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Biofuels for the Future: The Role of Biotechnology for Energy Crops

by

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Abstract

The utilization of energy crops produced on American farms as a source of renewable fuels is a concept with great relevance to current ecological and economic issues on both national and global scales. Recent research indicates that many approaches to renewable biofuels, including corn and sugarcane ethanol, soybean and palm biodiesel, are indeed, insufficient, not sustainable or even carbon negative. Development of a significant national capacity to utilize perennial forage crops, such as switchgrass (*Panicum virgatum*, L., Poaceae) and other bioenergy feedstocks, as biofuels could provide a degree of independence from foreign oil, a cleaner source of energy for road fuel to diminish greenhouse gas emissions, benefit our agricultural economy by providing an important new source of income for farmers, and allow for more productive use of land currently within the Conservation Reserve Program (CRP) and other marginal lands. It is now widely recognized that there are many advantages to the utilization of renewable biofuels crops that are not in the human food chain. The use of molecular breeding and genetic engineering of specific energy related traits in switchgrass will play a major role in the development of biofuels for the future.

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