Soil solarization and inoculation with sulphur oxidizing bacteria and their effects on some soil properties

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Two greenhouse pot experiments (clayey soil from “Assiut Experimental Farm” and sandy soil from “El-ghorib-Assiut Experimental Farm”) were conducted in order to evaluate the main and interaction effects of solarization (covering the soil with transparent plastic sheets), inoculation with sulfur oxidizing bacteria SOB (isolated thiobacillus), addition of filter mud cake (one of the sugar industry wastes, NagaaHammady Sugar Factory) as a source of organic matter and elemental sulfur (granule or micronize) on some sand and clay soil properties. In both soils, the temperature of solarized soil was always higher than the nonsolarized one with an average of 6°C at 8:00 AM and 14°C at 4:00 PM which resulted in a reduction in OM percentage. Both FMC and S addition had great effects on increasing soil EC compared to the increase that resulted from either solarization or SOB inoculation. The effect of elemental sulfur addition on decreasing soil pH was higher than the other treatments in clay soil, while FMC addition was the most effective treatment in sandy soil. The highest increase in available S was always found when soils were treated with elemental sulfur. Each of the treatments increased the available P in both soils, however the most effective treatment was FMC addition. Soluble Ca+2+Mg+2 and K+ were always increase due to each of the treatments. The highest increase in soluble Na+ was due to increasing soil temperature by solarization compared to the other treatments.

Biography

Hala H Gomah is an associate professor in Department of Soils and Water, Faculty of Agriculture, Assiut University, Egypt. She completed her PhD in 2001. Her areas of interest are Mineral nutrition on plant, soil fertility and fertilizers, heavy metals in soils and plants and micronutrients and chelating agent. She has published more than 15 research papers.

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