

Biofuels may damage health, researchers find

February 5 2013, by Harriet Jarlett



Concern is growing about finding alternatives to fossil fuels, but the negative impact of one of these—biofuels—may be greater than we first thought, say scientists.

Researchers show, using a [computer model](#), that the [natural chemicals](#) released through growing biomass plants could be dangerous to crops and humans.

Biofuels are seen as a suitable alternative to oil and coal in the bid to reduce carbon dioxide and mitigate global warming. Because of this, four years ago the EU set aggressive targets to replace ten per cent of transport fuel with biofuels by 2020. Yet these new findings suggest the health and agricultural costs could outweigh any benefits to the climate.

Professor Nick Hewitt, from the Lancaster Environment Centre who led

the research, says, 'At present there's 215 million hectares of land being cultivated across Europe and using previous estimates we show that you would actually need to plant one third of that with biofuels to meet the [target](#).' Land used to grow commercial crops over biomass would still be at risk from a product of [biofuel](#) production – ozone.

Using the model, the scientists populated their digital Europe with fast-[growing trees](#) used in biofuel production, such as poplar and willow. But when these trees are grown, chemicals such as isoprene are released. When these compounds combine in the atmosphere they form ozone – a key component of smog and a cause of crop losses. By growing enough crops to reach the targets the scientists found up to 39 per cent more isoprenes were released, and in turn ozone levels rose.

'We didn't have preconceived notions about what we might find, although we anticipated that increasing the amount of poplar would increase the amount of isoprene and ozone,' Hewitt says. 'But we had no idea of the impact we saw on [human health](#) and [crop yields](#).'

Ozone poisoning can amount to nearly £3 billion in losses in wheat alone. Yet with plans to increase biofuel production, a further £1 billion of [crop losses](#) could be added to this.

Ozone can cause severe respiratory problems. The World Health Organisation (WHO) currently believes that 22,000 people in Europe die per year due to ozone, but by planting enough poplar and willow to reach the EU target there could be over 1300 more deaths each year.

In order to generate enough land on which to digitally plant enough biofuel to reach the EU target, the scientists had to include countries outside of the EU, specifically the Ukraine. 'It is unrealistic to expect to plant that much only in the EU countries, since it would be more than half the available agricultural land,' explained Hewitt.

Even with the inclusion of these countries, by converting a third of the land to biofuel production it would mean a third less land being used to grow food . This loss was deemed a necessary forfeit, particularly since food consumption in Europe is expected to remain fairly stable until 2020.

'Deciding whether biofuels are good or bad is difficult, because they're probably beneficial from a climate point of view as they reduce CO₂ in the atmosphere,' concludes Hewitt. 'But they can be a bad thing from an air quality point of view as they raise [ozone levels](#). How you balance these though is a political decision.'

More information: Ashworth, K., Wild, O., and Hewitt, C. 2013. Impacts of biofuel cultivation on mortality and crop yields. *Nature Climate Change* [doi: 10.1038/nclimate1788](https://doi.org/10.1038/nclimate1788).

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