

Bioplastics may not be better for climate: Study

By PTI

BERLIN: Bioplastics – often promoted as a climate-friendly alternative to petroleum-based plastics – may lead to an increase in greenhouse gas emissions, according to a study.

The study from the University of Bonn in Germany suggests that shifting to plant-based plastics could have less positive effects than expected.

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An increased consumption of bioplastics in the following years is likely to generate increased greenhouse gas emissions from cropland expansion on a global scale.

Plastics are usually made from petroleum, with the associated impacts in terms of fossil fuel depletion but also climate change.

The carbon embodied in fossil resources is suddenly released to the atmosphere by degradation or burning, hence contributing to global warming.

This corresponds to about 400 million metric tonnes of CO₂ per year worldwide, almost half of the total greenhouse gases that Germany emitted to the atmosphere in 2017.

It is estimated that by 2050, plastics could already be responsible for 15 per cent of the global CO₂ emissions.

Bioplastics, on the other hand, are in principle climate-neutral since they are based on renewable raw materials such as maize, wheat or sugar cane.

These plants get the CO₂ that they need from the air through their leaves, researchers said.

Producing bioplastics, therefore, consumes CO₂, which compensates for the amount that is later released at end-of-life.

Overall, their net greenhouse gas balance is assumed to be zero.

Bioplastics are thus often consumed as an environmentally friendly alternative.

However, at least with the current level of technology, this issue is probably not as clear as often assumed, researchers said.

“The production of bioplastics in large amounts would change land use globally,” said Neus Escobar from the University of Bonn.

“This could potentially lead to an increase in the conversion of forest areas to arable land. However, forests absorb considerably more CO₂ than maize or sugar cane annually, if only because of their larger biomass,” Escobar said.

Experience with biofuels has shown that this effect is not a theoretical speculation.

The increasing demand for the “green” energy sources has brought massive deforestation to some countries across the tropics, researchers said.

They simulated the effects of an increased demand for bioplastics in major producing countries.

They used and extended a computer model that had already been used to calculate the impacts of biofuel policies.

It is based on a database that depicts the entire world

economy.

The study, published in the scientific Journal Environmental Research Letters, found that it takes a lot of time for the switch to bioplastics to pay off.

The belief that bioplastics will reduce the amount of waste in the oceans may not even come true.

Just because plastics are made from plants does not automatically make them easily degradable in marine environments, Escobar said.

“Bio-PE and Bio-PET are for example not biodegradable, same as their petroleum-based counterparts,” he said.

Bioplastics and biomaterials have however one clear advantage: They help to reduce the fossil fuel dependency of highly industrialised regions.

Researchers said that if governments really want to protect the environment, they should rather pursue a different strategy: It makes more sense to use plastic sparingly and to ensure that it is actually recycled.

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