.9 | 398.8 | 22.9 |
| 1.06 | 1.24 | 13.9 | 52.8 | 0.20 | 1.86 | 7.32 | 0.66 | 5.32 | 99.6 | 82.6 | 0.08 | 16.1 | 51.3 | 55.9 | 103.7 | 15.8 | 74.7 | 150 | 227.8 | 392.5 | 22.1 |
| 25 | св | 0.95 | 1.31 | 10.7 | 49.3 | 0.27 | 1.76 | 10.3 | 0.66 | 4.33 | 79.7 | 84.9 | 0.12 | 6.2 | 45.6 | 49.2 | 87.7 | 10.1 | 66.7 | 93 | 239.7 | 390.9 | 20.3 |
| 1.06 | 1.27 | 10.7 | 49.9 | 0.23 | 1.65 | 10.7 | 0.65 | 4.09 | 80.6 | 81.6 | 0.11 | 5.9 | 42.9 | 49.6 | 79.6 | 10.2 | 65.7 | 96 | 234.3 | 382.6 | 20.7 |
| 26 | св | 1.19 | 1.29 | 10.8 | 50.7 | 0.25 | 1.70 | 10.6 | 0.64 | 4.10 | 80.2 | 82.7 | 0.11 | 6.2 | 42.6 | 50.9 | 79.7 | 10.5 | 66.2 | 97 | 193.4 | 389.2 | 20.9 |
| 0.98 | 1.25 | 10.8 | 49.4 | 0.23 | 1.65 | 11.0 | 0.65 | 4.14 | 82.6 | 80.5 | 0.11 | 5.3 | 42.1 | 48.1 | 74.5 | 10.0 | 67.8 | 92 | 190.9 | 382.1 | 20.0 |
| Предгорный Крым | | | | | | | | | | | | | | | | | | | | | | | |
| 27 | сз | 0.81 | 1.24 | 11.8 | 50.4 | 0.23 | 1.97 | 5.54 | 0.70 | 4.92 | 99.6 | 82.4 | 0.09 | 5.8 | 49.0 | 82.6 | 91.8 | 13.1 | 83.1 | 116 | 178.4 | 411.8 | 19.1 |
| 28 | сз | 1.09 | 1.21 | 11.9 | 51.6 | 0.21 | 1.97 | 6.83 | 0.69 | 5.03 | 98.5 | 99.5 | 0.08 | 6.0 | 46.2 | 80.4 | 88.3 | 13.1 | 79.9 | 119 | 193.0 | 403.9 | 19.1 |
| 1.07 | 1.38 | 13.8 | 52.9 | 0.17 | 1.98 | 6.91 | 0.76 | 5.33 | 104.3 | 95.6 | 0.09 | 5.6 | 49.6 | 76.8 | 87. | 14.2 | 88.1 | 124 | 216.5 | 433.2 | 19.7 |
| Юго-Западный Крым | | | | | | | | | | | | | | | | | | | | | | | |
| 29 | св | 0.92 | 1.09 | 10.1 | 53.2 | 0.16 | 1.84 | 5.79 | 0.51 | 3.31 | 72.2 | 45.1 | 0.07 | 1.20 | 24.3 | 56.3 | 63.6 | 6.4 | 73.0 | 110 | 125.4 | 418.6 | 15.8 |
| 1.06 | 1.14 | 10.2 | 53.4 | 0.14 | 1.75 | 5.92 | 0.53 | 3.46 | 71.7 | 49.7 | 0.07 | 0.50 | 25.6 | 56.4 | 61.5 | 6.0 | 73.9 | 114 | 105.9 | 412.2 | 18.5 |
| 30 | св | 0.84 | 1.06 | 9.8 | 53.7 | 0.12 | 1.77 | 5.25 | 0.51 | 3.17 | 70.2 | 48.1 | 0.07 | 1.01 | 19.2 | 55.3 | 58.4 | 5.1 | 72.5 | 97 | 119.3 | 400.3 | 18.1 |
| 1.00 | 1.15 | 10.4 | 54.9 | 0.13 | 1.68 | 5.53 | 0.55 | 3.47 | 80.2 | 51.6 | 0.08 | 0.26 | 24.9 | 56.2 | 62.6 | 5.1 | 73.7 | 110 | 142.2 | 413.4 | 18.5 |
| 31 | св | 1.32 | 1.51 | 11.7 | 51.9 | 0.20 | 1.93 | 8.87 | 0.75 | 4.84 | 86.8 | 89.3 | 0.11 | 4.16 | 50.6 | 74.1 | 92.1 | 10.6 | 81.9 | 106 | 238.3 | 443.2 | 25.1 |
| 1.05 | 1.49 | 11.9 | 51.4 | 0.22 | 2.01 | 9.45 | 0.76 | 4.87 | 90.8 | 94.2 | 0.12 | 4.97 | 51.7 | 72.5 | 109.5 | 11.9 | 82.8 | 112 | 248.5 | 464.6 | 25.5 |
| 32 | св | 0.88 | 1.46 | 11.8 | 51.2 | 0.18 | 1.91 | 8.86 | 0.76 | 4.90 | 90.5 | 90.3 | 0.11 | 4.67 | 51.7 | 73.4 | 92.3 | 12.3 | 83.2 | 104 | 234.0 | 457.2 | 26.9 |
| 1.05 | 1.46 | 11.3 | 50.7 | 0.16 | 1.76 | 8.87 | 0.74 | 4.66 | 86.5 | 87.8 | 0.14 | 3.54 | 51.9 | 69.5 | 84.7 | 10.6 | 77.6 | 102 | 221.8 | 478.6 | 23.6 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Продолжение** **Табл. S2.** | | | | | | | | | | | | | | | | | | | | | | | |
| №\* | | Na2O | MgO | Al2O3 | SiO2 | P2O5 | K2O | CaO | TiO2 | Fe2O3 | V | Cr | MnO | Co | Ni | Cu | Zn | As | Rb | Sr | Zr | Ba | Pb |
| % | | | | | | | | | мг/кг | | | | | | | | | | | | |
| 33 | пз | 1.67 | 1.30 | 13.9 | 43.8 | 0.16 | 2.10 | 12.3 | 0.66 | 5.34 | 98.6 | 94.8 | 0.11 | 10.8 | 61.8 | 55.7 | 101.6 | 9.9 | 94.7 | 121 | 175.7 | 441.6 | 34.9 |
| 34 | сз | 1.36 | 0.95 | 11.7 | 41.0 | 0.24 | 1.75 | 14.2 | 0.63 | 4.73 | 94.9 | 85.3 | 0.10 | 15.0 | 50.4 | 100.2 | 146.3 | 10.2 | 72.2 | 76 | 166.9 | 326.1 | 34.5 |
| 35 | сз | 1.42 | 0.98 | 12.4 | 41.3 | 0.20 | 1.76 | 15.7 | 0.66 | 4.86 | 94.1 | 86.6 | 0.09 | 14.2 | 48.8 | 65.7 | 100.0 | 10.6 | 72.4 | 85 | 151.7 | 330.2 | 30.9 |
| Северо-Западный Крым | | | | | | | | | | | | | | | | | | | | | | | |
| 36 | св | 0.82 | 1.66 | 11.6 | 55.6 | 0.14 | 1.92 | 4.51 | 0.82 | 5.31 | 96.7 | 97.8 | 0.17 | 14.9 | 59.9 | 36.9 | 103.7 | 12.0 | 96.4 | 146 | 280.8 | 612.1 | 24.8 |
| 0.71 | 1.76 | 12.4 | 58.5 | 0.13 | 1.92 | 4.42 | 0.82 | 5.26 | 97.0 | 95.8 | 0.14 | 11.5 | 57.2 | 37.1 | 93.6 | 12.9 | 94.2 | 144 | 296.7 | 565.7 | 23.3 |
| 37 | св | 0.69 | 1.80 | 12.1 | 55.2 | 0.13 | 1.92 | 4.63 | 0.83 | 5.43 | 100.1 | 98.7 | 0.13 | 10.4 | 58.1 | 36.4 | 86.2 | 12.8 | 97.7 | 145 | 299.6 | 557.7 | 23.5 |
| 0.70 | 1.70 | 12.1 | 55.7 | 0.14 | 1.88 | 4.48 | 0.81 | 5.37 | 104.6 | 96.8 | 0.14 | 11.4 | 56.6 | 36.9 | 89.2 | 12.1 | 97.9 | 140 | 296.7 | 553.9 | 24.9 |
| 38 | сз | 0.46 | 1.25 | 9.9 | 54.1 | 0.23 | 1.76 | 8.19 | 0.61 | 3.60 | 76.9 | 64.9 | 0.09 | 0.68 | 35.9 | 64.5 | 75.7 | 6.8 | 59.6 | 104 | 238.5 | 361.3 | 20.9 |
| 39 | сз | 0.61 | 1.20 | 8.9 | 51.2 | 0.26 | 1.65 | 7.64 | 0.56 | 3.55 | 72.8 | 62.7 | 0.10 | 0.63 | 34.3 | 63.5 | 70.6 | 6.6 | 55.8 | 97 | 179.5 | 335.4 | 20.8 |
| 40 | пз | 1.49 | 1.92 | 8.3 | 33.5 | 0.17 | 1.34 | 23.4 | 0.53 | 2.11 | 59.6 | 75.1 | 0.11 | 7.2 | 35.2 | 27.5 | 69.3 | 9.6 | 57.3 | 259 | 192.6 | 238.1 | 13.3 |
| 1.81 | 2.19 | 7.5 | 24.6 | 0.16 | 1.07 | 27.8 | 0.43 | 1.80 | 55.7 | 71.0 | 0.09 | 3.18 | 30.9 | 20.9 | 57.9 | 7.6 | 62.4 | 290 | 188.9 | 227.3 | 5.8 |
| 41 | пз | 1.53 | 1.94 | 8.3 | 34.8 | 0.17 | 1.33 | 22.4 | 0.54 | 2.23 | 64.0 | 74.3 | 0.11 | 8.6 | 35.7 | 24.9 | 73.5 | 9.8 | 58.2 | 275 | 192.4 | 246.0 | 18.4 |
| 1.90 | 2.13 | 7.4 | 28.4 | 0.17 | 1.13 | 27.7 | 0.45 | 1.84 | 55.9 | 70.1 | 0.08 | 6.4 | 31.2 | 20.4 | 59.8 | 7.9 | 61.9 | 297 | 187.6 | 245.3 | 9.5 |
| 42 | пз | 2.01 | 2.47 | 6.5 | 19.7 | 0.26 | 1.23 | 32.1 | 0.36 | 1.49 | 44.6 | 62.7 | 0.06 | 2.41 | 23.1 | 15.0 | 57.9 | 6.9 | 54.2 | 255 | 182.7 | 364.5 | 8.9 |
| 43 | пз | 2.58 | 2.78 | 7.9 | 31.1 | 0.24 | 1.45 | 27.3 | 0.46 | 1.92 | 54.2 | 71.7 | 0.08 | 6.2 | 30.9 | 12.9 | 65.7 | 5.4 | 42.3 | 223 | 176.1 | 415.3 | 8.7 |
| 2.81 | 2.79 | 6.6 | 20.9 | 0.22 | 1.26 | 28.8 | 0.42 | 1.88 | 52.9 | 78.4 | 0.07 | 10.5 | 31.1 | 10.9 | 61.2 | 3.2 | 42.3 | 260 | 189.8 | 333.5 | 19.0 |
| 44 | пз | 2.12 | 2.53 | 7.2 | 27.2 | 0.24 | 1.56 | 24.8 | 0.47 | 1.95 | 48.6 | 71.9 | 0.08 | 5.3 | 34.5 | 21.9 | 63.9 | 5.7 | 45.5 | 246 | 199.9 | 378.3 | 12.7 |
| 2.61 | 2.90 | 6.9 | 24.0 | 0.22 | 1.40 | 29.1 | 0.43 | 1.94 | 53.2 | 78.2 | 0.07 | 11.8 | 32.3 | 12.1 | 58.3 | 4.3 | 44.6 | 331 | 190.5 | 427.2 | 14.2 |
| 45 | пз | 3.11 | 3.24 | 7.7 | 28.9 | 0.20 | 1.50 | 25.7 | 0.45 | 1.98 | 60.1 | 74.4 | 0.08 | 6.6 | 31.9 | 15.4 | 66.3 | 6.4 | 47.9 | 284 | 190.3 | 426.7 | 18.9 |

\*пз – постантичные залежи. сз – современные залежи. св – современные виноградники.

Table S3. Results of the total analysis of horizon A of fallow land from the areas of ancient viticulture of the Crimea

Таблица S3. Результаты валового анализа горизонта А залежных почв из районов античного виноградарства Крыма

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Элементы\* | | ХЕРСОНЕС  (n=72) | С-З КРЫМ  (n=47) | БОСПОР (B-C)  (n=23) | БОСПОР (B-LC)  n=11) |
| Х±Sx | Х±Sx | Х±Sx | Х±Sx |
| Макроэлементы,  % | CaO | 13.13 ± 0.93 | 23.2 ± 0.45 | 23.92 ± 1.6 | 8.36 ± 0.65 |
| Al2O3 | 13.35 ± 0.23 | 7.64 ± 0.1 | 7.23 ± 0.22 | 10.96 ± 0.25 |
| SiO2 | 43.17 ± 0.91 | 33.55 ± 0.63 | 22.51 ± 1.86 | 48.33 ± 2.06 |
| MnO | 0.11 ± 0.004 | 0.23 ± 0.04 | 0.09 ± 0.004 | 0.12 ± 0.01 |
| K2O | 2.02 ± 0.03 | 1.54 ± 0.03 | 1.17 ± 0.06 | 1.97 ± 0.07 |
| MgO | 1.36 ± 0.02 | 2.03 ± 0.09 | 1.33 ± 0.24 | 1.87 ± 0.05 |
| Na2O | 1.17 ± 0.05 | 2.05 ± 0.07 | 2.53 ± 0.12 | 1.5 ± 0.16 |
| Fe2O3 | 4.77 ± 0.11 | 2.04 ± 0.04 | 2.25 ± 0.08 | 4.47 ± 0.24 |
| TiO2 | 0.63 ± 0.01 | 0.44 ± 0.005 | 0.45 ± 0.02 | 0.7 ± 0.02 |
| P2O5 | 0.2 ± 0.01 | 0.21 ± 0.002 | 0.37 ± 0.04 | 0.38 ± 0.07 |
| Микроэлементы,  мг / кг | Sr | 121.76 ± 5.09 | 209.18 ± 4.56 | 1046.16 ± 91.07 | 342.05 ± 38.16 |
| Rb | 86.19 ± 2.25 | 44.17 ± 0.58 | 42.8 ± 2.44 | 68.97 ± 2.27 |
| As | 10.93 ± 0.57 | 6.86 ± 0.17 | 9.6 ± 0.56 | 16.66 ± 1.4 |
| Pb | 32.91 ± 1.99 | 14.26 ± 0.52 | 16.64 ± 0.78 | 28.53 ± 2.74 |
| V | 93.45 ± 2.46 | 56.77 ± 0.99 | 51.49 ± 2.85 | 87.05 ± 2.35 |
| Ni | 53.89 ± 1.21 | 32.59 ± 1.02 | 35.64 ± 1.41 | 48.86 ± 1.72 |
| Zn | 101.63 ± 4.08 | 63.16 ± 1.37 | 67.32 ± 2.52 | 89.65 ± 5.84 |
| Zr | 148.83 ± 5.42 | 179.98 ± 2.76 | 142.43 ± 7.82 | 234.86 ± 15.49 |
| Cu | 32.25 ± 1.17 | 28.31 ± 1.28 | 31.48 ± 2.15 | 43.02 ± 2.3 |
| Ba | 407.15 ± 6.83 | 386.13 ± 7.48 | 587.14 ± 14.15 | 521.46 ± 11.67 |
| Co | 5.77 ± 0.44 | 5.8 ± 0.48 | 7.15 ± 0.3 | 11.35 ± 1.33 |
| Cr | 81.24 ± 1.49 | 65.54 ± 1.78 | 78.99 ± 2.46 | 94.14 ± 1.93 |

Примечание. Sx – ошибка выборочной средней (X). \* Перечни макро- и микроэлементов ранжированы сверху вниз по мере уменьшения их диагностической роли при попарном сопоставлении данных по четырем районам виноградарства.