



ملخصات الابحاث المقدمة من الدكتورة/ داليا محمد الصوفى محمد

## البحث الثاني

Eman.E. Belal, Dalia M. El Sowfy and Mostafa M. Rady (16 July 2019). Integrative Soil Application of Humic Acid and Sulfur Improves Saline Calcareous Soil Properties and Barley Plant Performance. Communications in Soil Science and Plant Analysis. Vol. 50, No. 15, pp. 1919-1930.

التطبيق التكاملى الأرضى لحمض الهيوميك والكبريت يحسن خصائص التربة الملحية الجيرية وأداء نبات الشعير.

### ملخص البحث باللغة الإنجليزية:

During the 2017 and 2018 seasons, two field experiments were conducted on newly reclaimed saline calcareous soil (7.13 dS m<sup>-1</sup>, 16.9% CaCO<sub>3</sub>) in the experimental farm of the Faculty of Agriculture, Demo, Fayoum Governorate, Egypt. The current work aimed at identifying the potential positive effects of applied humic acid (HA) and elemental sulfur (S) on some soil properties and barley plant performance. The results showed that the application of HA and/or S at different rates ameliorated the adverse effects of saline calcareous soil conditions and significantly reduced some chemical properties of the soil (e.g., pH, E<sub>Ce</sub>, and CaCO<sub>3</sub>%), while soil organic matter (OM%) and some nutrients (e.g., P, Fe, Mn, Cu, and Zn) contents were significantly increased. In addition, the contents of nutrients (e.g., P, Fe, Mn, Cu, and Zn) in barley plant and yielded grain, grain content of N and protein (%), and the performance (e.g., plant height, spike length, grain and straw yields, and weight of 1000-grain) of barley plant were significantly increased with the application of HA and/or S. The best results were obtained through the integrative application of 100 kg HA+ 400 kg S ha<sup>-1</sup> to the tested saline calcareous soil. Therefore, the integrative soil application of 100 kg HA + 400 kg S ha<sup>-1</sup> can be recommended for the cultivation and sustainability of crop production in saline calcareous soil, in addition to rationalize the use of mineral fertilizers, which represent a surplus point for the sustainable agriculture system.