Will producing second-generation biofuels endanger biodiversity?

Biofuel production has come under attack from all fronts and is putting pressure on an EU commitment to increase the bloc's share of biofuels in transport to 10 per cent by 2020. Two experts debate whether second-generation production would damage biodiversity

YES Pieter de Pous

Agriculture policy officer, European Environmental Bureau

Yes, certainly in the quantities needed to meet a 10 per cent biofuel target.

Over the past few months a consensus has started to emerge that the use of food crops to produce fuel has severe negative impacts on food prices and ecosystems.

In response, policy makers are now increasingly embracing second-generation biofuels, or biofuels made from cellulosic materials, as the fuel of choice.

At first sight, they do have a number of attractions: they can be used from the leftover products from agriculture and forestry or be specifically grown on non-productive land. Therefore no extra land needs to be converted in theory.

The problem is that these 'waste' streams are part of a nutrient cycle and play a rather crucial role in the productivity of agricultural or forestry systems. Losing these nutrients to energy production would mean replacing them with mineral fertilisers and increasing diffuse pollution.

In forestry the competition is even more pronounced: forest biodiversity is intrinsically linked to the presence of deadwood in the forest. Creating a sizeable industry that incentivises forest owners to take out the dead 'leftover' wood and use it for fuel could greatly damage forest biodiversity.

Lastly, land that produces no food can be hugely productive for biodiversity and deliver important environmental services.

All this means second-generation biofuels should be treated with the same level of caution as first-generation. Strict sustainability criteria should be developed, based on a hierarchy of uses where waste materials are first used for improving soil quality and only lastly as an energy source. Again, preference should be given to heat and power production, which is more efficient than turning it into liquid fuel.

But perhaps the greatest threat to biodiversity from second-generation biofuels derives from the mere suggestion to policy makers that the problems associated with first-generation can be avoided.

Second-generation biofuels can only deliver limited volumes and certainly will not make it possible to meet the 10 per cent target in a sustainable way.

For policy makers, the only way out of the current controversy is to make a u-turn on the 10 per cent target, adopt strict criteria for those biofuels which are already being developed today, and set strict binding targets for CO_2 emissions from cars.

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NO Raffaello Garofalo

Secretary general, European Biodiesel Board

No, not if appropriate technologies and good environmental management practices are used.

The debate on biofuels sustainability is now focusing on second-generation biofuels. But second-generation technologies are not a panacea. While they have great potential, some of the current technologies are as good – and in some cases even better.

Policy should encourage current and future technologies based on their positive impact on greenhouse gas savings and security of supply, commercial viability and the reduced surfaces required for feedstock production.

Biodiesel makes up the vast majority of all biofuels used in Europe and is the most likely biofuel to be used to meet the 10 per cent target. One of the most sustainable methods of biodiesel production today uses recycled vegetable oils and animal fats. Biodiesel produced from these waste streams generates high greenhouse gas savings and, as a by-product, does not require the use of additional land surface.

Waste biomass from agriculture and forestry processes could also provide a huge resource for biodiesel production if the processing of lingo-cellulosic material reaches efficiency.

To avoid competition for land with habitats, the biodiesel industry has invested heavily in research on jatropha and algae.

Jatropha can grow on arid land, improving soil structure and reducing desertification. Sustainably managed plantations on the edges of the Sahel have helped secure the boundaries of the desert and preserve threatened habitats.

Algae can be grown almost anywhere in the world in closed tanks. Potential oil yields per hectare from algae are significantly higher than any plant material currently used and would drastically reduce the amount of land required for biodiesel production if this technology became commercially viable.

Current technologies and feedstocks, however, already offer a secure future for biodiversity conservation and climate change mitigation.

The European biodiesel industry depends on rapeseed produced in Europe for the vast majority of its feedstock. Rape is grown in Europe according to the best environmental management practices. The sustainability criteria to be included in the revision of the renewable energy directive will further elevate the sustainability of European biodiesel beyond most other biomass products.

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