

Biological conversion of cattails for bioethanol production

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Rising oil prices and uncertainty over the security of existing fossil fuel reserves, combined with concerns over global climate change, have created the need for new transportation fuels and bioproducts to substitute for fossil carbon-based materials. Ethanol is considered to be the next generation transportation fuel with the most potential, and significant quantities of ethanol are currently being produced from corn and sugar cane via a fermentation process. Utilizing lignocellulosic biomass as a feedstock is seen as the next step towards significantly expanding ethanol production. The most widely investigated of these sources thus far have been corn stover or crops grown specifically as energy crops, such as switchgrass and poplars. However, another viable feedstock could be aquatic plants obtained from constructed wetlands, such as cattails. The biological conversion of cellulosic biomass into bioethanol is based on the breakdown of biomass into aqueous sugars using chemical and biological means, including the use of hydrolytic enzymes. This presentation reviews a series of recent studies by the researchers at the North Carolina A&T State University, which confirmed the technical and economical feasibility of converting cattails to cellulosic ethanol.

Biography

Bo Zhang is the Research Scientist of Biological Engineering Program in the Department of Natural Resources and Environmental Design at North Carolina A&T State University, USA. He earned his Ph.D. at the prestigious Department of Chemical Engineering and Materials Science of University of Minnesota. He has published over 20 peer-reviewed research articles in internationally renowned journals and 7 academic book chapters, and has one patent granted in China and one pending patent in the U.S. He is the Editor of Journal of Petroleum & Environmental Biotechnology. He also reviews articles for more than 10 professional journals regularly. He is invited to judge proposals by United State Department of Agriculture (USDA). He is the senior member of American Institute of Chemical Engineers (AIChE), full member of the selective Sigma Xi, The Scientific Research Society, and full member of American Chemical Society (ACS).

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