

International Conference on

Environmental Health & Safety

October 24-25, 2016 | Valencia, Spain

ENVIRONMENTAL AND ECONOMIC SUSTAINABILITY IN ADVERSE CONDITIONS

Carla Idely Palencia-Aguilar*

*Agregados de la Sabana Ltd, Colombia

Very few examples of operating projects that integrate social, economic, environmental, technical and ecological aspects in developing economies, with multiple adverse conditions: climate change, political issues, low income, skepticism, wrong conceived governmental regulations for mining operations, and so on, could be found. This work includes determination of optimal land use by multi-criteria analysis with three main variables: geostatistics, evapotranspiration and groundwater characteristics. It also uses indicators such as NDVI to proof how the mining interventions had improved the characteristics of the zone, how risk assessment and risk management are key components for environmental sustainability and how innovative techniques in dehydration could add value to agriculture, silviculture and cattle raising products from rehabilitated zones to assure economic sustainability. The use of remote sensing, meteorological stations, piezometers, sunphotometers, geoelectric analysis among others; provide the information for modelling the actual situation and predict future needs. Temporality aspects from MODIS and ASTER images are also included not only for agriculture applications but also for water resource management and water quality assurance. Organic Agriculture applications have been tested with different products such as Goldenberry and Quinoa, both with international demand. Zeodratation is used to dehydrate the products by means of pressure changes and zeolites that behave as adsorbant and as molecular sieve selectors of water versus nutrient content. Thousands of experiments in the past 8 years have been taking place in order to define the best quality and most efficient curve per tested product. The results show healthier products with concentrated vitamin and antioxidant contents.

Biography

Carla Idely Palencia-Aguilar is an Industrial Engineer from Javeriana University in Colombia with Masters degrees in: Manufacturing Engineering at Worcester Polytechnic Institute, MBA at Clark University, Master in Finance at Boston College in the USA, Master in Environmental Engineering at Ecole des Mines d'Ales in France; with specializations in Management at Harvard Ext University in the USA, Environmental Architecture at Lund University in Sweden, Limnology, Water Quality and Bioindicators from the Austrian Academy of Science, and Groundwater modeling from ITC, the Netherlands. She was also Professor at Los Andes University and Jorge Tadeo Lozano University in Colombia, as well as Consultant for various companies and Speaker in Conferences and Exhibitions around the world.

carlapalencia@hotmail.com

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