Supplementary table 1 Meteorological and habitat data of desert sampling sites in northwest China.

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| Site | Desert name | Climate | Height of  scrub dunes | GW |
| Huocheng | Ili basin | Semi-arid | 2.5 m | 10–20 m |
| Mosuowan | Gurbantunggut Desert | Arid | 2.5 m | 20–25 m |
| Tazhong | Taklimakan Desert | Extremely arid | 2.5 m | 5–6m |

Notes: GW represents groundwater. The depth of the groundwater table at the meteorological tower is 5–6 m (Dong et al., 2020); the depth of the groundwater table at Mosuowan is 20–25 m (Wu et al., 2019); and the groundwater level at Huocheng is 10–20 m (Huo et al., 2020).