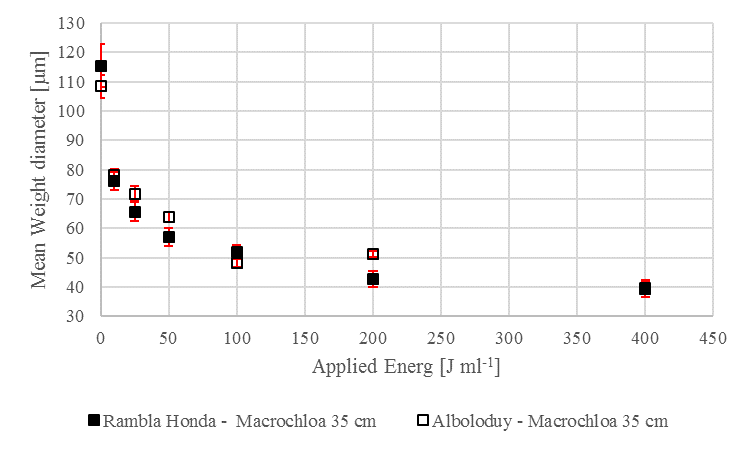
Supplementary Material



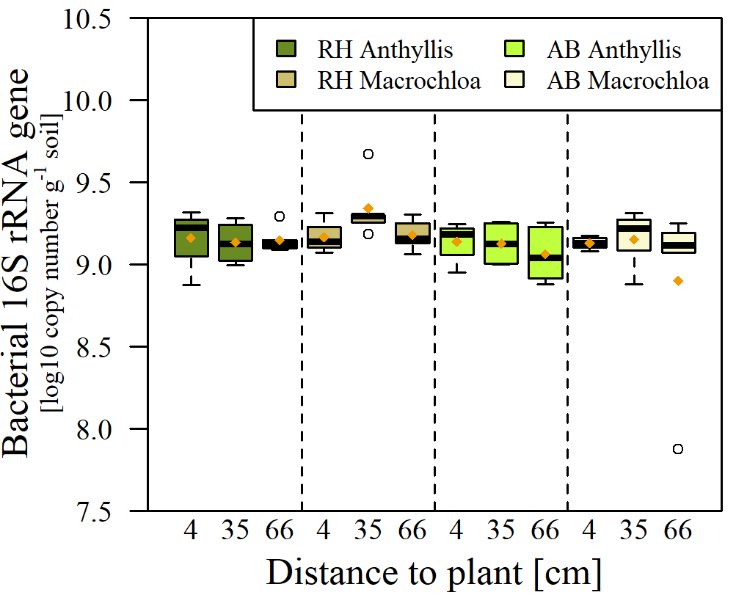
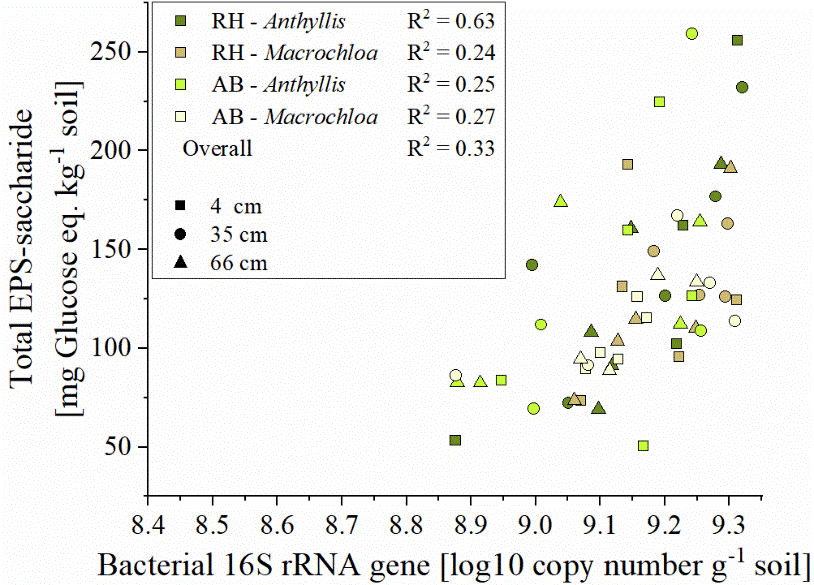
**Supplementary Figure 1:** Pre-test of microaggregation using different levels of applied energy, by time of sonication, using the middle distance from the *Macrochloa* plots. Error bars represent standard error (5 replicates).



**Supplementary Figure 2:** The pH of the soil-water mixture (1:2.5) of the soil samples from Alboloduy (AB) and Rambla Honda (RH). Box-and-whisker diagrams showing the median (black line), 25th, 75th (resp. upper/lower part box), min./max. (whiskers) and mean values (orange dot).



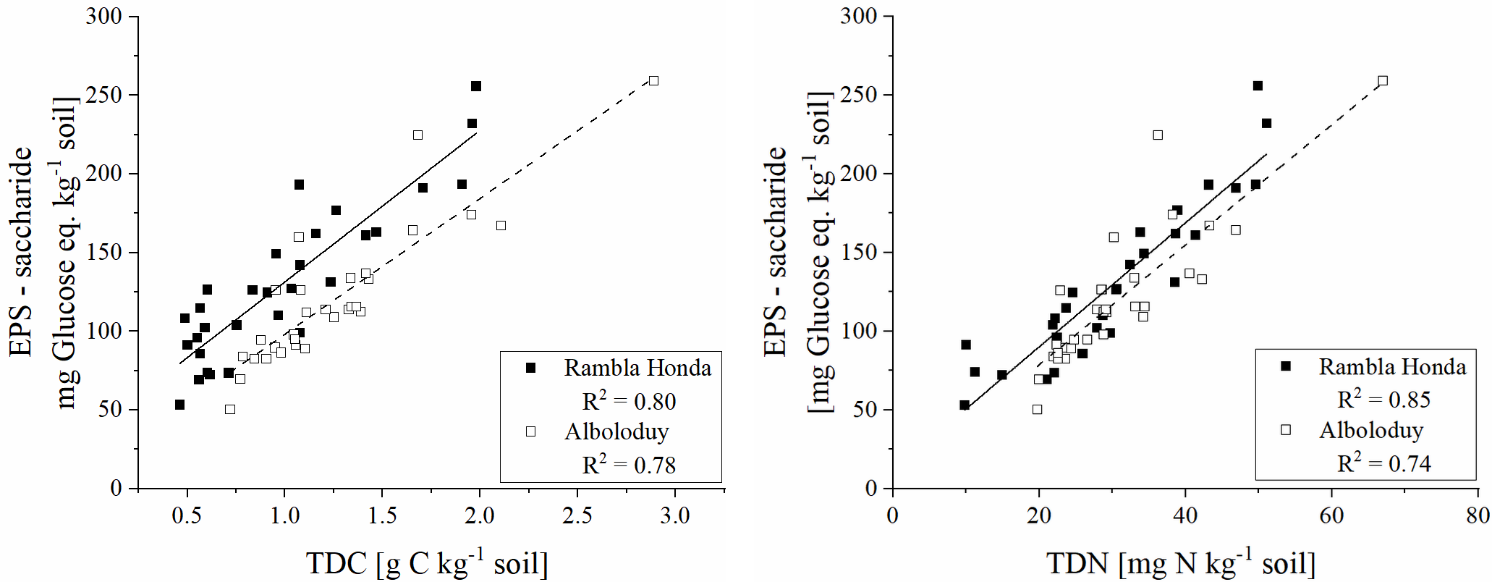
**Supplementary Figure 3:** Clay fraction (< 0.002 mm) of the fine earth fraction (<2mm) from Alboloduy (AB) and Rambla Honda (RH). Box-and-whisker diagrams showing the median (black line), 25th, 75th (resp. upper/lower part box), min./max. (whiskers) and mean values (orange dot), with 5 replicates.



a)

b)

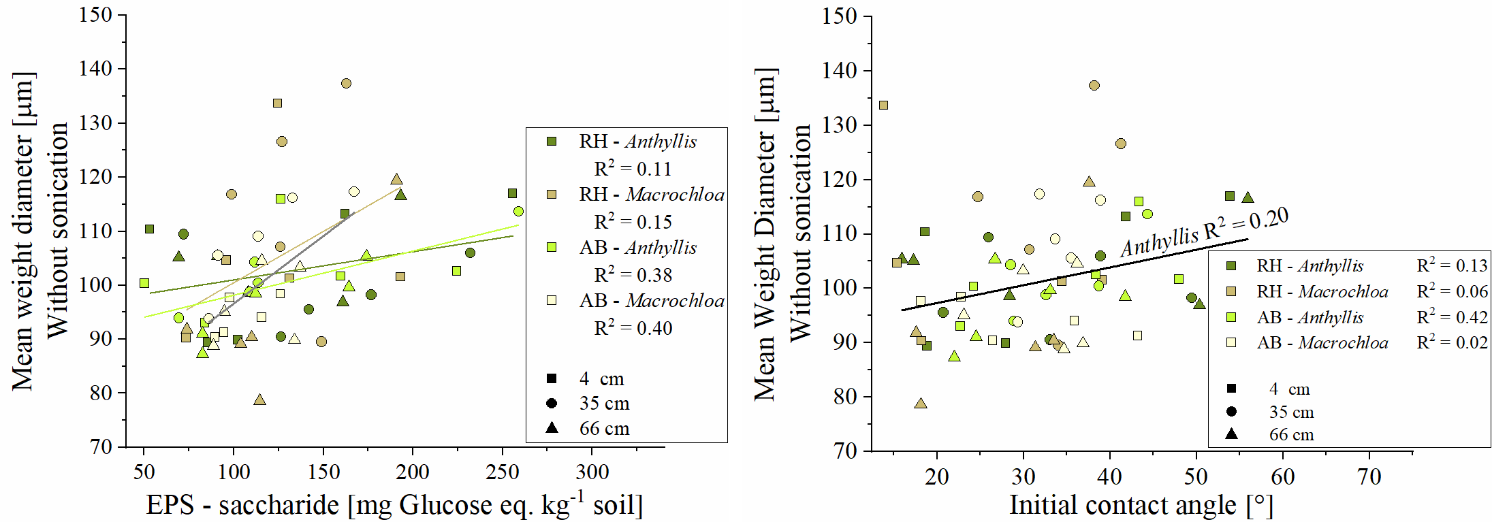
**Supplementary Figure 4:** Bacterial 16S rRNA gene copy number of the soil samples from Alboloduy (AB) and Rambla Honda (RH), a, and the linear regressions between the bacterial 16S rRNA gene copy number and total EPS-saccharide content of the soil samples from Alboloduy (AB) and Rambla Honda (RH), b. Box-and-whisker diagrams (left) shows the median (black line), 25th, 75th (resp. upper/lower part box), min./max. (whiskers) and mean values (orange dot).



a)

b)

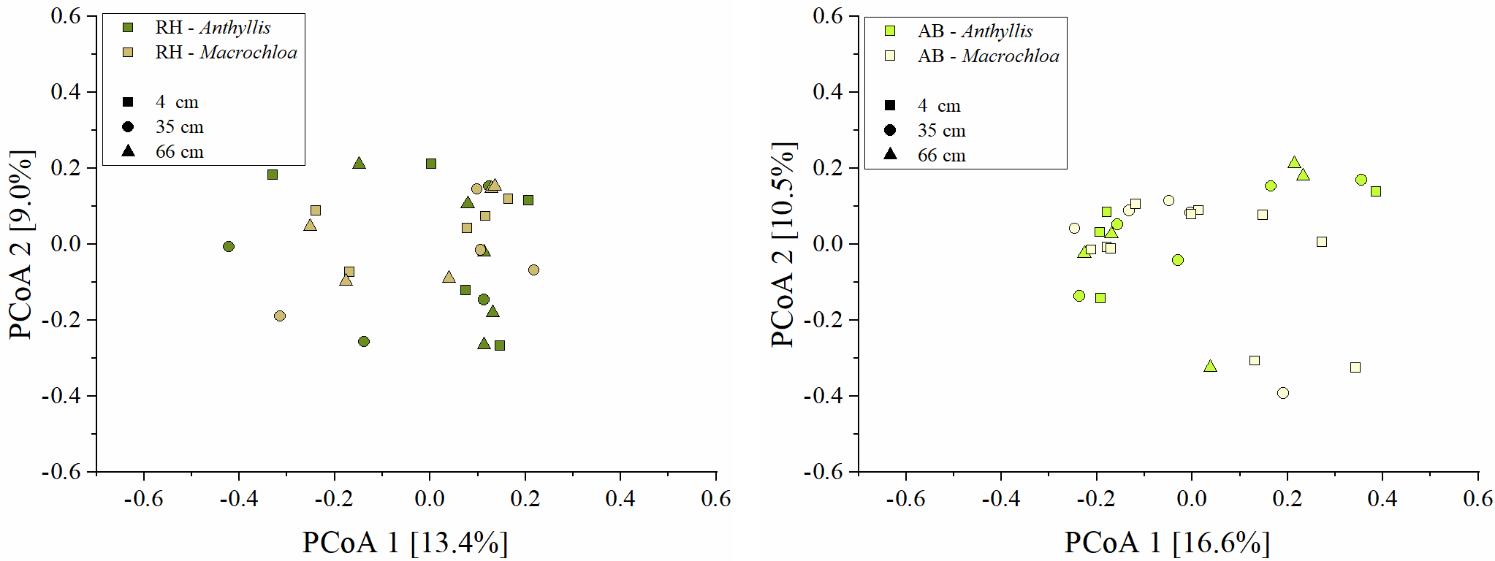
**Supplementary Figure 5:** Linear regressions between EPS-saccharide content and Total Dissolved Carbon (TDC, a) or Total Dissolved Nitrogen (TDN, b), respectively.



a)

b)

**Supplementary Figure 6:** Linear regressions between mean weight diameter of the microaggregate fraction (< 0.25 mm) and EPS-saccharide (a) or the initial contact angle (b) of the soil samples from Alboloduy (AB) and Rambla Honda (RH).



a)

b)

**Supplementary Figure 7:** Principal Coordinates Analysis (PCoA) of the prokaryotic community composition based on 16S rRNA gene sequencing for the Rambla Honda site (a) and Alboloduy site (b), whereby the PCoA axis 1 scores were used in the structural equation modelling analysis. Note that no environmental variable, i.e. soil texture/carbon/nitrogen, was significant (p<0.05) within the sites analyses and therefore not plotted.

**Supplementary Table 1:** Initial and optimum linear mixed effect model, used to obtain results in supplementary table 3. As described in section 2.4, the initial model contained all fixed effects and random slope for the subplots.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Parameter** |  | **Initial model** | | **Optimum model** | |  | **Random slope for** | | | **Different variance for** | | |
|  | *AIC* | *LL* | *AIC* | *LL* |  | *Site* | *Plant* | *Distance* | *Site* | *Plant* | *Distance* |
| pH |  | -12.4 | 20.2 | -15.8 | 23.9 |  |  |  |  |  |  | X |
| EC |  | 534.0 | -253.0 | 532.1 | -251.4 |  |  |  |  | X |  |  |
| BD |  | -72.2 | 50.1 | -74.0 | 52.0 |  |  |  |  |  | X |  |
| TC |  | 85.5 | -28.7 | 80.7 | -24.3 |  |  |  |  |  |  | X |
| OC |  | 72.3 | -22.2 | 70.2 | -19.1 |  |  | X |  |  |  |  |
| IC |  | -14.2 | 21.1 | -35.0 | 32.5 |  |  |  |  | X |  |  |
| TN |  | 67.6 | -19.8 | 66.8 | -14.4 |  |  |  | X |  |  |  |
| C/N - ratio |  | 217.6 | -94.8 | 214.2 | -88.1 |  |  |  |  | X |  | X |
| Clay |  | 424.0 | -198.0 | 422.4 | -195.2 |  |  |  |  |  |  | X |
| Silt |  | 501.5 | -236.7 | 498.1 | -232.0 |  |  |  |  | X | X |  |
| Sand |  | 521.3 | -246.6 | 518.0 | -243.0 |  | X |  |  |  |  |  |
| Microaggr. Fr. # |  | 499,3 | -233,7 | 530,1 | -238,0 |  |  |  |  |  |  | X |
| TDC |  | 91.8 | -31.9 | 89.6 | -26.8 |  |  | X |  |  |  | X |
| TDN |  | 404.5 | -188.2 | 403.8 | -185.9 |  |  | X |  |  |  |  |
| EPS-saccharide |  | 544.8 | -258.4 | 542.9 | -253.5 |  |  | X |  | X |  |  |
| MWD - 0 J ml-1 |  | 409.7 | -190.9 | 401.6 | -183.8 |  |  |  |  | X | X |  |
| MWD - 200 J ml-1 |  | 353.9 | -162.9 | 342.7 | -149.4 |  |  |  | X | X | X |  |
| Contact angle \* |  | 399.4 | -185.7 | 397.7 | -182.8 |  |  | X |  |  |  |  |

*AIC: Akaike information criterion LL:* *log likelihood*

*EC – Electrical Conductivity; BD - Bulk Density; TC – Total Carbon; OC – Organic Carbon; IC – Inorganic Carbon; TN – Total Nitrogen; TDC – Total Dissolved Carbon in EPS-extract; TDN – Total Dissolved Nitrogen in EPS-extract; MWD – Mean Weight Diameter of microaggregate fraction; # – As part of the soil <4 mm; \* – As measure of hydrophobicity/wettability of the microaggregate fraction*

**Supplementary Table 2:** Initial and optimum linear mixed effect model, used to obtain results in supplementary table 5. As described in section 2.4, the initial model contained all fixed effects and random slope for the subplots.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Phylum / Parameter** |  | **Initial model** | | **Optimum model** | |  | **Random slope for** | | | **Different variance for** | | |
|  |  | *AIC* | *LL* | *AIC* | *LL* |  | *Site* | *Plant* | *Distance* | *Site* | *Plant* | *Distance* |
| Acidobacteria |  | 274.7 | -123.3 | 268.9 | -116.4 |  |  | X |  |  |  | X |
| Actinobacteria |  | 296.4 | -134.2 | 289.6 | -128.8 |  |  |  |  |  |  | X |
| Bacteroidetes |  | 222.9 | -97.5 | 220.8 | -95.4 |  |  |  |  | X |  |  |
| Chloroflexi |  | 265.3 | -118.7 | - | - |  |  |  |  |  |  |  |
| Entotheonellaeota |  | 64.4 | -18.2 | 56.0 | -13.0 |  |  |  |  | X |  |  |
| Firmicutes |  | 250.3 | -111.2 | 238.9 | -98.5 |  | X |  |  |  | X | X |
| Gemmatimonadetes |  | 188.8 | -80.4 | 180.2 | -69.1 |  | X |  |  |  | X | X |
| Patescibacteria |  | 128.3 | -50.2 | 127.2 | -47.6 |  |  |  |  |  |  | X |
| Alphaproteobacteria |  | 280.7 | -126.4 | 280.9 | -120.4 |  |  |  | X |  | X |  |
| Deltaproteobacteria |  | 152.6 | -62.3 | 147.9 | -54.0 |  |  |  | X | X |  |  |
| Gammaproteobacteri |  | 205.0 | -88.5 | 204.6 | -81.3 |  | X |  |  |  | X | X |
| Thaumarchaeota |  | 250.2 | -111.1 | 250.8 | -108.4 |  |  |  |  | X | X |  |
| Verrucomicrobia |  | 164.4 | -68.2 | 164.6 | -67.3 |  |  |  |  | X |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Pielou |  | -263.3 | 145.6 | -264.5 | 150.2 |  |  | X |  |  |  | X |
| Chao1 |  | 636.8 | -304.4 | 637.9 | -303.9 |  |  |  |  | X |  |  |
| Shannon |  | 96.3 | -34.1 | - | - |  |  |  |  |  |  |  |
| Richness |  | 613.1 | -292.6 | - | - |  |  |  |  |  |  |  |
| 16S rRNA gene copy number |  | 35.9 | -3.9 | 24.8 | 3.8 |  |  |  |  |  |  | X |

AIC: Akaike information criterion LL: log likelihood

**Supplementary Table 3:** Overview of the results of the linear mixed effect model for the general soil properties and EPS extracts. Initial and final model statistics are given in Supplementary Table 1. P-values below the 0.05 significance level are displayed in bold.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Site | | Plant | | Distance | | Site x Plant | | Site x Distance | | Plant x Distance | | Site x Plant x Distance | |
|  | F-value | p-value | F-value | p-value | F-value | p-value | F-value | p-value | F-value | p-value | F-value | p-value | F-value | p-value |
| pH | 36.25 | ***<0.001*** | 1.03 | 0.325 | 1.96 | 0.157 | 0.20 | 0.661 | 3.08 | 0.060 | 0.11 | 0.899 | 0.31 | 0.732 |
| EC | 1.28 | 0.270 | 0.01 | 0.920 | 1.33 | 0.280 | 0.23 | 0.640 | 0.52 | 0.600 | 0.74 | 0.480 | 0.23 | 0.800 |
| BD | 9.62 | ***0.007*** | 0.87 | 0.365 | 13.18 | ***<0.001*** | 0.11 | 0.743 | 0.75 | 0.481 | 1.54 | 0.231 | 2.19 | 0.129 |
| TC | 31.38 | ***<0.001*** | 0.05 | 0.822 | 1.82 | 0.178 | 0.01 | 0.922 | 0.11 | 0.899 | 2.01 | 0.151 | 1.24 | 0.302 |
| OC | 0.04 | 0.838 | 1.98 | 0.178 | 2.56 | 0.093 | 0.11 | 0.745 | 0.27 | 0.767 | 1.47 | 0.246 | 1.58 | 0.222 |
| IC | 58.53 | ***<0.001*** | 0.26 | 0.618 | 7.58 | ***0.002*** | 0.09 | 0.771 | 0.91 | 0.413 | 0.81 | 0.455 | 1.45 | 0.251 |
| TN | 20.86 | ***<0.001*** | 0.00 | 0.967 | 1.02 | 0.372 | 0.08 | 0.785 | 0.26 | 0.772 | 0.75 | 0.481 | 2.78 | 0.077 |
| OC/TN - ratio | 18.49 | ***0.001*** | 0.17 | 0.685 | 1.72 | 0.196 | 0.18 | 0.675 | 1.07 | 0.357 | 0.77 | 0.472 | 0.05 | 0.957 |
| Clay | 567.89 | ***<0.001*** | 16.02 | ***0.001*** | 5.27 | ***0.011*** | 1.79 | 0.200 | 1.51 | 0.236 | 4.09 | ***0.026*** | 5.19 | ***0.011*** |
| Silt | 3.47 | 0.081 | 0.24 | 0.633 | 0.34 | 0.718 | 2.77 | 0.116 | 0.38 | 0.690 | 0.27 | 0.768 | 1.20 | 0.314 |
| Sand | 7.93 | ***0.012*** | 1.51 | 0.238 | 0.39 | 0.678 | 0.93 | 0.348 | 0.63 | 0.539 | 0.52 | 0.602 | 0.95 | 0.396 |
| Microaggregate fr.# | 0,04 | 0,839 | 0,31 | 0,583 | 5,05 | ***0,012*** | 0,82 | 0,378 | 1,50 | 0,240 | 2,75 | 0,079 | 0,11 | 0,896 |
| TDC | 3.96 | 0.064 | 0.05 | 0.823 | 5.41 | ***0.010*** | 0.00 | 0.961 | 1.37 | 0.269 | 0.09 | 0.916 | 0.14 | 0.874 |
| TDN | 0.04 | 0.841 | 0.12 | 0.739 | 1.81 | 0.180 | 0.00 | 0.979 | 1.12 | 0.340 | 0.10 | 0.901 | 0.09 | 0.913 |
| EPS-saccharide | 1.25 | 0.280 | 0.48 | 0.498 | 1.17 | 0.323 | 0.01 | 0.918 | 0.21 | 0.808 | 0.11 | 0.900 | 0.12 | 0.887 |
| MWD – 0 J ml-1 | 1.10 | 0.310 | 0.01 | 0.92 | 5.21 | ***0.01*** | 0.21 | 0.66 | 2.53 | 0.10 | 5.15 | ***0.01*** | 2.04 | 0.15 |
| MWD – 200 J ml-1 | 0.02 | ***0.009*** | 9.58 | ***0.01*** | 3.52 | ***0.04*** | 0.44 | 0.52 | 0.42 | 0.66 | 1.34 | 0.28 | 0.33 | 0.72 |
| Contact Angle\* | 1.04 | 0.889 | 0.60 | 0.45 | 1.45 | 0.25 | 0.17 | 0.69 | 0.40 | 0.67 | 1.12 | 0.34 | 0.52 | 0.60 |

*EC – Electrical Conductivity; BD - Bulk Density; TC – Total Carbon; OC – Organic Carbon; IC – Inorganic Carbon; TN – Total Nitrogen; TDC – Total Dissolved Carbon in EPS-extract; TDN – Total Dissolved Nitrogen in EPS-extract; MWD – Mean Weight Diameter of microaggregate fraction; # – As part of the soil <4 mm; \*– As measure of hydrophobicity/wettability of the microaggregate fraction*

**Supplementary Table 4:** Mean values, with standard deviations, of the general soil properties and EPS extracts.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | | **Rambla Honda - *Anthyllis*** | | | **Rambla Honda-*Macrochloa*** | | | **Alboloduy - *Anthyllis*** | | | **Alboloduy – *Macrochloa*** | | |
|  | *unit* | 4 cm | 35 cm | 66 cm | 4 cm | 35 cm | 66 cm | 4 cm | 35 cm | 66 cm | 4 cm | 35 cm | 66 cm |
| EC | [µS cm-1] | 228.0±57.6 | 222.6±49.2 | 205.6±56.4 | 225.8±29.7 | 231.2±17.2 | 217.0±42.4 | 259.6±36.7 | 237.0±23.9 | 244.4±21.8 | 228.4±38.8 | 241.2±77.7 | 238.8±53.6 |
| BD | [g cm-3] | 1.37±0.06 | 1.37±0.04 | 1.49±0.05 | 1.30±0.10 | 1.44±0.05 | 1.41±0.09 | 1.42±0.07 | 1.47±0.07 | 1.49±0.03 | 1.39±0.07 | 1.45±0.02 | 1.51±0.12 |
| TC | [g C kg-1] | 18.2±5.9 | 16.6±4.3 | 16.2±5.1 | 17.0±4.1 | 16.8±1.0 | 14.6±4.1 | 28.5±6.9 | 25.3±4.2 | 24.1±4.6 | 24.1±4.5 | 25.9±3.7 | 25.6±3.9 |
| IC | [g C kg-1] | 1.1±1.6 | 1.0±1.4 | 1.5±2.0 | 1.5±1.0 | 1.4±1.4 | 1.7±1.6 | 13.7±6.2 | 13.2±5.7 | 13.2±5.8 | 14.5±4.3 | 14.9±4.3 | 14.7±4.4 |
| Graphitic C | [g C kg-1] | 4.0±1.7 | 3.8±1.7 | 3.7±1.7 | 3.8±1.6 | 4.0±1.6 | 3.9±1.7 | - | - | - | - | - | - |
| OC/TN – ratio | [-] | 6.84±1.97 | 6.29±1.58 | 5.73±1.65 | 5.78±1.23 | 5.92±0.50 | 5.20±1.21 | 9.11±2.01 | 8.01±1.48 | 8.17±0.86 | 8.34±1.90 | 7.83±1.79 | 8.17±1.16 |
| Clay (<2µm) | [g kg-1] | 16±15 | 22±7 | 16±2 | 35±14 | 23±09 | 22±11 | 81±16 | 77±17 | 81±8 | 104±14 | 117±16 | 83±8 |
| Silt (2-63µm) | [g kg-1] | 218±35 | 204±44 | 209±38 | 235±62 | 240±51 | 244±34 | 198±18 | 211±16 | 210±27 | 195±12 | 190±21 | 194±15 |
| Sand(63µm–2mm) | [g kg-1] | 766±37 | 774±49 | 775±37 | 730±67 | 737±59 | 734±45 | 721±18 | 711±31 | 710±30 | 700±24 | 693±29 | 723±20 |
| Microaggr. fr. # | [g kg-1] | 291.5±29.2 | 320.4±30.7 | 310.5±22.5 | 287.1±27.0 | 296.3±25.4 | 298.0±38.4 | 286.3±72.6 | 302.1±60.5 | 307.7±72.4 | 309.6±17.9 | 307.8±11.1 | 314.6±13.8 |
| TDC | [g C kg-1] | 0.95±0.64 | 1.10±0.56 | 0.98±0.65 | 0.90±0.27 | 1.07±0.24 | 0.92±0.47 | 1.04±0.38 | 1.47±0.82 | 1.35±0.48 | 1.06±0.18 | 1.36±0.45 | 1.26±0.17 |
| TDN | [mg N kg-1] | 30.5±15.0 | 33.2±13.3 | 28.8±16.2 | 30.2±9.9 | 31.8±2.1 | 26.5±13.1 | 27.3±6.6 | 35.7±18.2 | 32.0±10.4 | 27.0±4.2 | 31.9±10.3 | 31.4±6.9 |
| MWD – 0 J ml-1 | [µm] | 104.0 ±13.3 | 99.9 ±7.7 | 104.5 ±7.7 | 106.3 ±16.2 | 115.5 ±18.4 | 93.9 ±15.2 | 102.7 ±8.3 | 102.2 ±7.4 | 96.4 ±7.2 | 94.4 ±3.6 | 108.4 ±9.5 | 96.3 ±7.3 |
| MWD –200 J ml-1 | [µm] | 25.1±1.7 | 27.0±6.1 | 26.1±2.0 | 32.2±12.4 | 37.5±12.7 | 28.4±3.6 | 24.8±4.0 | 24.1±2.9 | 24.2±4.5 | 27.7±4.9 | 32.4±5.8 | 27.5±2.7 |
| Initial contact angle | [°] | 29.0±19.3 | 30.5±22.3 | 24.1±20.7 | 30.0±26.4 | 26.0±5.9 | 22.0±18.3 | 36.7±21.2 | 29.0±14.1 | 38.7±17.9 | 33.5±18.5 | 44.7±15.9 | 42.9±18.8 |

*1 – As part of the soil <4 mm;* *see Supplementary Table 1 for more abbreviations*

**Supplementary Table 5:** Overview of the results of the linear mixed effect model for the relative abundance of the individual phyla and Alpha-diversity indices. Initial and final model statistics are given in Supplementary Table 2. P-values below the 0.05 significance level are displayed in bold.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Site | | Plant | | Distance | | Site x Plant | | Site x Distance | | Plant x Distance | | Site x Plant x Distance | |
|  | F-value | p-value | F-value | p-value | F-value | p-value | F-value | p-value | F-value | p-value | F-value | p-value | F-value | p-value |
| Acidobacteria | 9.83 | ***0.006*** | 0.59 | 0.453 | 5.55 | ***0.009*** | 0.20 | 0.663 | 0.28 | 0.756 | 1.85 | 0.176 | 0.28 | 0.757 |
| Actinobacteria | 22.04 | ***<.0.001*** | 0.65 | 0.434 | 7.02 | ***0.003*** | 0.77 | 0.394 | 0.10 | 0.903 | 5.55 | ***0.009*** | 1.15 | 0.332 |
| Bacteroidetes | 0.00 | 0.993 | 0.01 | 0.909 | 2.51 | 0.099 | 0.42 | 0.525 | 1.25 | 0.302 | 1.41 | 0.260 | 2.03 | 0.150 |
| Chloroflexi | 0.15 | 0.700 | 0.19 | 0.668 | 0.39 | 0.683 | 0.98 | 0.338 | 0.29 | 0.749 | 0.32 | 0.727 | 0.38 | 0.688 |
| Entotheonellaeota | 30.92 | ***<.0.001*** | 0.04 | 0.854 | 5.82 | ***0.008*** | 0.01 | 0.906 | 0.22 | 0.806 | 1.86 | 0.174 | 2.42 | 0.107 |
| Firmicutes | 4.32 | 0.054 | 2.97 | 0.104 | 0.38 | 0.687 | 1.24 | 0.282 | 2.38 | 0.111 | 1.07 | 0.357 | 0.96 | 0.395 |
| Gemmatimonadetes | 0.81 | 0.380 | 0.10 | 0.761 | 8.02 | ***0.002*** | 1.04 | 0.323 | 2.12 | 0.138 | 0.23 | 0.796 | 0.46 | 0.633 |
| Patescibacteria | 0.91 | 0.355 | 0.00 | 0.977 | 1.13 | 0.336 | 0.04 | 0.843 | 0.83 | 0.445 | 0.75 | 0.481 | 0.01 | 0.991 |
| Alphaproteobacteria | 11.08 | ***0.004*** | 4.15 | 0.058 | 2.34 | 0.114 | 0.21 | 0.651 | 3.35 | ***0.049*** | 0.65 | 0.528 | 0.21 | 0.816 |
| Deltaproteobacteria | 3.43 | 0.083 | 1.52 | 0.236 | 71.79 | ***<.0.001*** | 0.03 | 0.868 | 5.77 | ***0.008*** | 26.01 | ***<.0.001*** | 2.71 | 0.084 |
| Gammaproteobacteria | 2.24 | 0.154 | 0.34 | 0.567 | 8.50 | ***0.001*** | 1.34 | 0.265 | 6.79 | ***0.004*** | 0.77 | 0.471 | 1.32 | 0.282 |
| Thaumarchaeota | 10.50 | ***0.005*** | 1.09 | 0.312 | 1.02 | 0.373 | 0.20 | 0.658 | 0.71 | 0.502 | 1.74 | 0.194 | 1.29 | 0.291 |
| Verrucomicrobia | 6.93 | ***0.018*** | 0.01 | 0.937 | 1.55 | 0.230 | 0.00 | 0.993 | 7.75 | ***0.002*** | 0.01 | 0.990 | 2.92 | 0.070 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Pielou | 19.00 | ***<0.001*** | 3.40 | 0.084 | 0.10 | 0.878 | 0.00 | 0.912 | 1.30 | 0.289 | 0.90 | 0.409 | 0.70 | 0.512 |
| Chao1 | 0.80 | 0.384 | 0.03 | 0.872 | 0.11 | 0.893 | 0.03 | 0.873 | 0.11 | 0.899 | 1.28 | 0.293 | 0.19 | 0.828 |
| Shannon | 1.09 | 0.312 | 0.16 | 0.699 | 0.14 | 0.874 | 0.09 | 0.767 | 0.68 | 0.516 | 1.43 | 0.257 | 0.38 | 0.690 |
| Richness | 0.86 | 0.367 | 0.04 | 0.845 | 0.10 | 0.903 | 0.03 | 0.859 | 0.16 | 0.849 | 1.28 | 0.293 | 0.24 | 0.786 |
| Bacterial 16S rRNA gene copy number | 2.15 | 0.162 | 0.31 | 0.583 | 1.57 | 0.224 | 0.77 | 0.392 | 0.92 | 0.408 | 0.86 | 0.432 | 0.32 | 0.730 |

**Supplementary Table 6:** Mean values, with standard deviations, of the Alpha diversity indices and bacterial 16S rRNA gene copy numbers.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Parameter** | | **Rambla Honda - *Anthyllis*** | | | **Rambla Honda - *Macrochloa*** | | | **Alboloduy - *Anthyllis*** | | | **Alboloduy – *Macrochloa*** | | |
|  | *unit* | 4 cm | 35 cm | 66 cm | 4 cm | 35 cm | 66 cm | 4 cm | 35 cm | 66 cm | 4 cm | 35 cm | 66 cm |
| Pielou | [-] | 0.94±0.00 | 0.94±0.01 | 0.94±0.01 | 0.94±0.00 | 0.94±0.01 | 0.93±0.01 | 0.93±0.00 | 0.93±0.01 | 0.93±0.00 | 0.93±0.01 | 0.93±0.01 | 0.93±0.01 |
| Chao 1 | [-] | 507.8±197.2 | 375.9±217.2 | 488.3±122.6 | 461.1±188.3 | 481.3±250.3 | 444.1±159.3 | 467.6±222.8 | 387.0±140.0 | 407.0±161.7 | 370.6±243.2 | 422.6±173.3 | 387.1±177.3 |
| Shannon | [-] | 5.67±0.39 | 5.33±0.64 | 5.66±0.25 | 5.56±0.39 | 5.54±0.64 | 5.52±0.37 | 5.50±0.51 | 5.40±0.35 | 5.44±0.33 | 5.15±0.81 | 5.41±0.50 | 5.37±0.49 |
| Richness | [-] | 435.0±144.6 | 333.9±177.4 | 422.8±93.6 | 400.3±144.4 | 409.4±192.3 | 386.1±123.2 | 399.5±171.2 | 345.4±111.3 | 357.0±121.0 | 319.9±194.8 | 367.1±136.3 | 343.5±141.6 |
| 16S rRNA gene copy number | [log10 copy number g-1] | 9.16±0.19 | 9.17±0.14 | 9.15±0.08 | 9.18±0.09 | 9.34±0.19 | 9.18±0.10 | 9.14±0.11 | 9.13±0.14 | 9.06±0.17 | 9.13±0.04 | 9.15±0.18 | 8.90±0.58 |

Supplementary Table 7: Comparison of relative abundances (%) ± standard deviation of prokaryotic phyla (>1%) at the Rambla Honda and Alboloduy sites around *Anthyllis cytisoides* and *Macrochloa tenacissima* (in 4 cm, 35 cm and 66 cm distance from the plant). Phyla names with \* are significant on p < 0.05 level. Other significant differences on lower levels are indicated by differences in letters, whereby same letter are indications of no significant differences. More detailed information on statistics can be found in Supplementary table 5.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Phylum | Rambla Honda - *Anthyllis* | | | Rambla Honda - *Macrochloa* | | | Alboloduy - *Anthyllis* | | | Alboloduy - *Macrochloa* | | |
|  | 4 cm | 35 cm | 66 cm | 4 cm | 35 cm | 66 cm | 4 cm | 35 cm | 66 cm | 4 cm | 35 cm | 66 cm |
| **Acidobacteria\*** | 15.4±3.7 ab | 16.8±1.4 a | 12.8±3.6 b | 16.6±3.2 ab | 16.1±1.8 a | 15.5±1.5 b | 18.6±4.6 ab | 19.0±2.3 a | 15.8±1.7 b | 18.0±5.3 ab | 17.2±2.9 a | 16.1±3.0 b |
| **Actinobacteria\*** | 26.6±5.4 ab | 25.0±1.5 a | 32.4±3.8 b | 26.8±5.5 | 28.5±2.1 | 27.5±2.3 | 21.9±6.2 ab | 21.6±3.9 a | 25.9±3.7 b | 22.0±4.7 | 24.3±1.7 | 25.5±1.7 |
| Bacteroidetes | 6.0±1.6 | 7.2±0.8 | 4.8±1.3 | 5.1±1.8 | 5.7±0.2 | 5.6±1.9 | 5.5±1.2 | 5.7±1.8 | 5.3±1.4 | 7.0±2.3 | 5.6±1.9 | 5.0±1.7 |
| Chloroflexi | 7.6±2.0 | 8.6±1.0 | 9.0±1.2 | 9.1±1.5 | 7.7±1.2 | 9.1±4.7 | 9.6±4.5 | 9.6±3.3 | 9.3±3.4 | 8.6±1.9 | 7.4±1.0 | 8.8±2.5 |
| **Entotheonellaeota\*** | 0.3±0.0 | 0.2±0.2 | 0.3±0.1 | 0.3±0.3 | 0.1±0.2 | 0.5±0.2 | 0.9±0.3 | 0.6±0.4 | 1.0±0.4 | 0.7±0.1 | 0.9±0.3 | 0.9±0.2 |
| Firmicutes | 1.9±1.0 | 1.3±0.4 | 2.7±1.2 | 1.9±0.9 | 1.6±0.3 | 2.9±0.8 | 4.6±4.3 | 4.4±0.5 | 2.9±1.7 | 3.9±1.3 | 4.5±0.4 | 5.4±1.5 |
| Gemmatimonadetes | 3.3±1.0 | 2.7±0.4 | 2.9±0.6 | 3.5±0.7 | 3.2±0.4 | 3.1±0.3 | 4.5±3.1 | 3.9±1.9 | 3.8±1.2 | 4.2±1.4 | 3.1±1.1 | 3.6±0.7 |
| Patescibacteria | 1.5±0.4 | 1.0±0.6 | 0.9±0.3 | 1.2±0.4 | 1.2±0.3 | 0.8±0.5 | 1.0±1.3 | 0.8±0.3 | 0.9±0.4 | 0.7±0.9 | 1.0±0.5 | 0.8±0.5 |
| **Alpha-proteobacteria\*** | 15.7±4.6 | 16.5±6.5 | 15.1±4.3 | 13.3±0.9 | 16.0±2.9 | 13.2±2.2 | 11.7±1.0 | 13.0±3.2 | 13.2±3.5 | 9.9±1.6 | 11.9±1.5 | 12.3±2.9 |
| Delta-proteobacteria | 4.7±1.0 | 3.8±1.0 | 3.5±0.9 | 4.4±0.4 | 4.2±0.3 | 3.9±0.8 | 3.9±1.0 a | 4.0±0.8 ab | 4.5±1.0 b | 4.1±1.0 | 5.0±0.3 | 4.5±0.7 |
| Gamma-proteobacteria | 8.4±1.3 | 6.9±0.8 | 6.7±1.6 | 8.1±0.5 | 6.6±0.1 | 7.6±2.1 | 7.1±0.3 a | 6.6±1.1 b | 6.8±1.5 ab | 6.6±1.4 | 7.5±1.1 | 6.7±0.9 |
| **Thaumarchaeota\*** | 5.4±0.8 | 5.0±2.1 | 5.4±2.1 | 6.4±1.4 | 5.0±0.8 | 6.0±2.3 | 8.1±3.0 | 8.5±4.2 | 8.2±3.4 | 11.4±2.5 | 9.1±1.8 | 8.3±3.5 |
| **Verrucomicrobia\*** | 2.2±0.8 | 3.9±1.1 | 2.7±1.7 | 1.9±1.1 | 3.0±1.7 | 3.4±1.3 | 1.6±1.1 a | 1.6±0.7 b | 1.7±0.9 ab | 1.9±1.5 | 1.8±0.5 | 1.3±0.6 |