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Quality Characteristics of Treated Wastewater of 'Industrial Area Foggia'

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Abstract : The production system of Foggia province (Apulia, Southern Italy) is characterized by the presence of numerous agro-food industries whose activities include the processing of vegetables products that release large quantities of wastewater. The reuse in agriculture of these wastewaters offers the opportunity to reduce the costs of their disposal and minimizing their environmental impact. In addition, in this area, which suffers from water shortage, the use of agro-industrial wastewater is essential in the very intensive irrigation cropping systems. The present investigation was carried out in years 2009 and 2010 to monitor the physico-chemical and microbiological characteristics of the industrial wastewater (IWW) from the secondary treatment plant of the 'Industrial Area of Foggia'. The treatment plant released on average about 567,000 m3y-1 of IWW, which distribution was not uniform over the year. The monthly values were about 250,000 m3 from November to June and about 90,000 m3 from July to October. The obtained results revealed that IWW was characterized by low values of Total Suspended Solids (TSS), Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Electrical Conductivity (EC) and Sodium Absorption Rate (SAR). An occasional presence of heavy metal and high concentration of total phosphorus, total nitrogen, ammoniacal nitrogen and microbial organisms (Escherichia coli and Salmonella) were observed. Due to the presence of this pathogenic microorganisms and sometimes of heavy metals, which may raise sanitary and environmental problems in order to the possible irrigation reuse of this IWW, a tertiary treatment of wastewater based on filtration and disinfection in line are recommended. Researches on the reuse of treated IWW on crops (olive, artichoke, industrial tomatoes, fennel, lettuce etc.) did not show significant differences among the irrigated plots for most of the soil and yield characteristics.

Keywords : agroindustrial wastewater, irrigation, microbiological characteristic, physico-chemical characteristics
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