

Effect of soil conditioners on nutrient uptake by a green pepper crop

Deyanira Lobo¹, Donald Gabriels², Giovanni Depaola³

¹Universidad Central de Venezuela, Facultad de Agronomía, Departamento de Edafología, Maracay, Venezuela. e-mail: lobod@agr.ucv.ve

²Department of Soil Management and UNESCO Chair on Eremology, Ghent University, Belgium, e-mail: donald.gabriels@UGent.be

³Instituto Universitario de Tecnología de Maracaibo, Venezuela. depaolavila@gmail.com

ABSTRACT

In order to evaluate the effect of soil conditioners on nutrient uptake, a greenhouse experiment was carried out on a sandy soil in the Maracaibo Plain of Venezuela with green pepper (*Capsicum annuum*) as a test plant. Pot experiments were carried out in a comparative study between an organic fertilizer (cattle manure), a water absorbent polymeric based soil conditioner (hydrogel) and a chemical fertilizer, on the production of above ground biomass and nutrient uptake of green pepper as test plant, in a sandy soil. Two irrigation doses were applied to maintain the soil water content either at 100% or 80% of its field (pot) capacity (FC).

The concentrations of K, P, Ca and Mg were determined by the wet digestion procedure in the above ground plant tissue. N was determined by the Kjeldahl method.

Soil conditioners and especially the hydrogel, resulted in higher concentrations of N, P and K uptake, compared to the cattle manure. Those effects may be attributed to the increased water efficiency when a hydrogel is applied. Similar effects were also observed in the development and yield of the green pepper. No differences in nutrient uptake between the two irrigation doses were found.

Keywords: hydrogel, above ground biomass, green pepper, nutrient uptake, irrigation