



Nutrients dynamic, Nitrogen, Phosphorous and Potassium, under fertirrigated melon crop in a shallow calcareous soil in Spain

M.T. Castellanos(1), A.M. Tarquis(2), Fco. Ribas(1), M.J. Cabello(1), N. Figueiró(1), A. Arce(3) and M.C. Cartagena(3)

(1)Centro Mejora Agraria El Chaparrillo - Delegación Provincial de Agricultura, c. Alarcos 21, Ciudad Real, 13071, Spain. (2)Dpto. Matemática Aplicada - E.T.S. Ing. Agrónomos - Polytechnic Univ.of Madrid, Ciudad Universitaria sn, Madrid, 28040, Spain. (3)Dpto. Química y Análisis Agrícola - E.T.S. I.A.- Polytechnic Univ.of Madrid, Ciudad Universitaria sn, Madrid, 28040, Spain.

Best management practices are needed in many cropped, irrigated and fertirrigated landscapes in Spain to avoid contamination of fresh water and ground water aquifers. The melon crop area at Ciudad Real adds the 29% of the national production in Spain, grown on irrigation giving satisfactory yields. The common agronomic management is representative of semiarid cropped zones of Spain where environmental degradation of water supplies with high N loads are observed.

The site of this work is located near on Mancha Occidental aquifer (U.H.04.04, 6.953 km²) and Campo de Montiel aquifer (U.H. 04.06, 3.192 km²) with high contamination problems and soils with a restrictive subsurface “caliche” pan layer (petrocalcic horizon). The average soil depth of the plot undergoing the experiment was 0.60 m, the texture is a sandy-loam soil, slightly basic (pH 7.9), poor in organic matter (0.20%), rich in potassium (407 ppm, ammonium acetate) and with a medium level of phosphorous (19.4 ppm, Olsen). All these characteristics requires calibration of fertirrigation scheduling with N fertilizer application rates to optimise melon crop yields but minimize threats of N pollution to water supplies.

The objectives of this study were to estimate in each part of the soil-plant-water system the nutrient dynamics: N, P, K, Ca and Mg. The absorption rates of these elements during the crop cycle with respect to the soil content of them were studied. The results

for each element are discussing comparing their different behaviour depending on the phonological stage of the crop.