

Seawater as Alternative to Freshwater in Pretreatment of Date Palm Residues for Bioethanol Production in Coastal and/or Arid Areas - DTU Orbit (08/11/2017)

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The large water consumption (1.9-5.9 m³ water per m³ of biofuel) required by biomass processing plants has become an emerging concern, which is particularly critical in arid/semiarid regions. Seawater, as a widely available water source, could be an interesting option. This work was to study the technical feasibility of using seawater to replace freshwater in the pretreatment of date palm leaflets, a lignocellulosic biomass from arid regions, for bioethanol production. It was shown that leaflets pretreated with seawater exhibited lower cellulose crystallinity than those pretreated with freshwater. Pretreatment with seawater produced comparably digestible and fermentable solids to those obtained with freshwater. Moreover, no significant difference of inhibition to *Saccharomyces cerevisiae* was observed between liquids from pretreatment with seawater and freshwater. The results showed that seawater could be a promising alternative to freshwater for lignocellulose biorefineries in coastal and/or arid/semiarid areas.

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