

Table 1. Chemical characteristics, water retention, and enzymatic activities of non-rhizospheric soil for the different sampling dates.

	Sep 2011	May 2012
pH	8.30±0.04	7.84±0.01
EC ($\mu\text{S cm}^{-1}$)	2447±10	2437±3
Cl ⁻ (mg l ⁻¹)	13±1	27±8
SO ₄ ⁻² (mg l ⁻¹)	1637±33	1703±24
NO ₃ ⁻ (mg l ⁻¹)	28±2	14±1
Ca ⁺² (mg l ⁻¹)	634±14	591±8
Mg ⁺² (mg l ⁻¹)	15±2	21±4
Na ⁺ (mg l ⁻¹)	8.7±0.8	11.7±2.9
K ⁺ (mg l ⁻¹)	4.8±0.8	6.2±1.2
Gypsum (%)	87±2	89±2
CaCO ₃ +MgCO ₃ (%)	9.6±1.9	6.9±1.1
Total P ($\mu\text{g g}^{-1}$)	36±3	24±3
Total S (g kg ⁻¹)	73±7	48±2
Water soluble C ($\mu\text{g g}^{-1}$)	27±1	22±1
Water soluble N ($\mu\text{g g}^{-1}$)	4.5±0.4	8.3±0.3
Total organic C (g kg ⁻¹)	5.2±0.3	4.0±0.3
Total C (g kg ⁻¹)	20±3	15±2
Total N (g kg ⁻¹)	0.5±0.1	0.8±0.1
Water retention 1/3 atm (%)	11.44±0.05	9.89±0.26
Water retention 15 atm (%)	1.98±0.05	1.57±0.13
Available Water Content (%)	9.45±0.04	8.32±0.35
Microbial biomass carbon ($\mu\text{gC g}^{-1}$)	342.6±10.8	321.2±5.2
Basal respiration rate (mg CO ₂ g ⁻¹ h ⁻¹)	1.388±0.038	0.323±0.074
Dehydrogenase ($\mu\text{molPNFh}^{-1}\text{g}^{-1}$)	0.125±0.016	0.251±0.015
β -Glucosidase ($\mu\text{molPNPh}^{-1}\text{g}^{-1}$)	0.272±0.031	1.438±0.186
Alkaline phosphatase ($\mu\text{molPNP h}^{-1}\text{g}^{-1}$)	8.61±1.21	15.57±1.72
Arylsulphatase ($\mu\text{molPNFh}^{-1}\text{g}^{-1}$)	0.638±0.100	0.323±0.074
Urease ($\mu\text{molNH}_3\text{h}^{-1}\text{g}^{-1}$)	0.757±0.145	0.434±0.075
Protease ($\mu\text{molNH}_3\text{h}^{-1}\text{g}^{-1}$)	0.413±0.028	0.155±0.019

Table 2. Meteorological data corresponding to La Paca (Murcia, Spain)

	01-07/21-09-2011	01-03/30-04-2012
Mean temperature (°C)	23.3	10.5
Maximum temperature (°C)	31.2	17.7
Minimum temperature (°C)	15.4	4.0
Mean humidity (%)	55.9	59.1
Maximum humidity (%)	82.6	86.3
Minimum humidity (%)	30.9	32.2
Mean radiation (MJ m ⁻²)	28.5	20.0
Maximum radiation (MJ m ⁻²)	30.8	27.7
Minimum radiation (MJ m ⁻²)	14.7	3.2
Hours of sun (mean)	11.3	10.1
Rainfall (mm)	31.2	57.3

Table 3: Water retention (FCP: Field Capacity Point, 1/3 atm, PWP: Permanent Wilting Point, 15 atm, and AWC: Available Water Content:) in the rhizosphere soil of the three gypsophytes (H: *H. fruticosa*, HS: *H. squamatum*, and T: *T. balthazaris*) and brushite and gypsum, for the different sampling dates

Con formato: Subrayado

	FCP (%)	PWP (%)	AWC (%)
Sep. 2011			
H	16.97 ± 0.62	3.44 ± 0.29	13.52 ± 0.66
HS	15.79 ± 0.76	2.89 ± 0.44	12.90 ± 0.62
T	21.26 ± 0.92	3.40 ± 0.21	17.86 ± 0.74
May 2012			
H	20.33 ± 2.06	1.95 ± 0.27	18.38 ± 2.22
HS	11.67 ± 1.09	2.70 ± 0.11	8.97 ± 1.02
T	20.60 ± 1.72	2.72 ± 0.10	17.88 ± 1.67
ANOVA P-values			
Species (S)	<0.001	NS	<0.001
Date (D)	NS	<0.001	NS
S x D	<0.001	NS	<0.001
Brushite	45.07 ± 0.25	12.10 ± 0.32	32.98 ± 0.08
Gypsum	59.38 ± 0.97	4.05 ± 1.02	55.33 ± 1.99

Table 4. Chemical properties of the rhizosphere soil of the three gypsophytes (H: *H. fruticosa*, HS: *H. squamatum* and T: *T. balthazaris*) for the different sampling dates.

	TP	TS	WSC	WSN	TOC	TN	TC	Carbonates
	($\mu\text{g g}^{-1}$)	(g kg^{-1})	($\mu\text{g g}^{-1}$)	($\mu\text{g g}^{-1}$)	(g kg^{-1})	(g kg^{-1})	(g kg^{-1})	(%)
Sep 2011								
H	48 \pm 4	71 \pm 3	50 \pm 1	11 \pm 2	8.0 \pm 0.8	0.8 \pm 0.1	21 \pm 3	8.0 \pm 1.4
HS	50 \pm 4	76 \pm 3	46 \pm 1	6 \pm 4	8.2 \pm 0.8	0.8 \pm 0.1	16 \pm 2	4.7 \pm 0.3
T	49 \pm 2	75 \pm 6	60 \pm 1	10 \pm 1	9.3 \pm 0.6	0.9 \pm 0.1	21 \pm 2	7.6 \pm 1.0
May 2012								
H	30 \pm 2	57 \pm 5	31 \pm 1	21 \pm 1	7.8 \pm 0.2	1.6 \pm 0.1	18 \pm 3	6.1 \pm 2.1
HS	37 \pm 2	45 \pm 2	34 \pm 2	15 \pm 1	6.8 \pm 0.3	0.6 \pm 0.1	16 \pm 1	4.8 \pm 0.6
T	29 \pm 2	47 \pm 3	34 \pm 1	21 \pm 1	7.9 \pm 0.3	0.8 \pm 0.1	15 \pm 2	3.9 \pm 0.9
ANOVA P-values								
Species (S)	NS	NS	NS	NS	NS	<0.001	NS	NS
Date (D)	<0.001	<0.001	<0.001	<0.05	NS	<0.05	NS	NS
S x D	NS	NS	NS	NS	NS	<0.001	NS	NS

Table 5. Spearman's coefficients of correlation between soil chemical and biochemical properties.

	BR	BC	Des.	β-glu.	Phos.	Aryls.	Ur.	Prot.	WSC	WSN	TOC	TN	TP	TS	TC	carbonates
BR	1	0.602***	NS	-0.384*	0.398*	0.460**	0.626***	0.832***	0.709***	NS	0.371*	NS	0.826***	0.498**	0.430**	0.464*
BC		1	NS	NS	NS	NS	0.534***	0.659***	0.484**	NS	0.374*	NS	0.473**	NS	NS	NS
Des.			1	0.396*	NS	NS	NS	NS	NS	0.664***	NS	NS	NS	-0.371*	NS	NS
β-glu.				1	NS	NS	-0.418*	-0.465**	NS	0.350*	NS	NS	-0.366*	-0.595***	NS	NS
Phos.					1	0.463**	NS	0.365*	NS	NS	NS	NS	NS	NS	NS	NS
Aryls.						1	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Ur.							1	0.554***	0.370*	NS	NS	NS	0.580***	0.490**	0.518***	0.509**
Prot.								1	0.644***	NS	NS	NS	0.682***	0.544***	0.366*	0.368*
WSC									1	NS	NS	NS	0.594***	0.368*	NS	NS
WSN										1	NS	NS	NS	-0.347*	NS	NS
TOC											1	0.613***	0.399**	NS	0.446**	NS
TN												1	0.687***	0.692***	NS	NS
TP													1	0.451**	0.630***	0.647***
TS														1	NS	NS
TC															1	0.955***
carbonates																1

*, **, *** significant at P< 0.05, P<0.01, and P<0.001, respectively. NS= not significant. WSC: water soluble C; TOC: total organic C.

Table 6: Cyanoprokaryota species in the non-rhizospheric soil and in the rhizosphere soil of the three gypsophytes (H: *H. fruticosa*, HS: *H. squamatum*, and T: *T. balthazaris*) for the different sampling dates.

Species	September 2011			May 2012				
	non-rhizospheric	rhizospheres		non-rhizospheric	rhizospheres			
	soil	HS	H	T	soil	HS	H	T
Cyanophyta								
<i>Asterocapsa salina</i>			+					
<i>Chroococcopsis</i> cf. <i>fluviatilis</i>			++				++	+
<i>Gloeocapsa biformis</i>			++	+			+	
<i>Gloeocapsa rupestris</i>								+
<i>Gloeocapsa rupicola</i>			++				++	++
<i>Gloeocapsa salina</i>			+				++	++
<i>Gloeocapsa violascea</i>							+	+
<i>Myxosarcina</i> sp.			++				+	
<i>Microcoleus chthonoplastes</i>		+	+++	+++			++	++
<i>Nostoc microscopicum</i>	+++				+++		++	
<i>Pseudocapsa dubia</i>							+	
<i>Schizothrix</i> cf. <i>calcicola</i>			+++				+++	+++
<i>Scytonema</i> sp.	+++		+		+++			
<i>Tolypothrix elenkinii</i>			+				++	++
Streptophyta								
<i>Klebsormidium</i> sp.		+	++				+	+

+ low, ++ medium and +++ high presence. The lack of signs indicates absence.