



Microbial inoculants and organic amendment improves the establishment of autochthonous shrub species and microbial activity recovery in a semiarid soil

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The re-establishment of autochthonous shrub species is an essential strategy for recovering degraded soils under semiarid Mediterranean conditions. A field assay was carried out to determine the combined effects of the inoculation with native rhizobacteria (*B. megaterium*, *Enterobacter* sp, *B. thuringiensis* and *Bacillus* sp) and the addition of composted sugar beet (SB) residue on physicochemical soil properties and *Lavandula dentata* L. establishment. One year after planting, *Bacillus* sp. and *B. megaterium*+SB were the most effective treatments for increasing shoot dry biomass (by 5-fold with respect to control) and *Enterobacter* sp+SB was the most effective treatments for increasing dry root biomass. All the treatments evaluated significantly increased the foliar nutrient content (NPK) compared to control values (except *B. thuringiensis*+SB). The organic amendment had significantly increased available phosphorus content in rhizosphere soil by 29% respect to the control. *Enterobacter* sp combined with sugar beet residue improved total N content in soil (by 46% respect to the control) as well as microbiological and biochemical properties. The selection of the most efficient rhizobacteria strains and their combined effect with organic residue seems to be a critical point that drives the effectiveness of using these biotechnological tools for the revegetation and rehabilitation of degraded soils under semiarid conditions.