Salt-Tolerant Plant Promising for Biodiesel

Bijgedragen door www.enn.com
donderdag 26 juli 2007
Laatst geupdate op maandag 08 december 2008

University of Delaware Researcher Says Seeds from July 10, 2007 — By Randall Chase, Associated Press

LEWES, Del. -- John Gallagher pinches a pod from the long-stemmed plant in the greenhouse next to his office, cracks it open and pops the BB-sized seeds into his mouth.

"They're not going to compete with peanuts, but they're good," said Gallagher, a University of Delaware researcher.

While the seashore mallow might be handy for a quick snack, the sturdy plant has provided Gallagher food for thought in addressing a smorgasbord of environmental problems, from global warming to the disappearance of coastal farmland.

Gallagher, a marine biosciences professor, says the seeds are a promising source of biodiesel, with an oil composition similar to that of soybeans and cottonseed.

Unlike soybeans and corn, which require annual plantings to feed the growing appetite for biofuels, the pink-flowered seashore mallow is both a perennial and a halophyte, or salt-tolerant plant, that grows in areas where other crops can't.

"You don't have to divert land that is presently used for producing food and feed to the process of making biodiesel," said Gallagher, who runs the university's Halophyte Biotechnology Center with his wife and fellow researcher, Denise Seliskar.

With the threat of sea water encroaching on farmland and coastal aquifers because of global warming, Gallagher believes the seashore mallow could help preserve the economic value of arable land transitioning to marshland.

The meal left over after oil is extracted from mallow seeds has enough protein to be used for animal feed, while the stems have potential for use in cellulosic ethanol, Gallagher said. The roots of the plant could be used to make industrial gum.

"It's almost like the pig of the vegetable world; you can use everything but the squeal," Gallagher said, noting that the roots sequester carbon from the atmosphere, making the plant a carbon-neutral source of energy.

Dan Soeder, a U.S. Geological Survey hydrologist studying saltwater intrusion in coastal areas, is among those intrigued by Gallagher's research on the mallow as biofuel.

"I don't know if it's going to be the cure for all evils, but it certainly fills a niche," Soeder said. "It's a biofuel crop that you're growing without tying up agricultural land."

While more than 20 countries are involved in saltwater agriculture projects for food crops, the idea of using halophytes as biomass for fuel is a recent development, said Dennis Bushnell, chief scientist at NASA's Langley Research Center in Hampton, Va.

"This is a revolution for agriculture as well as for energy," said Bushnell, who has been advocating the use of halophytes as fuel sources for more than a decade but has been unable to generate much interest among federal agencies.

According to Bushnell, some 250 halophytes are potential food staple crops, while thousands more might be available as fuel biomass.

Gallagher and Seliskar are tending a 2 1/2-acre plot of seashore mallow planted last year at the edge of a farm in Sussex County. While that crop is planted on conventional farmland, plans are in the works for an experimental plot in saline soil elsewhere.

Seed yield would need to be improved before the mallow can be commercialized for biodiesel purposes, but Gallagher and his colleagues say selective breeding, tissue culturing and genetic engineering could improve the crop potential of the plant, which is native to salt marshes stretching from the Gulf of Mexico to the mid-Atlantic coast.

On the Net:

Halophyte Biotechnology Center: http://www.ocean.udel.edu/halophyte/hbc.htm

Bron: www.enn.com.