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STSM title: Effects of organic amendments and native plants on soil macroporosity and bacterial diversity.

STSM Host scientist: Nadia Vignozzi and Roberta Pastorelli. CREA-ABP, Consiglio per la Ricerca in Agricoltura e l'Analisi dell'Economia Agraria, Centro di Ricerca per l'Agrobiologia e la Pedologia, Firenze, Italy.

Five Keywords: Soil macroporosity, microbial community, revegetation, quarry restoration, semiarid climate.

Topic summary: In recent years, the restoration of degraded lands from semiarid environments is quite common, but little is known about the restoration effects on the physical, biological and microbiological soil properties.

Methods summary: In an experimental restoration on calcareous quarries from SE Spain, organic amendments (sewage sludge, compost, non-amendment) combined with different kinds of mulches (gravel, woodchips, non-mulch) have been tested for improvement in soil/substrate properties and accelerated ecological restoration. Macroporosity was assessed by image analysis of soil thin sections. Composition and structure of microbial communities were estimated by PCR-DGGE. In each experimental plot 75 native plants (*Stipa tenacissima*, *Anthyllis terniflora* and *Anthyllis cytisoides*) were planted.

Results and implications for restoration: The combination of organic amendments and mulches provided more porous restored soils than non-amended substrates. The phylogenetic structure of soil microbial communities showed differences among all the treatments and the reference soils. These constructed soils should be studied over time in order to know the effects of the different restoration techniques on pedogenetic processes and their biological functionality.

Relevant web links: <http://resecol.eeza.csic.es/>



Calcareous quarry in SE Spain



Quarry restoration in 2008 and 2014