Water Conservation With Biodegradable Hydrogels

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Can biodegradable hydrogels be used as an efficient way to conserve water in soil for plants, and is this a sustainable and sufficient source that can be used in conditions where soil would normally lack water, due to dry or warm environments and droughts? The goal of this experiment is to compare biodegradable hydrogels and determine whether or not they are an effective component that can be used for water conservation within soil. It is hypothesized that HEC will make the most effective hydrogel as it is a commonly used biodegradable polymer in hydrogels, and that all of the hydrogels will improve the amount of time that water is kept in soil. This experiment consisted of two tests. The first test was to gain basic knowledge of how much water each of the hydrogels could absorb on their own. For the absorption test the hydrogels were placed in separate containers, given an hour to absorb water, and weights were recorded of each hydrogel in their containers before and after absorbing the water. The weights were then recorded for an entire week. The second test consisted of recording the weights of these hydrogels within soil, in separate seedling pots that then had water added, the weights were again recorded over an entire week. My hypothesis was true as the HEC hydrogel was one of the best performing hydrogels, and each of the hydrogels did improve the duration of time that the water was kept within the soil. It was not anticipated that the CMC hydrogel would perform as well as it did, as CMC is not as commonly used as a biodegradable polymer in hydrogels. Both HEC and CMC performed the best out of all of the hydrogels, and the hydrogels that contained agar did not perform as well.

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