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Study of the Effect of Humic Acids on Soil Salinity Reduction

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Abstract : Soil salinization is one of the most severe environmental hazards which threaten sustainable agriculture in arid and semi-arid regions, including Morocco. In this regard the application of organic matter to saline soil has confirmed its effectiveness. The present study was aimed to examine the effect of humic acid which represent, among others, the important component of organic matter that contributes to reduce soil salinity. In fact, different composts taken from Agadir (Morocco), with different C/N ratio, were tested. After extraction and purification of humic acid, the interaction with Na2CO3 was carried out. The reduction of salinity is calculated as a value expressed in mg Na2CO3 equivalent/g HA. The results showed that humic acid had generally a significant effect on salinity. In that respect, the hypothesis proposed that carboxylic groups of humic acid create bonds with excess sodium in the soil to form a coherent complex which descends by leaching operation. The comparison between composts was based on C/N ratio, it showed that the compost with the lower ratio C/N had the most important effect on salinity reduction, whereas the compost with higher C/N ratio was less effective. The study is attended also to evaluate the quality of each compost by determining the humification index, we noticed that the compost which have the lowest C/N (20) ratio was relatively less stable, where a greater predominance of the humified substances, when the compost with C/N ratio is 35 exhibited higher stability.

Keywords : compost, humic acid, organic matter, salinity
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