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| **Organization** | The Research Group ‘Agrochemical, Technology and Management of Soils and Substrates’ belongs to Department of Agricultural Science and Technology, School of Agricultural Engineering (ETSIA), Universidad Politécnica de Cartagena (UPCT). |
| **Areas of expertise** | Soil Science. Soil Biogeochemistry and Environment. Soil Contamination and Remediation. Mine Soils. Soil-Water Eutrophication. Wetlands and Pollution. Soil-Plant Relationships. Ecosystem Restoration. |
| **Biography** | **Recent papers (last 5 years):**  We have participated in several national and international projects related to the environmental impacts under current national and European laws, the evaluation of soil pollution and methodologies for suitable ecosystem restoration. The main research topics are related to soil-plant relationships, metals availability and geochemistry in polluted and eutrophic environments (including the role of wetlands against pollution), and phytomanagement issues in semiarid degraded environments. The three main researchers of the Group are:  Dr. José Álvarez-Rogel is professor of Soil Science at the UPCT and Head of the Research Group ‘Agrochemical, Technology and Management of Soils and Substrates’. His main research topics are related to soil-plant relationships mainly in saline environments, soil and water pollution in metal-contaminated areas, the role of wetlands against eutrophication and metal pollution. He has also experience in studies of soil mapping, agricultural soil capability and soil erosion.  Dr. Héctor M. Conesa-Alcaraz is a researcher financed by the “Ramón y Cajal” program. He has wide experience in soil contamination studies. He has been member of Soil Protection group at ETH Zurich (Switzerland) as Postdoctoral researcher till joining the UPCT in 2010. He has improved techniques to describe metal availability and geochemistry in degraded soils and studied soil contamination issues due to industrial activities and remediation options. He also has evaluated risks of metal transfer into the food chain, performed socio-economic evaluations of soil contamination at regional scales and studied the impacts of intensive agriculture and industrial activities on wetlands.  Dr. María Nazaret González-Alcaraz is a researcher that nowadays has a postdoctoral grant, financed by "Fundación Ramón Areces", at the Department of Ecological Science, Faculty of Earth and Life Sciences, VU University, Amsterdam. She is specializing in soil ecotoxicology. Among the activities of this stay there is a research project about soil ecotoxicology that the Group is starting in collaboration with the latter Department.  A list of selected papers in the last years is:  \* H. M. Conesa et al. 2014. Role of rhizosphere and soil properties for the phytomanagement of a salt marsh polluted by mining wastes. International Journal of Environmental Science and Technology 11:1353–1364 (DOI 10.1007/s13762-013-0323-z).  \* González-Alcaraz, M.N. et al. 2014. Gradients of soil salinity and moisture, and plants distribution, in a Mediterranean semiarid saline watershed: a model of soil-plant relationships for contributing to the management. CATENA, 115: 150-158 (DOI: 10.1016/j.catena.2013.11.011).  \* Parraga-Aguado, I. et al. 2014. Metal(loid) allocation and nutrient retranslocation in Pinus halepensis trees growing on semiarid mine tailings. Science of the Total Environment, 485–486: 406–414.  \* Párraga-Aguado, I., et al. 2014. Usefulness of pioneer vegetation for the phytomanagement of metal(loid)s enriched tailings: grasses vs. shrubs vs. trees. Journal of Environmental Management. 133:51-58  \* Párraga-Aguado, I., et al. 2014. Elemental and stable isotope composition of Pinus halepensis foliage along a metal(loid) polluted gradient: implications for phytomanagement of mine tailings in semiarid areas. Plant and Soil. 379: 93-107  \* González-Alcaraz, M.N., et al. 2013. Nitrate removal from eutrophic wetlands polluted by metal-mine wastes: Effects of liming and plant growth Journal of Environmental Management, 128: 964-972.  \* González-Alcaraz, M.N. et al. 2013. When liming and revegetation contribute to the mobilization of metals: learning lessons for the phytomanagement of metal-polluted wetlands. Journal of Environmental Management, 116: 72-80.  \* González-Alcaraz, M.N. et al. 2013. Phytomanagement of strongly acidic, saline eutrophic wetlands polluted by mine wastes: the influence of liming and Sarcocornia fruticosa in metals mobility. Chemosphere, 90: 2512-2519.  \* Parraga-Aguado, I. et al. 2013. The importance of edaphic niches and pioneer plant species succession for the phytomanagement of mine tailings. Environmental Pollution, 176:134-143  Párraga-Aguado, I., et al. 2013. Assessment of metal(loid)s availability and their uptake by Pinus halepensis in a Mediterranean forest impacted by abandoned tailings. Ecological Engineering, 58: 84– 90  \* González-Alcaraz, M.N., Álvarez-Rogel, J. 2012. Liming and vegetation favor Fe-mobilization in eutrophic wetland soils affected by mine wastes. Ecological Engineering (DOI: 10.1016/j.ecoleng.2012.12.042).  \* González-Alcaraz, M.N. et al. 2012. Evolution and phosphorus fractionation in saline Spolic Technosols flooded with eutrophic water: the role of plant rhizosphere. Journal of Soils and Sediments, 12: 1316-1326.  \* Evangelou, M.W. Robinson, B.H., Conesa H.M. y Schulin, R. 2012. Biomass production on trace element (TE) contaminated land – A review. Environmental Engineering Science, 29: 823- 839.  \* Conesa, H.M. et al. 2012. A critical assessment of soil amendments (slaked lime/acidic fertilizer) for the phytomanagement of moderately contaminated shooting range soils. Journal of Soil and Sediments, 12: 565- 575.  \* Conesa, H.M. et al. 2012. A critical view of current state of phytotechnologies to remediate soils: still a promising tool? Scientific World Journal, 2012: 1-10.  \* Conesa, H.M. et al. 2011. Influence of soil properties on trace element availability and plant accumulation in a Mediterranean salt marsh polluted by mining wastes: Implications for phytomanagement. Science of the Total Environment, 409: 4470-4479.  \* González-Alcaraz, M.N. et al. 2011. The combined use of liming and Sarcocornia fruticosa development for phytomanagement of salt marsh soils polluted by mine wastes. Journal of Hazardous Materials, 186: 805-813.  \* María-Cervantes, A. et al. 2011. Mobilisation of As and trace metals in saline, acidic Spolic Technososls: the role of the rhizosphere and flooding conditions. Journal of Soils and Sediments, 11: 800-814.  \* María-Cervantes, A. et al. 2010. Rhizosphere and flooding regime as key factors for the mobilization of arsenic and potentially harmful metals in basic mining polluted salt marsh soils. Applied Geochemistry, 25: 1722-1733.  \* Conesa, H.M. et al. 2011. Influence of soil properties on trace element availability and plant accumulation in a Mediterranean salt marsh polluted by mining wastes: implications for phytomanagement. Sci. Total Environ. 409, 4470–4479.  \* Conesa, H.M., Schulin, R. 2010. The Cartagena–La Unión mining district (SE Spain): a review of environmental problems and emerging phytoremediation solutions after fifteen years research. Journal of Environmental Monitoring 12: 1225-1233.  **Recent projects:**  \* Evaluation of the toxicity of mining wastes using bioassays with plants and soil invertebrates: remediation with biochar from MSW and sludge of WWTP. Financed by the Spanish Goverment (Ministerio de Ciencia e Innovación). Length: 2015-2017.  Biotechnological applications for phyto-stabilization of mine tailings with native pioneer plant species in SE Spain: study of the ecophysiological and successional aspects. Financed by the Spanish Goverment (Ministerio de Ciencia e Innovación). Length: (2012-2014).  Using native plants to restore / stabilize mine tailings in the Sierra de Cartagena-La Union. Regional Government of Murcia, Spain. Length 2011-2015.  Study of combined stress due to resources co-limitation and heavy metals for revegetation of mining soils in semiarid areas. Financed by the Spanish Goverment (Ministerio de Ciencia e Innovación). Length: 2011-2013.  Relations between biogeochemical cycles and the role of wetlands as green filters: effects of eutrophication, plant species and the season of the year for carbon sequestration. Financed by the Spanish Goverment (Ministerio de Ciencia e Innovación). Length: 2011-2014.  Antimony leaching from contaminated soil under different water regimes. Financed by Swiss National Foundation (SNF). . In collaboration with Swiss Federal Institute of Technology de Zürich (ETH-Zürich). Length 2010- 2013.  Strukturen und prozesse der initialen Ökosystementwicklung in einem künstlichen Wassereinzugsgebiet. Zeit-räumliche Entwicklung von Wunrzelwachsum, -abbau und exsudation iin der initialen Phase der Ökosystemgenese. Financed by Deutsche Forschungsgemeinschaft. In collaboration with Swiss Federal Institute of Technology de Zürich (ETH-Zürich). Length: 2007-2010.  Eutrophic water treatment in wetlands affected by mining waste in the surrounding areas of Mar Menor lagoon: influence of the channels and effects of calcium carbonate and hydromorphic conditions on biogeochemical processes. Regional Government of Murcia, Spain. Length 2009-2013  Heavy metals. Arsenic and phosphorus dynamic in the soil-water-plant system in wetlands polluted by metal mine wastes: experiments about the effect of calcium carbonate and hydromorphic conditions. Financed by the Spanish Goverment (Ministerio de Ciencia e Innovación). Length: 2008-2010. |
| **Call for proposal** | Growing a Low Carbon, Resource Efficient Economy with a Sustainable Supply of Raw Materials  Topic: More effective ecosystem restoration in the EU  SC5-07-2015 |
| **Funding programme** | Climate action, environment, resource efficiency and raw materials |
| **Deadline  for call** | 2014-10-16 17:00:00 (Brussels local time) |
| **Contact person(s) - Name - Telephone number - Email Address** | José Álvarez Rogel/Héctor Miguel Conesa Alcaraz  +34-968-325543/+34-968-327034  [jose.alvarez@upct.es](mailto:jose.alvarez@upct.es) / [hector.conesa@upct.es](mailto:hector.conesa@upct.es) |