SUPPORT INFORMATION A

Materials used in interaction experiments were:

- ✓ Ca-Montmorillonite standard (STx-1) from Gonzales County (Texas, USA), provided by "Clay Minerals Society Source", Clay Minerals Repository, Department of Geology, University of Missouri (USA).
- ✓ Illite standard (Imt-2) from SilverHill, Montana (USA) provided by "Clay Minerals Society Source", Clay Minerals Repository, Department of Geology, University of Missouri (USA).
- ✓ Commercial black peat was provided by Tolsa S.A. (Buyos, Lugo, Spain). Chemical characteristics (MAPA, 1994): pH (H_2O) = 4.0, oxidizable organic matter ($g \cdot kg^{-1}$) = 854; total organic matter (dry ashed) ($g \cdot kg^{-1}$) = 995, carbon in humic acids ($g \cdot kg^{-1}$) = 302, carbon in fulvic acids ($g \cdot kg^{-1}$) = 183. Nitrogen (Kjeldahl) ($g \cdot kg^{-1}$) = 14, C/N = 35.4, CEC ($cmol_c \cdot kg^{-1}$) = 150. Fe and Mn extracted by the Lindsay and Norvell, 1978 method (1) were 295 $mg \cdot L^{-1}$ and 8.2 $mg \cdot L^{-1}$ respectively.
- ✓ Synthetic Ferric Hydroxide prepared in the laboratory following the procedure of Sims et al., 1968 (2). A solution of $FeCl_3 \cdot 6H_2O$ (Probus) is treated with NaOH ($Fe^{3+}/OH^- = 1/3$) at room temperature. The precipitate is first washed with distilled water for 24 h and then with ethanol (80%) until the pH is 6.0. The brown precipitate is dried in oven at 65º C for 24 h and then ground in a mortar till a fine powder is obtained. Such material is X Ray identified as a 6 lines ferrhydrite with high specific surface (220 $m^2 \cdot g^{-1}$) that allows a high interaction with the chelates.
- ✓ A standard of calcareous soil (SCS) composition was 50% standard Quartz sand, 15% Ca-Montmorillonite, 5% Illite, 2% organic matter, 19% $CaCO_3$, 1% dolomite

and 8% oxides and phosphates (7.0% $Fe(OH)_3$, 0.5% $Al(OH)_3$, 0.1% MnO_2, 0.004% $Cu(OH)_2$, 0.006 % $Zn(OH)_2$ and 0.39% $CaHPO_4$. Standard Quartz sand (diameter 1-3 mm), was provided by the Instituto Eduardo Torroja, Madrid and acid washed. Ca-Montmorillonite and Illite was obtained from the Clay Mineral Society Source. The organic matter was the acid peal already described. Al, Cu and Zn hydroxides were prepared in the laboratory from $AlK(SO_4)_2$ (Probus), $CuSO_4$ an $ZnSO_4$ and following the same methods as for the Fe(III) oxide. MnO_2 was prepared from reduction of $KmnO_4$ (Panreac) with ethanol.

SUPPORT INFORMATION B

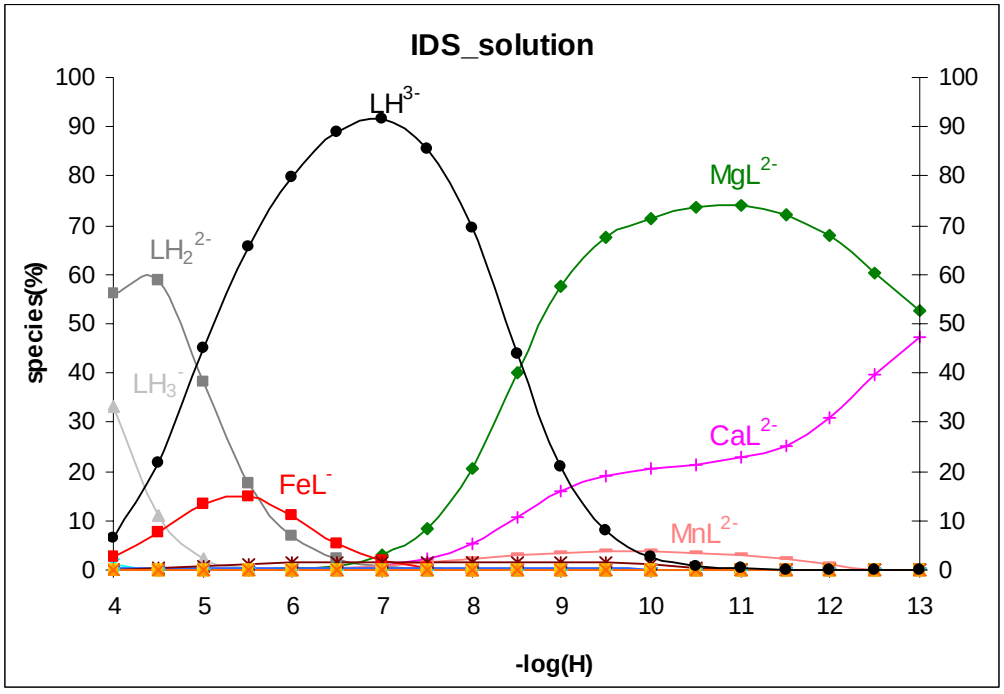

Figure 1. Species distribution for nutrient solution. No Fe precipitation

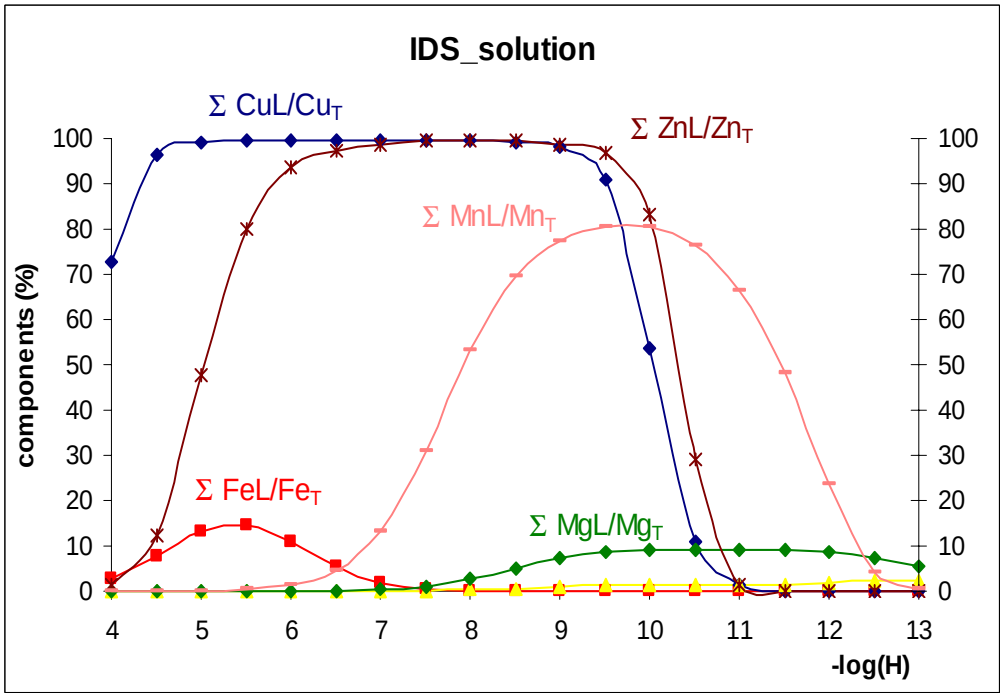

Figure 2. Element Species distribution (% respect the total element) for nutrient solution. No Fe precipitation.

LITERATURE CITED

1. Lindsay, W. L.; Norvell, W. A. 1978. Development of a DTPA soil test for zinc, iron, manganese and copper. Soil Sci. Soc. Am. J. 42:421-428.
2. Sims, J. R., Bingham, F.T. 1968. Retention of boron by layer silicates, sesquioxides, and soil materials: Soil Sci. Soc. Am. Proc. 32:364–369.