**Table 1. The names, abbreviations, and descriptions of the different wind erosion control practices and identification of its usage as an engineering, plant, or biocrust type of erosion control practice. Please note the abbreviation identification for all treatments are given in the footnote of this table.**

|  |  |  |  |
| --- | --- | --- | --- |
| Practice | | Abbreviation | Description |
| Engineering practice | Bare land control | E-CK | The original bare sandy land was maintained |
| Wheat straw checkerboard | E1 | The size of Wheat straw checkerboard is 1 m × 1 m |
| Gravel mulch | E2 | A layer of gravel 3–7 cm in diameter was placed on the surface |
| Red clay mulch | E3 | A layer of red clay 10 cm thick was placed on the surface |
| Combined measures | E4 | Gravel and red clay were placed in the DSA and deposition areas, respectively |
| Plant practice | Natural restoration | V-CK | Wheat straw checkerboard only |
| *Sedum aizoon* L. | V1 | Transplantation, 15 plants/m2 |
| *Pennisetum alopecuroides* (L.) Spreng. | V2 | Broadcasting, 15 kg/ha |
| Biocrust practice | Bare land control | B-CK | Straw checkerboard was placed in the peripheral area and experimental plots |
| Algal crust | B1 |
| Moss crust | B2 |

Note: E-CK-bare land control, E1-wheat straw checkerboard, E2-gravel mulch, E3-red clay mulch, E4-DSA (Direct Shear Abrasion) + gravel /deposition zone + red clay measure; V-CK-natural vegetation restoration area, V1-*Sedum aizoon* L. planting area, V2-*Pennisetum alopecuroides* (L.) Spreng. planting area; B-CK-natural vegetation restoration, B1- algal crust mulch, B2- moss crust mulch;

**Table 2. The locations and sand transport rates for the engineering, plant, and biocrust practices at various height intervals above the ground surface in the solar panel area of the photovoltaic power station. Please note that all sand transport values are given in units of [] and that the abbreviation identification for all treatments are given in the footnotes of this table. Different letters indicate significant differences at the P<0.05 level within each column using permutated multivariate analysis of variance (PERMANOVA) for means comparisons.**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Location | Practice Treatment | | Height above ground surface (cm) | | | | | | | | | |  |
| 0–2.5 | 2.5–5.0 | 5.0-–7.5 | 7.5–10 | 10–12.5 | 12.5–15 | 15–17.5 | 17.5–20 | 20–22.5 | 22.5–25 | Total |
| Between solar panels | Engineering practice | E-CK | 1027.54a | 603.04a | 370.21a | 219.91a | 144.39a | 108.81a | 91.08a | 81.23a | 77.33a | 78.22a | 2801.76a |
| E1 | 353.89b | 272.90b | 186.37b | 137.29b | 99.29a | 79.51a | 68.72a | 59.05ab | 52.48b | 70.94a | 1380.44b |
| E2 | 176.50c | 111.09c | 69.14d | 51.64d | 40.17b | 34.34b | 32.16b | 30.76b | 30.00c | 29.31b | 605.11cd |
| E3 | 201.81c | 131.16bc | 92.46b | 76.09c | 54.75b | 46.70b | 38.27b | 35.24b | 31.28c | 29.31b | 737.07c |
| E4 | 60.01d | 49.35d | 42.01cd | 35.25d | 31.14b | 30.37b | 34.89b | 27.29b | 31.70c | 33.51b | 375.52d |
| Under solar panels | Plant practice | V-CK | 111.86b | 56.38a | 44.65a | 34.55a | 36.71a | 42.24a | 40.67a | 41.76a | 39.38a | 31.91a | 480.12a |
| V1 | 188.21a | 41.23a | 32.96a | 26.66a | 22.49ab | 19.05b | 14.33b | 15.75b | 12.00b | 10.54b | 383.22ab |
| V2 | 97.60b | 67.22a | 53.63a | 27.47a | 17.99b | 10.64b | 7.39b | 13.63b | 7.69b | 6.33b | 309.59b |
| Between solar panels | V-CK | 1066.13a | 576.84a | 361.88a | 304.45a | 216.85a | 143.77a | 92.21a | 80.23a | 65.59a | 61.78a | 2969.72a |
| V1 | 173.53b | 60.88b | 42.75b | 38.59b | 35.98b | 19.44b | 14.55b | 11.92c | 7.33b | 6.38b | 411.35b |
| V2 | 190.45b | 140.94b | 121.34b | 49.71b | 46.12b | 30.21b | 20.10b | 37.77b | 12.38b | 10.89b | 659.91b |
| Under solar panels | Biocrust practice | B-CK | 350.63a | 269.35a | 103.79a | 72.28a | 57.55a | 32.48a | 33.20a | 36.10a | 34.29a | 43.81a | 1033.49a |
| B1 | 43.48b | 41.18b | 39.19b | 36.84b | 35.86b | 32.93a | 31.20a | 30.56a | 30.80a | 37.04a | 359.08b |
| B2 | 31.37b | 29.45b | 29.79b | 29.39b | 28.27b | 28.17a | 29.22a | 28.80a | 28.37a | 34.68a | 297.51b |

Note: E-CK-bare land control, E1-wheat straw checkerboard, E2-gravel mulch, E3-red clay mulch, E4-DSA (Direct Shear Abrasion) + gravel /deposition zone + red clay measure.

V-CK-natural vegetation restoration area, V1-*Sedum aizoon* L. planting area, V2-*Pennisetum alopecuroides* (L.) Spreng. planting area.

B-CK-natural vegetation restoration, B1- algal crust mulch, B2- moss crust mulch.

**Table 3 Regression of the relationships between wind velocity** **uz and height z for all velocity profiles under the engineering and plant treatments. Please note the abbreviation identification for the treatments are given in the footnotes of this table.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Treatment | | a | b | r2 | z0 (cm) |
| Engineering practice | E-CK | 6.3157 | 0.8822 | 0.951 | 0.078 |
| E1 | 3.8758 | 0.7918 | 0.911 | 0.748 |
| E2 | 5.3509 | 0.5088 | 0.901 | 0.003 |
| E3 | 3.1411 | 0.4895 | 0.846 | 0.163 |
| E4 | 3.3932 | 0.4727 | 0.862 | 0.076 |
| Plant practice | V-CK | 3.1034 | 0.5393 | 0.930 | 0.317 |
| V1 | 3.4918 | 0.6138 | 0.925 | 0.338 |
| V2 | 2.9727 | 0.5346 | 0.977 | 0.413 |

Note: E-CK-bare land control, E1-wheat straw checkerboard, E2-gravel mulch, E3-red clay mulch, E4-DSA (Direct Shear Abrasion) + gravel /deposition zone + red clay measure; V-CK-natural vegetation restoration area, V1-*Sedum aizoon* L. planting area, V2-*Pennisetum alopecuroides* (L.) Spreng. planting area.

**Supplement Material:**

**Table 1. The average wind velocities (m/s) at 20 to 200 cm heights above the ground surface and the average wind velocities over the entire height for the engineering and plant treatments. Please note the abbreviation identification for the treatments are given in the footnotes of this table. Different letters indicate significant differences at the P<0.05 level within each column using Tukey’s HSD Test for means comparisons.**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Treatments | | Height above ground surface (cm) | | | | | | | | average wind velocities of the entire height |
| 200 | 150 | 120 | 100 | 80 | 60 | 40 | 20 |
| Engineering practice | E-CK | 6.72a | 6.62a | 6.61a | 6.28a | 6.23a | 6.09a | 5.51a | 4.72a | 6.10a |
| E1 | 4.40c | 4.15c | 4.04c | 3.79c | 3.52c | 3.79c | 3.37c | 2.38c | 3.68c |
| E2 | 5.78b | 5.32b | 5.53b | 5.39b | 5.26b | 5.23b | 4.74b | 4.55a | 5.23b |
| E3 | 3.65d | 3.34d | 3.23d | 3.02d | 2.98c | 2.95d | 2.42d | 2.57bc | 3.02d |
| E4 | 3.96cd | 3.52d | 3.47cd | 3.16d | 3.29c | 3.18cd | 2.87cd | 2.76b | 3.28cd |
| Plant practice | V-CK | 3.63a | 3.24a | 3.15a | 3.12a | 3.01a | 2.81ab | 2.43b | 2.38a | 2.97a |
| V1 | 3.90a | 3.65a | 3.60a | 3.39a | 3.42a | 3.34a | 3.11a | 2.31a | 3.34a |
| V2 | 3.43a | 3.21a | 3.04a | 2.94a | 2.86a | 2.61b | 2.43b | 2.19a | 2.84a |

Note: E-CK-bare land control, E1-wheat straw checkerboard, E2-gravel mulch, E3-red clay mulch, E4-DSA (Direct Shear Abrasion) + gravel /deposition zone + red clay measure; V-CK-natural vegetation restoration area, V1-*Sedum aizoon* L. planting area, V2-*Pennisetum alopecuroides* (L.) Spreng. planting area.