



Technosols designed for rehabilitation of extractive activities in Alicante province (Spain)

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Restoration technologies in areas degraded by extractive activities require the use of their own mine spoils. Reducing deficiencies in physical properties, organic matter, and nutrients with a contribution of treated sewage sludge is proposed. This experiment was based on a controlled study using columns. The work was done with two mine spoils, both very rich in calcite. Two biosolids doses were undertaken (30,000 and 90,000 kg/ha of sewage sludge) in addition to a different mine spoils used as substrates. The water contribution was provided by a device that simulated short duration rain. The leached water was collected 24 hours after the last application. Nitrate, ammonium, phosphate, sulfate, and chloride ions were determined, as well as the pH and electrical conductivity. The experiment saw the bulk density decrease and the aggregate stability increase, thereby improving the structure. The electrical conductivity limit value is $<1000 \mu\text{S}/\text{cm}$. These values will be met from the fourth irrigation application onward, while the values up to that point were far superior. Significant nitrate concentrations appeared that may pose an environmental contamination risk. The resulting values for each irrigation application, the relationship between parameters, and the environmental risk are discussed.