

Better plants for biofuels

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An article in *F1000 Biology Reports* published today argues that recent advances in knowledge mean that plant-derived biofuels could meet about 30% of the global demand for liquid transportation fuels, drastically reducing the amounts of greenhouse gases released into the atmosphere from burning fossil fuels, without having an impact on food production.

It is widely accepted that one of the causes of detrimental [climate change](#) is the emission of [greenhouse gasses](#) such as carbon dioxide, nitrous oxide and methane in to the atmosphere from the burning of fossil fuels.

Consequently, in recent years, scientific studies into the development of low-carbon technologies to meet our energy needs have become increasingly popular. Chris R. Somerville, F1000 Faculty Member and Philomathia Professor of Alternative Energy at the University of California, Berkeley, and Heather Youngs, a senior analysis fellow in the Energy Biosciences Institute at UC Berkeley and Adjunct Professor of Biochemistry at Michigan Technological University, describe recent research into ways that the body of plants, rather than the seeds, can be improved for use in making next-generation biofuels, in an article published today in *F1000 Biology Reports: Development of feedstocks for cellulosic biofuels*.

In their article, Somerville and Youngs argue that advances in the technology used to produce and extract plant biomass to be burned directly or converted to liquid fuels may allow the expansion of

productivity to a scale large enough to meet the demand for an estimated 30% of all liquid transportation fuels.

The article also addresses some of the concerns associated with the development of biofuels, in particular, that land used to grow plants for biofuels, means less land for other purposes. However, Somerville and Youngs point out that recent scientific advances raise the possibility that non-edible plants can be engineered or bred to grow on the approximately 600 million hectares of land worldwide on which agricultural production has been abandoned, and used to produce biofuels, without significant effects on food production or the ecosystem.

"Many of the concerns about the use of food crops for biofuels do not apply to the use of the inedible parts of plants that are the focus of our review", said Chris R. Somerville said. He continued: "New dedicated energy crops are a particularly promising area of research."

The expansion of biofuel production is a topic with complex economic, ecological, environmental and political concerns. Many advances in our understanding of how to produce biofuels sustainably are arising from interdisciplinary research. Many more will be needed to reach the scale required to reduce the environmental impacts of transportation in an acceptable manner.

More information: f1000.com/reports/biology

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