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Use of local pastoral species to increase fodder production of the saline rangelands in southern Tunisia

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Climate changes associated with multiple destructive human activities accelerate the degradation process of the natural rangelands around the world and especially the vulnerable areas such as the dryland ecosystems (Anaya-Romero et al., 2015; Eskandari et al., 2016; Muños Rojas et al., 2016; Vicente-Serrano et al., 2016). The vegetation cover and the biomass production of these ecosystems are decreasing and this is resulting in land degradation due to the soil erosion and changes in soil quality due to the abuse and misuse of the soil resources (Cerdà et al., 2016; Prosdocimi et al., 2016; Keesstra et al., 2016). To cope with such threats, it is necessary to develop some management techniques (restoration, plantation…) to enhance the biomass production and the carbon sequestration of the degraded rangelands (Muñoz-Rojas et al., 2016; Tarhouni et al., 2016). The valorization of saline water by planting pastoral halophyte species in salt-affected soils as well as the marginal areas are considered among the valuable tools to increase the rangeland production in dry areas. In this work, the ability of four plants (Atriplex halimus L. (Amaranthaceae), Atriplex mollis Desf. (Amaranthaceae), Lotus creticus L. (Fabaceae) and Cenchrus ciliaris L. (Poaceae)) to grow and to produce are tested under a field saline conditions (water and soil). Non-destructive method (Vegmeasure) is used to estimate the biomass production of these species. Chemical (crude protein, moisture and ash contents) and biochemical analyses (sugars, tannins and polyphenols contents) are also undertaken. Two years after plantation, the obtained results showed the ability of the four species to survive and to grow under high salinity degree. A strong positive correlation was obtained between the canopy cover and the dry biomass of the four studied species. Hence, the restoration of saline soils can be ensured by planting local halophytes.

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