

Gellan Gum/Humic Acid Hydrogels as Potential System for Plant Growth

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Hydrogels are three-dimensional polymeric networks with promising properties as release systems for fertilizers, pesticides and plant growth-promoting bacteria, as well as improving water availability in crop soils. Most commercial hydrogels for agricultural use are based on synthetic polymers. Due to the increasing attention on the use of biodegradable materials, hydrogels based on natural polymers have gained interest. In this work, the design and development of new hydrogels with superabsorbent characteristics based on gellan gum (GG) and humic acid (HA) were carried out, as an ecological alternative with potential application in the agricultural industry. Hydrogels were obtained by crosslinking the GG chains with spermidine in the presence of HA. The structural and physicochemical properties of the hydrogels were evaluated by FTIR, TGA, SEM and degree of swelling at 25 °C in deionized water and in a soil aqueous extract. Chlorophyll quantification was evaluated in sorghum (*Sorghum sp.*) seedlings germinated in a growth chamber for plants at 27±1 °C and 12 light hours. The results showed that adding HA to the GG matrix increases the amount of total chlorophylls in sorghum seedlings.