

Biofuels as Invasive Species?

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Susan Post, Illinois Natural History Survey, in front of a research plot of *Miscanthus*, a potential biofuel crop.

As the United States looks to crops as possible future sources of energy, a University of Arkansas researcher and his colleagues call for caution, citing the possibility of some biofuel crops becoming invasive species.

Robert N. Wiedenmann, professor of entomology, and his colleagues S. Raghu, Roger C. Anderson, Curt C. Daehler, Adam S. Davis, Dan Simberloff and Richard N. Mack put forth their argument for ecological studies of biofuel crops in the policy forum in the Sept. 22 issue of *Science*.

“Most of the traits that are touted as great for biofuel crops – no known pests or diseases, rapid growth, high water-use efficiency – are red flags

for invasion biologists,” Wiedenmann said. “We want to start a dialog and approach the question of biofuels systematically.”

President George Bush announced the U.S. renewable energy initiative in his 2006 State of the Union address, bringing to the forefront the identification and use of potential biofuels as alternative energy sources. The authors of the Policy Forum article in Science call for an examination of potential invasiveness as crops are examined for their biofuel potential and before putting such crops into large-scale production.

Seemingly benign crops that have become invasive species have already occurred in the United States. Wiedenmann and his colleagues cite the case of *Sorghum halepense*, otherwise known as Johnson grass. Johnson grass was introduced as a forage grass and now has become an invasive weed in many states, causing up to \$30 million annually in losses for cotton and soybean crops in just three states.

One proposed biofuel crop, *Miscanthus*, can grow up to eight feet in six weeks. Wiedenmann describes it as “Johnson grass on steroids.”

“Plants like these, particularly grasses, have great potential from an energy standpoint, but the benefits need to be balanced with the costs,” Wiedenmann said.

Although invasive species are traditionally thought of as introduced species, a native species also can become invasive through alterations to the environment, Wiedenmann said. One example: the removal of oak and chestnut trees along much of the east coast has led to sugar maples becoming invasive in some areas.

Invasive species alter ecosystems in ways that can cause both ecological and economic harm. Since 1999, the U.S. government has had an

invasive species council, which develops invasive species management plans.

Researchers investigating the potential for biofuels tend to be engineering or agricultural specialists who are looking at maximizing energetic conversion or crop size. Wiedenmann and his colleagues want to see ecologists at the table with engineering and agricultural researchers addressing the potential for invasiveness. He cites a lack of communication in one government organization where some scientists were examining a plant for heavy metal mitigation, while another group of scientists were working on biological control of the same plant.

Source: University of Arkansas, Fayetteville

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