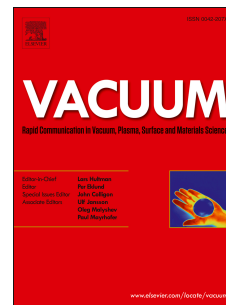


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**Green synthesis of agar/Gum Arabic based superabsorbent as an alternative for irrigation in Agriculture**

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**Abstract**

The scarcity of water is a serious problem in the agricultural production, leading to decrease in crop yield. The solution to this problem can be generated by inducing the production of synthetic materials based on natural polysaccharide with good water absorption and retention capacities. The present work aimed at preparing an acrylic acid grafted over agar and gum Arabic based hydrogels for sustainable moisture retention capacity in agricultural land. The graft copolymer based biodegradable hydrogel has been synthesized by using microwave irradiation under the best conditions to get the maximum percentage swelling. The synthesized product has been characterized using Fourier Transform Infrared Spectroscopy (FTIR), X-ray diffraction (XRD) and scanning electron microscopy (SEM) techniques. The effects of hydrogel treatment on water retention capacity of eight different soil samples collected from various regions of Punjab were evaluated. The synthesized hydrogel showed great potential as a soil conditioning material to be used in agriculture purposes.

**Keywords:** Superabsorbent; Hydrogels; moisture retention; microwave; percentage swelling

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