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DEVELOPMENT OF AN ALOE VERA AND CELLULOSE BASED BEAD TO AID THE GROWTH  
OF PHASEOLUS VULGARIS PLANT ON MARS REGOLITH**Abstract**

In order to become multi-planetary species, we need to develop technologies that will enable human life in extreme and remote environments. One example of such extreme environments is the growth of vegetation crops on Martian soil. Overall, growing plants under these conditions will be a challenge due to drastically shifting temperatures, low atmospheric pressure, scarcity of nutrients, type of regolith and water. *Phaseolus vulgaris*, also known as “Kidney Beans”, have the convenient characteristic that they have quick germination rates as well as nutritional quality and can easily adapt to grow in most environments. We present an approach to reduce water consumption by developing a biopolymeric hydrogel using Aloe vera and cellulose able to retain large amounts of water. We combine both biopolymers through a variety of conditions including aloe vera/cellulose ratios, the influence of N-P-K and Peat Moss. The developing product ‘hydropearls’ is composed of two groups: (1) the hydrogels and (2) the nutritional-solid matter composed of N-P-K and Peat Moss.