Agricultural use of biosolids in the Mediterranean karst environment

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**Abstract.** Rural areas in Croatia have great potential in the shape of natural assets and landscapes, which is an excellent basis for the economic development, considering two main economic branches: agriculture and tourism. In the context of integrated land and water management, production of wastewater effluent and large quantities of sewage sludge from the local sewage treatment plants may be an issue of high significance. Submerged wastewater effluent discharge in the vicinity of cities along the Adriatic Sea coast may lead to coastal marine sediment contamination by inorganic and organic pollutants, depending of sewage treatment system performance. The city of Šibenik area (Middle Eastern Adriatic coast) had faced in the past the serious problem of the eutrophication of the Krka River Estuary and coastal marine environment that had been receiving untreated industrial and domestic sewage for years. As a region is very attractive because of natural beauties, the problem was becoming more pronounced during the touristic summer period. Sewage treatment system and pipeline to outside of Krka River Estuary was constructed in 2008, and treated effluent is being released into the near shore marine environment SE of the Island of Zlarin by 5000 m long sub-marine pipe system. The investigation undertaken to examine the metal concentrations in marine sediments influenced by the wastewater disposal system showed no distinct anthropogenic loads of trace elements in sediment that may be related to the wastewater effluent discharge. Anyway, quantities of the sewage sludge that remain after the treatments may pose great risk for environment if not treated, stored or disposed properly. It was estimated that 1.846 tones (dry mater) are being produced monthly from sewage treatment plants in 5 agglomeration of the Sibensko-kninska County (SKC). Application of treated sludge to agricultural land was considered to be the best practical environmental option for most sewage sludge, but this option has to be carefully examined. In the last two decades more than 5000 ha of karst stony terraces and steep slopes in the study region have been remediate by stone crushing to make the land suitable for agricultural production, mostly for grapevine and olive production. After the deforestation, new grapevine and olive trees plantations are made particularly on the slopes exposed to sun and sheltered from strong winds. So, the capacity of the arable land of the to take on sewage sludge from the local treatment plants in SKC has been defined by this study.