

1 Mechanism of bare patch formation under *Haloxylon ammodendron* canopies and
2 patch effects on soil microorganisms in the Gurbantunggut Desert, Northern China

3 *Plant and soil*

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10 **Online Resource 1 Comparison of eight ions and total salt in soil inside and outside bare patches under *Haloxylon ammodendron***
11 **canopies (UC for inside the bare patches, UM for outside the bare patches)**

Group	Cl ⁻ mg/g	SO ₄ ²⁻ mg/g	Ca ²⁺ mg/g	K ⁺ mg/g	Mg ²⁺ mg/g	Na ⁺ mg/g	CO ₃ ²⁻ mg/g	HCO ₃ ⁻ mg/g	TS mg/g
UC	0.013±0.005a	1.94±1.332a	0.062±0.023a	0.078±0.024a	0.076±0.032a	1.159±0.59a	0.268±0.07a	0.401±0.044a	5.63±1.973a
UM	0.007±0.003a	0.015±0.01a	0.036±0.003a	0.038±0.006a	0.007±0.002a	0.049±0.016a	0±0b	0.215±0.01b	0.533±0.11b

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13 **Online Resource 2 Comparison of other chemical properties of soil inside and outside bare patches under *Haloxylon***
14 ***ammodendron* canopies (UC for inside the bare patches, UM for outside the bare patches)**

Group	TP g/kg	TK g/kg	SOC g/kg	TN g/kg	NO ₃ ⁻ -N mg/kg	NH ₄ ⁺ -N mg/kg	MBC mg/kg	MBN mg/kg	pH
UC	0.462±0.058a	22.267±0.321a	8.057±0.458a	9.349±0.216b	21.665±1.2a	43.313±5.846a	332.12±123.219a	88.32±17.758a	10.013±0.144a
UM	0.272±0.084b	22.267±0.208a	8.526±1.786a	10.141±0.126a	8.776±1.866b	40.511±3.664a	187.399±29.521a	82.171±14.698a	8.737±0.042b

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16 **Online Resource 3 Species annotation statistics of metagenomic**

Sample	Region	Domain/Kingdom(%)			
		Archaea	Bacteria	Fungi	Viruses
UC-1	UC	0.0076	0.9761	0.0139	0.0023
UC-2	UC	0.0071	0.9772	0.0134	0.0023
UC-3	UC	0.0069	0.9773	0.0134	0.0023
Average	UC	0.0072	0.9769	0.0136	0.0023
UM-1	UM	0.0067	0.9775	0.0135	0.0023
UM-2	UM	0.0072	0.9762	0.0142	0.0024
UM-3	UM	0.0087	0.9735	0.0153	0.0025
Average	UM	0.0076	0.9757	0.0143	0.0024

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