**Titre :** New Polysaccharide-based bio-superabsorbents for Water Stress Control in Agriculture: Preparation and Properties

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**Abstract**

Water management is rapidly becoming one of the most pressing issues all countries in semi-arid and arid parts of the world are facing. Global water consumption is predicted to increase by 50% in 2030[[1]](#footnote-1), which will cause an acute water shortage. Presently, the agricultural sector consumes more than 70% of freshwater in most regions of the world1, putting more pressure on water needs and worsening water scarcity. To address this issue, scientists and researchers are exploring innovative solutions, among which the development of ecofriendly polysaccharide-based bio-superabsorbents stands out, in fact, the bio-superabsorbents are materials that have the ability to absorb and release large quantities of water. Commercially available synthetic petroleum based super absorbents, based on acrylic monomer, are harmful for the environment and human health as reported in many scientific reports[[2]](#footnote-2). Polysaccharide-based bio-superabsorbents are typically derived from natural sources, such as plant-based polymers, and are designed for various applications, including agriculture, horticulture, hygiene and environmental remediation. The objective of this work is to develop new biodegradable superabsorbent materials using cellulose composites extracted from various plant sources. These materials are intended to be effective for agricultural applications and presenting water absorption a retention property that make them very competitive compared to those commercially available.

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1. Source: « World Water Day », World Resources Institute. <https://www.wri.org/events/2021/03/world-water-day> [↑](#footnote-ref-1)
2. Source : Evaluation et changement climatique – Canada : https://ec.gc.ca/ese-ees/ [↑](#footnote-ref-2)