**Effects of nitrogen addition on the interaction of the indigenous shrub *Juniperus phoenicea* with biological soil crust**

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It is well known that biological soil crust (BSC) exert a strong influence onvascular plants, although the literature related to this effectis frequently contradictory, reporting consequences ranging from negative topositive. Besides, most of these studies have considered both plant and BSC communities as a whole, without taking into consideration the species involved, despite the fact that plant-BSC interaction are likely to be highly species-specific.We aim to assess the N addition effects on the interaction of *Juniperus phoenicea*with the BSC, looking into the soil processes that are being affected by N addition.

The study site is dominated by *Juniperus phoenicea* for about 53%, other shrubs cover another 27%, and the remaining 20% is composed by soil with a well developed biological crust. In April 2012 a N addition experiment was set up. Eight plots of 36 m2 were selected in order to systematically include at least one entire plant of *Juniperus phoenicea* and a portion of soil covered with BSC not smaller than 6 m2. Four of the plots are periodically treated with 7.5 kg N ha-1 at the beginning of each season. There is a clear increasing gradient in species relative abundance and BSC abundance in general from the edge of each *Juniperus phoenicea* crown towards its outer perimeter. Near the trunk the development of BSC is low because the ground is partially covered by litterfall, increasing at around 50 cm from the edge and then decreasing again as we move farther, probably because of trampling or due to drier soils.

To achieve our goal, we will select one subplot including at least one entire plant of *Juniperus phoenicea* from each fertilized and control plot. We will assess the species composition of the BSC and abundance annually, and we will also explore the fine root turnover and the water use efficiency by using isotopes. Besides, we are developing a non destructive methodology to assess moisture content of the BCS using hyperspectral reflectance, given the relationship between reflectance and biophysical parameters.