ABSTRACT

The Albufera of Valencia is one of the most important wetlands of the Iberian Peninsula by its high environmental and landscape value. It was declared a Natural Park in 1986 and it is also included in the list of wetlands of international importance for birds (RAMSAR Convention). Water is the main resource of the park and its natural cycle determines its life. In this sense, the evolution of the wetland has become conditioned to the complex irrigation system that has controlled the entrances and exits of lake water from the expansion of rice cultivation at the beginning of the last century to the present. Paddy management involves the passage of surface water from the upper level plots to the deeper plots that are situated near and around the lake. These plots called "tancats" and they are hydrologic independent units with a twist: The soil surface is below the free water surface level of the lake.

The principal problems at the Park are related to water quality and its implications for soil salinity. Although the park has undergone a variety of studies, soils have not been defined. These studies have not related soils and waters with respect to salinity. By these reasons this research is planned to characterize and evaluate, space and temporally, the quality of the waters and soils of the Park respect to salinity.

For this reason we have established a working plan in four lines: a) control of surface and ground water in 133 piezometers; b) control 54 channels that bring water to the rice paddies; c) control levels of the water table and free surface in the piezometers; d) study of soils. The analysed parameters were: pH, electrical conductivity (EC), Na^+, K^+, Cl^-, SO_4^{-2}, HCO_3^-, CO_3^{-2}, Ca^{+2}, Mg^{+2}, Total Dissolved Solids (TDS), Adsorption Ratio Sodium (SAR) for water, and texture, organic matter, carbonates, colour, electrical conductivity of the saturation extract EC_e, pH of the extract, value n, moisture at saturation point, coarse elements, iron and principal cations and anions in water extracts of soil.

The study of the evolution of water quality in the 133 piezometers and 54 ditches for 32 months has established that the northern part of lake suffers a salinization process due to the influence of high water table. This process is closely related to the distance of the lake, elevation above sea and rice crop cycle. The salinity in samples, ditches and surface water, presents EC values acceptable for use in rice. Salinization problems in these types of water are due to the effect of fluctuating water table and soil salinity. The taxonomic classification of soils is grouped into three suborders: Aquents, Fluvents and Salids. The data set has allowed to characterize two very important resources in the wetland whose knowledge was partial or nil. There were no data on piezometric levels and water quality and soil variables in such detail and with such high sampling density.